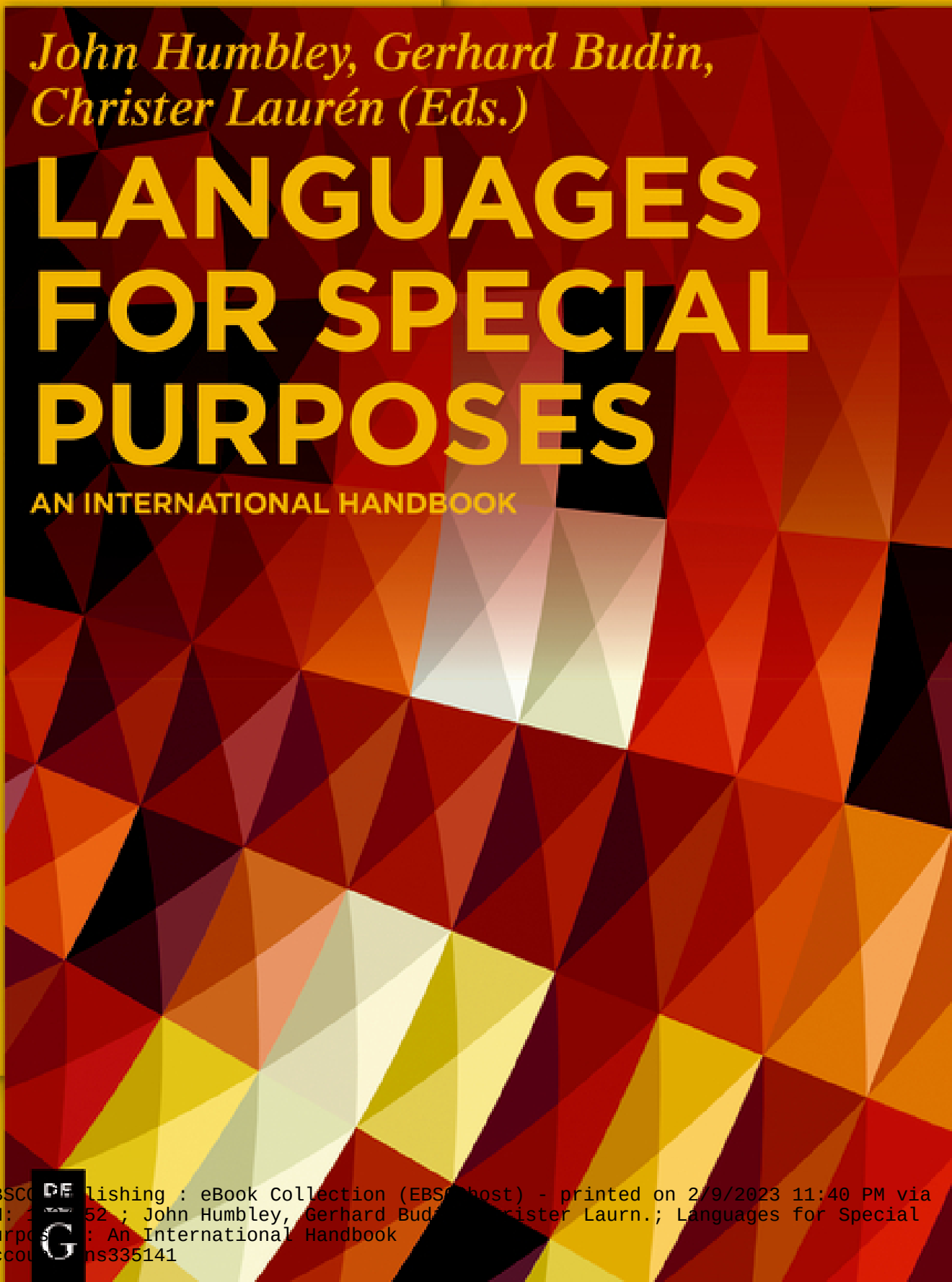
DE GRUYTER
MOUTON

REFERENCE



John Humbley, Gerhard Budin, Christer Laurén (Eds.)
Language for Special Purposes

Language for Special Purposes

An International Handbook

Edited by
John Humbley, Gerhard Budin, Christer Laurén

DE GRUYTER
MOUTON

ISBN 978-3-11-022800-7
e-ISBN (PDF) 978-3-11-022801-4
e-ISBN (EPUB) 97 978-3-11-039465-8

Library of Congress Cataloging-in-Publication Data
Names: Humbley, J. (John), editor. | Budin, Gerhard, editor. | Lauren, Christer, editor.
Title: Language for special purposes : an international handbook / edited by John Humbley, Gerhard Budin, Christer Lauren.
Description: Berlin ; Boston : De Gruyter Mouton, [2018] | Series: De Gruyter reference | Includes bibliographical references.
Identifiers: LCCN 2018012017| ISBN 9783110228007 (hardcover) | ISBN 9783110228014 (PDF) | ISBN 9783110394658 (EPUB)
Subjects: LCSH: Sublanguage. | Communication, International. | Discourse analysis.
Classification: LCC P120.S9 L3493 2018 | DDC 401/.47--dc23 LC record available at https://lccn.loc.gov/2018012017

Bibliographic information published by the Deutsche Nationalbibliothek
The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available on the Internet at http://dnb.dnb.de.

Typesetting: Integra Software Services Pvt. Ltd.
Printing and binding: CPI books GmbH, Leck
Cover illustration: shuoshu/DigitalVision Vectors/gettyimages

www.degruyter.com

Preface

This fresh look at Language for Special Purposes (LSP) has been long in the making. It was inspired by Gerhard Budin and Christer Laurén, who aimed at updating certain aspects of the monumental HSK 14.1 and 14.2, (Hoffmann/Kalverkämper/Wiegand (eds.). 1999/1999. Language for special purposes: an international handbook of special language and terminology research. Berlin: DeGruyter) on this extremely varied subject, by inviting the foremost specialists in the field to survey research carried out. The present volume sees itself as a reorientation and is committed to the following aspects. Firstly, the aim was to reach a broader readership, including not only linguists and students and all those interested in the structures of language used in specialised communication situations, but also professionals working in different areas who seek insights into their own use of language in relation to their speciality. A second aim for the present handbook was to give more prominence to terminology, which has become an essential part not just of language for special purposes, but also of linguistics as a whole.

It was felt the time had come to acknowledge that there has been a shift in both terminology and LSP studies, bringing them closer in contact with general linguistics. This has been made possible by the increasing availability of large-scale corpora. The progress made in this respect should not be underestimated. In the early days of corpus linguistics, the resources available, coming from the press and fiction, were heavily weighted in favour of language for general purposes and of only indirect use for LSP; the situation has changed rapidly and there are now voluminous quantities of specialized texts available for analysis, especially in English. Furthermore, new tools make it possible to create and analyse corpora in other languages and in various subject fields. A further motivation for the new handbook was to cater for vocational uses of LSPs – more and more courses are being made available in various aspects of specialized communication, and it was felt that the time was ripe for these to be analysed and presented synthetically. As it happened, this volume is appearing as a stand-alone update of newer trends in LSP: One of the fundamental questions that this volume seeks to address is how language, in combination with other codes, enables communication in specialized situations.

The present handbook is divided into five sections. The first, Fundamental Aspects, includes in-depth analyses of what LSP is and what it is used for. To start with, the complex relationships between LSP and genre are investigated, before going on to analysing the main function of special languages, that of communicating specialized knowledge and know-how. Contrary to popular conception, technical communication is not culturally neutral, and a chapter is devoted to LSPs as instruments of intercultural communication. The issues involved in technical writing – a theme further developed in the subsequent sections - come under close scrutiny here, in particular, how LSPs can be assimilated by technical writers. LSPs are thus instruments

https://doi.org/10.1515/9783110228014-201

or vehicles for different sorts of specialized communication, but they also have their own instruments, particularly in the form of lexicography, and the role and types of specialized dictionaries are focussed on in this section.

The second section analyses LSPs in selected domains and in various language communities. The aim here was less a comprehensive survey, such as was provided in the first two HSK handbooks, but rather to present prototypes. Thus, the various LSPs used in three very different European languages are presented: one an international language, French, the other two Scandinavian, though one Indo-European (Norwegian), the other Fenno-Ugric (Finnish) and the different challenges which all three face. Issues of competition in specialised communication, in particular from English, is one of the transversal themes of these three chapters. As is well known and generally accepted, LSP is the vehicle for the expression of domain knowledge, and three key areas have been chosen to illustrate its importance: legal language, medical language and the language of economics. Cross-disciplinary issues are also raised in this section, in particular those of gender, which is taken here in a separate chapter from a historical point of view.

The third section directly addresses the role of LSPs in vocational situations. The use of company-based terminology and LSP is investigated thoroughly, and chapters are devoted to how these are used in professional situations, where new professions are emerging, using controlled languages, instructional texts and more generally the way technical documentation is conceived and worked out. This practical orientation is one of the main foci of this volume.

The fourth section is given over to the broader issues involved in scientific communication. This starts with a systemic functional perspective analysing the natural sciences and then goes on to a socio-linguistic, intercultural viewpoint. Legal discourse is similarly analysed here. LSPs are not just written forms of communication: the role of the spoken word in scientific exchanges, all too often taken for granted, is investigated here.

The final section is designed to go some way towards redressing the balance in favour of terminology. First of all, the most basic tenants of terminology are reiterated in the form of the relation between language and concept systems. The ways in which terms are formed in several European languages are accounted for, as is the pairing of terms with concept systems, one of the basic issues of terminology. Terminology as we know it today was largely derived from reflections on how technology is expressed through language, and the specifics of technical terminology is analysed, again from a historical perspective. Legal language, which is highlighted in this volume, is allotted two chapters in this section: one on the specificities of legal terminology, and the other on the issues of the translation of legal texts. Two other terminologies are also analysed: that of medicine, a terminology, which goes back to the beginnings of medicine itself, and a much more modern, specific LSP, i.e. that of the oil industry.

The choice of texts was made with a view to giving a comprehensive overview of the role of language and languages in specialised communication. As a general

handbook, giving access to current thought on LSP, no theoretical school of thought is given particular prominence. Indeed, the different subjects are treated according to the theoretical options that the author or authors, leading specialists in their fields, consider most appropriate for the purposes of the presentation. Particular attention has been given however to presenting in English, often for the first time, approaches to LSP characterized by a distinctive European linguistic culture, German and Scandinavian on the one hand, and French on the other, thus providing a fresh look at the themes treated.

It should finally be pointed out that he use of the term *language for special purposes* or *LSP* is continued throughout the handbook as an umbrella concept, as several authors voluntarily restrict their scope to analysing manifestations of specialised discourse, making no claim to fix specialised discourse markers in the system.

The present volume is appearing much later than originally anticipated and in a more limited format than originally planned. Since a coherent set of texts had already been written, it was decided with the editors to publish these in their own rights. We have a debt of gratitude to Gerhard Budin and Christer Laurén for allowing the present volume to see the light of day.

John Humbley
June 2018

Contents

Part V: **Terminology and multilingual domain communication**

Part I: **Fundamental aspects**

Maurizio Gotti

1 LSP as specialised genres

Abstract: This chapter investigates the evolution of the concept of genre as applied to the field of LSP. After outlining its defining properties, the analysis discusses a few main generic conventions to illustrate the strict codification processes commonly adopted by specialised communities. The principal features of generic organisation are then analysed, together with a few cases of generic differentiation. The chapter also discusses the occurrence of intertextuality and interdiscursivity in specialised genres as well as the main changes brought about by recent technological innovations.

1 Introduction

One of the phenomena that most distinguishes specialised discourse is compliance with the textual norms governing the construction of its different genres. There is a close link between each type of specialised text and its organisation, which in turn implies correlations between the conceptual, rhetorical and linguistic features that characterise the text itself. Indeed, genres are the internal communicative mechanisms operating within a group of members of a specific professional community, as well as between these members and society as a whole. Genres do not only provide a conventional framework but also affect textual features and their conceptual and rhetorical development. Specialised communities have a high level of rhetorical sophistication, the keys to which are offered solely to their members. With time, several text types have arisen – some derived from genres used in the general language, others crafted specifically to meet the needs of specialists (e.g., Gotti 2010). The specialised community, as a social entity, has established its own genres and textual rules of interaction for an effective transmission of information among its members and as an effective way of characterising this community as a whole (Martin and Rose 2008).

The notion of genre is complex. Berkenkotter and Huckin (1995) outline some of the theoretical criteria that may be adopted to frame this concept:

- Genres are dynamic entities, as they continuously evolve and change as a consequence of the socio-cultural needs of the various communities.
- Genre competence implies knowledge of the appropriateness of a text in relation to a specific situation in terms of both form and content.
- Genres are not only constitutive of social structures, but at the same time they are a reproduction of such structures.

Maurizio Gotti, Bergamo (Italy)

https://doi.org/10.1515/9783110228014-001

- Genres are the manifestation of the conventions of specific communities as they share their typical interests, purposes and common knowledge. It is the actions of the community that shape specialised genres and it is those genres what community members need for constructing and disseminating new specialised knowledge. According to the social constructionist hypothesis (Brodkey 1987), disciplinary communities are at the same time both originators and outcomes of their discourse.
- Genres are situated manifestations of discourse as they presuppose that full utterances should be interpreted within the rhetorical framework that the texts display. Devitt (2004: 31) explains that a "genre is a reciprocal dynamic within which individuals' actions construct and are constructed by recurring context of situation, context of culture, and context of genres".

Genre analysis has focused on language as action (Miller 1984), showing how rhetorical conventions relate to the communicative purpose of both the overall text and its different sections. Indeed, the communicative rationale "shapes the schematic structure of the discourse and influences and constrains choice of content and style" (Swales 1990: 58). In the last few years the constructionist approach has gained momentum in the area of specialised discourse studies, with the rising interest in the role played by personal interactions in the elaboration and application of specialised texts, particularly in the contexts of law, banking, education and international organizations (Gotti 2013; Breeze, Gotti, Sancho-Guinda 2014; Sarangi and Slembrouck 2014).

Generic knowledge is acquired within specialised communities through "a set of differentiated, sequenceable goal-directed activities drawing upon a range of cognitive and communicative procedures relatable to the acquisition of pre-genre and genre skills appropriate to a foreseen or emerging sociorhetorical situation" (Swales 1990: 76). Such skills constitute a 'genre literacy' (Cope and Kalantzis 1993; Neeley 2005) which distinguishes the more expert, senior members of a community from junior members and newcomers, in their role of recipients as well as producers of specialised discourse. Through training and engagement, specialists learn to implement the conventions associated with different types of text (Dressen-Hammouda 2008), and the conventional use of genres produces a 'horizon of expectation' (Todorov 1990) among their audience.

Genre analysis has become firmly established as one of the most popular approaches to the study of academic and professional discourse. In its initial phase, it was used especially for the description of variations in texts geared to language learning and teaching programmes (Swales 1990; Bhatia 1991, 1993). As such, the main emphasis was on the analysis of linguistic form, although the basis of genre theory has always been the relationship between text and context, viewed both as what surrounds a text and as what makes a particular genre possible in specific contexts.

In recent years, however, genre theory has taken a closer interest in context understood in its broader sense, paying particular attention to interactions depending not only on generic form and content, but more importantly on how genres are constructed, interpreted and exploited for the achievement of specific goals in

specialised contexts. These relatively new concerns have driven genre theory in the direction of a more comprehensive, powerful, multidimensional framework capable of handling not only texts but also contexts in a more meaningful manner (Smart 1998; Swales 1998, 2004; Bhatia 2004). In this sense, the emphasis has almost been reversed, with the context generally attracting more attention in the description of specialised genres. Moreover, recent years have seen a growth in linguistic research of a sociological or anthropological nature, seeking to reconstruct the interactional dimension of the main genres employed by disciplinary communities, institutional bodies and the professions. Bhatia (2008a) has argued for the integration of the analysis of typical characteristics of professional genres with the investigation of the nature of professional practice. Moreover, he has suggested the adoption of a "complex and dynamic multiperspective and multidimensional analytical framework" which would enable ESP researchers and practitioners to "bridge the gap between the ideal world of classroom and the real world of professional practice" (Bhatia 2008a:171).

More recently, a newer perspective has emerged in genre studies, a product of Bhatia's own evolution in the way to contemplate genre theory: Critical Genre Analysis, resulting from the fusion of two fields, Genre Analysis and Critical Discourse Analysis (Bhatia 2012, 2016). Within this new line, Bhatia advocates an approach to the study of genre language as critical discourse, language as social control, and language in and as social interaction, focusing in particular on a multidimensional methodological framework where interdiscursivity and asymmetrical power relations are seen as ways of 'demystifying' professional practice through the medium of genres.

2 Generic codification

Generic conventions are followed very closely in specialised texts, even when the reasons underpinning certain features no longer exist. An example of this phenomenon is the textual construction of English legal documents. In recent contracts it is increasingly common to divide a text into numbered sections, with more punctuation and spaces between sections, but in many instances these devices are either omitted or occur only occasionally. This is due to a custom established before the invention of printing: writing across each line from margin to margin, without any punctuation, to avoid additions or alterations of the original meaning. Such conventions have in part survived to this day, although printing makes text alteration far more difficult.

Textual standardisation occurs in all disciplinary fields and is strongest when a text is not free-standing but is the redrafting of an earlier text, incorporating all data reflecting the new conditions. This is the method followed for drafting legal contracts which, as they serve a range of recurring codified situations governed by specific norms, are often based on pre-printed forms with spaces for the parties' names and special clauses to meet individual requirements. Even when printed forms are avoided, the alternative

is a checklist of textual provisions, from which the user can draw those required in a given situation. This custom is confirmed by Kurzon's following statement:

> The texts of contracts, wills and deeds are never written afresh every time a lawyer has to draw one up. The lawyer uses what are called in the profession 'formbooks', in which documents or paragraphs of documents are set out, and it is up to the lawyer to choose the appropriate paragraph or paragraphs for the particular document s/he is drawing up. All the lawyer has to add to these documents are the personal particulars of the person or persons. (Kurzon 1989: 284–285)

A similar case is found in business correspondence, with the main types of letter generally grouped into categories according to their pragmatic function: enquiries, offers, orders, complaints, reminders, etc. Each category follows a standard pattern, with certain sections arranged in a set sequence. Besides the structure shared by all business letters – with an opening (sender's and receiver's addresses, date, reference numbers, salutation), a body (containing the letter's main content) and a closing section (greetings, signature and reference to attachments) – there is a conventional pattern for each type of letter. For example, an order for goods is generally organised as follows:

1. reference to a previous offer;
2. order for the goods required;
3. instructions concerning packing, delivery, insurance, etc;
4. specification of the method of payment preferred.

Business letters do not normally require much creative effort on the writer's part, because the sender tends to use standardised letter formulae stored in his computer files; these are customised by adding details about the transaction concerned. The standardisation of business communication also makes texts shorter, more concise and comprehensible to the reader – a key factor in specialised transactions and global communication. Commenting on this important link between pragmatic transparency and textualisation in business correspondence, Ghadessy and Webster make the following remark:

> The purpose of almost every business letter is to evoke some material and immediate response or action. A letter of enquiry or adjustment, an application for a position, a collection letter, a sales letter – all are designed to get something done. For this reason business writing is often spoken of as PERSUASIVE WRITING. In business writing the use of language must be governed by the results aimed at; it must be designed to create the proper impression upon the recipient, and thus to evoke the proper action, response and result. Another important point is that business letters are likely to get a more rapid reading than the works of literature. Consequently the business writer tries to compress his message so that it will be immediately and unmistakably clear. There must be no chance of its being misunderstood. He must prepare his letter for the eye as well as the brain. (Ghadessy and Webster 1988: 112, original emphasis)

Also within the broad academic community, the various communities of practice – the so-called 'academic tribes' (Becher 1989) – have defined specific rules of social interaction and interactional procedures strictly linked with their own particular research practices (Berkenkotter, Bhatia and Gotti 2012; Gotti and Guinda 2013). Moreover,

they have codified the varying discourse processes and dialogic conventions relating to the different written/spoken generic formulations typical of the various contexts of their practice (e.g. abstracts, academic lectures, conference presentations, PhD dissertation defences, research articles, seminars, etc). Research articles are viewed as persuasive artefacts, generally following a logico-argumentative model and employing suitable linguistic devices to perform the different rhetorical functions that constitute the various parts (or 'moves') of the text.

Tourism is one of the fields which have undergone some of the greatest developments over recent years, involving the use of the latest technologies and means of communication as well as the employment of thousands of people, from travel agency clerks to tour operators, from tour guides to accommodation and transport personnel. Even in the world of tourism, however, textual genres are highly codified (Gotti, Maci and Sala 2017). The most typical are the following:

- *Tourist guides* – Aimed at the traveller or visitor, they usually contain descriptions of places (history, monuments, etc.) as well as practical information (means of transport, times of opening of museums, shopping advice, typical restaurants, accommodation facilities, maps, etc.)
- *Articles in specialised journals and general magazines* – Besides giving information about places (as in tourist guides), they also provide details of various offers for the same destination comparing prices, services offered and their quality. Compared to tourist guides, their descriptions tend to be more subjective.
- *Brochures and other advertising materials* – Their main aim is to attract the holidaymaker/traveller in order to sell tourist 'products', such as flights, package holidays, hotel accommodation, etc. Although these materials are also highly informative, their main aim is persuasive.
- *Itineraries* – Travel agents are often called upon to draw up an itinerary. A typical descriptive leaflet provides detailed information about the places to be visited, the activities offered during a package tour organised for a specific group or customer.
- *Professional correspondence* – This is used not only between agencies and customers, but also by individual agencies to communicate with other agencies, tour operators, hotels, airlines, etc.

This considerable codification increases semantic-conceptual coherence and transparency, as signalled by textual organisation. Studies on this aspect of text have not only highlighted its different parts but also the contribution of each part to the overall pattern. Texts consist of standardised parts which are constitutive of the genres themselves. For example, a typical itinerary contains the following sections:

- an easily understood title;
- an indication of the geographical location;
- directions on how to reach this place;
- a mention of the climate;
- a description of any scenic beauty;

- a mention of any archaeological, historical or artistic features;
- cuisine;
- accommodation options;
- sports and entertainment facilities;
- attractive illustrations;
- shopping hints;
- special events;
- addresses etc. for obtaining further information.

Also the world of business has developed its own typical texts. The most common written genres used in business communication are the business letter (Bhatia 2004; Gillaerts and Gotti 2008), the company email (Kankaaranta 2006; Gimenez 2008) and the advertisement (Gerritsen et al. 2007), while the most frequent oral ones correspond to negotiations (Firth 1994; Charles 1996; Hendon, Hendon and Herbig 1996; Ghauri and Usunier 1996; Planken 2005) and business meetings (Rogerson-Revell 1999, 2008; Poncini 2007). Genre analysis has also investigated the genres and texts of corporations as sets of social practices, which include new complex realizations that are also conceived as part of the corporate discourse system in all its complexity and power of reverberation and regeneration (Garzone and Gotti 2011; Breeze 2013).

3 Generic organisation

Discourse analysts have drawn attention to the concept of genre to gain a better understanding not only of the linguistic characteristics of texts, but also of their macrostructure, which appears to be organised according to genre expectations and conventions rooted in the socio-cultural context. A highly influential approach to genre analysis is that developed by Swales (1990), who has identified the main parts of a genre as 'moves' and its sub-elements as 'steps'. In the fast-moving field of scientific investigation, empirical research articles constitute the main source of innovative knowledge. Their standard structure, which reflects the main stages used in scientific laboratory reports, generally consists of four sections: Introduction, Methods, Results and Discussion/Conclusion. As regards introductory sections of scientific articles, Swales has identified a general structure, called *CARS (Create a Research Space) Model* (cf. Figure 1).

An example of the application of Swales' model to the analysis of legal genres is Bhatia's (1993) explanation of the typical structure of a legal case. The standard structure of this genre reflects the main stages in the interpretation of a case, and generally consists of the following four moves:

1. *Identifying the case* – Each case is identified and referred to in a consistent way so that it can be quoted and used as evidence in court, in law classes, in textbooks, in casebooks and in other legal contexts.

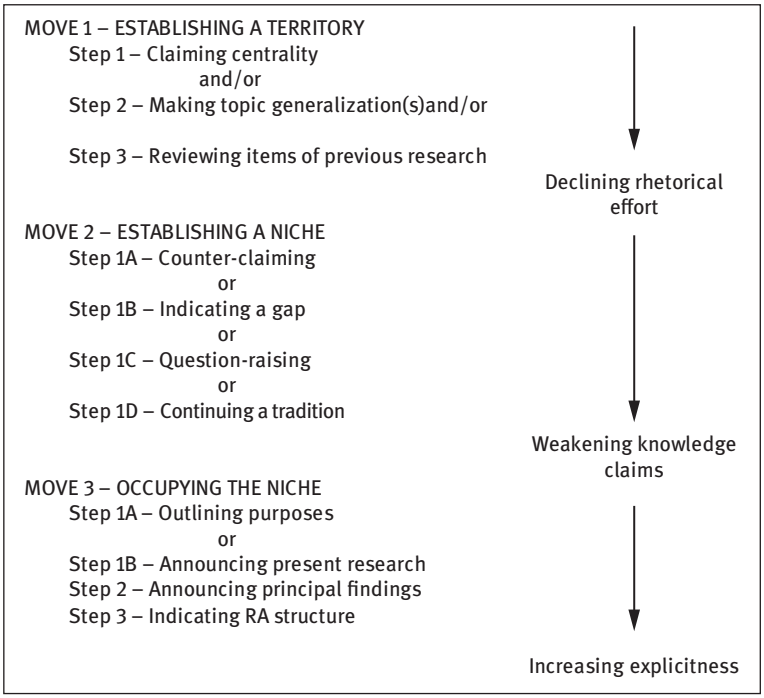


Figure 1: Swales' (1990: 141) CARS Model for article introductions.

2. *Establishing facts of the case* – This part informs the reader of the main facts of the case which are legally relevant for the judgement to be pronounced.
3. *Arguing the case* – This is the principal section of the genre and consists of several steps according to the nature and length of the legal case. The main steps are the following:
   a. *Giving a history of the case* – Previous judges who have delivered judgements related to the case are mentioned together with their verdicts and motivations.
   b. *Presenting arguments* – The arguments put forward by the present judge are illustrated here.
   c. *Deriving 'ratio decidendi'* – This step presents the principles of law derived by the judge for application to subsequent cases.
4. *Pronouncing judgement* – This last move is usually short and consists of a highly standardised formulaic statement reporting the judgement pronounced.

The moves and steps presented here are usually present in all legal cases and can be considered the basic elements of the genre. However, more moves and steps may be present, depending on the complexity and length of the case being dealt with. There is also some degree of flexibility in the order of these moves. While Moves 1 and 2 usually occur in this order, Moves 3 and 4 sometimes change positions, according to the aim of the casebook in which they occur. For example, if the purpose of the

casebook is to remind legal experts of the case references, Move 4 is likely to appear before Move 3.

Another study of generic structure is Candlin, Leather and Bruton (1976), which highlights the different stages normally found in oral texts of doctor-patient interactions during surgery visits. The basic pattern found by the authors consists of four main stages, preceded and followed by two routine opening and closing stages typical of oral interaction, i.e. initial greetings and leave-taking. The first stage is the doctor's request for information on the complaint and the patient's conveyance of such information; the second is the visit itself; the third is the doctor's diagnosis; and the fourth is advice for treatment and follow-up. These four stages have also been investigated by researchers looking at single exchanges within the corpus considered. They have identified not only sentences realising the four aforesaid macrofunctions but also a number of metacommunicative functions linked to the speaker's (generally the doctor's) need to make his communicative intention clear and transparent. Despite the difficulty of assigning a single pragmatic purpose to each interactant (a problem encountered not only in this study but in most attempts to identify textual microacts), the authors have found the following highly-recurring functions in doctor talk to patients during surgery visits:

a. GREET ('Good morning.')
b. ELICIT ('Can you tell me what happened?')
c. INTERROGATE ('Did you bend right back when you fell?')
d. QUESTION ('Does this hurt?')
e. MAKESURE ('It doesn't hurt?')
f. EXTEND ('So it doesn't hurt to put your weight on it?')
g. ACTION-INFORM ('I'm going to put in a couple of stitches.')
h. DIAG-INFORM ('You haven't broken anything.')
i. PROG-INFORM ('It should heal up quite quickly.')
j. TREAT-DIRECT ('Take plenty of rest.')
k. DIRECT ('Can you just lie down a moment.')
l. APOLOGY ('Sorry.')
m. TALK ('Little girls tend to do that sort of thing.')
n. MED-ASK ('Are you allergic to penicillin?')
o. ADMIN-ASK ('Do you use this hand in your work?')
p. REASSURE ('Nothing serious here')
q. ACCEPT ('I see')
r. LEAVETAKE ('See you after the x-ray then.')
s. GO-ON ('Mmm ...' To encourage patient to continue the story)
t. ANSWER ('Yes, I'm afraid it's broken just here.')
u. REPEAT ('What?')
v. RESTATE ('... Swallow all right.' Repeating what was said because the patient did not catch it)
w. FEED-ME-BACK ('Do you follow me?')

The combination of various sequences within the corpus is fairly regular: 95% of interactions open with the microact GREET followed in 60% of cases by the microact ELICIT and in 50% of cases by INTERROGATE. The sequence GREET – ELICIT – INTERROGATE (with its associated replies) is therefore considered distinctive of the first stage.

4 Generic differentiation

Genres vary according to several factors, the main ones being the communicative purposes they aim to fulfil, the settings or contexts in which they are employed, the communicative events or activities they are associated with, the professional relationships between the people taking part in such activities or events, and the background knowledge of each participant. Indeed, the communicative situation combines several contextual factors, making it difficult to attribute a given linguistic peculiarity to a single originating factor. This awareness has led scholars to group together the contextual factors capable of identifying the parameters which distinguish different genres within a specialised language. Thus, for legal language, Danet (1980) adapted Joos' (1961) stylistic categories for degree of formality to the different modes of text production (distinguishing between WRITTEN and ORAL, with the former subdivided into COMPOSED and SPONTANEOUS). By this route she developed a sociolinguistic scheme for the genres of legal language (cf. Table 1).

Table 1: Danet's (1980: 471) sociolinguistic scheme for legal genres.

STYLE				
Mode	***Frozen***	***Formal***	***Consultative***	***Casual***
Written	Documents: Insurance policies Contracts Landlord-tenant leases Wills	Statutes Briefs Appellate opinions		
Spoken-composed	Marriage ceremonies Indictments Witnesses' oaths Pattern instructions Verdicts	Lawyers' examinations of witnesses in trials and depositions Lawyers' arguments, motions in trials Expert witnesses' testimony	Lay witnesses' testimony	
Spoken-spontaneous			Lawyer-client interaction Bench conferences	Lobby conferences Lawyer-lawyer conversations

As can be seen in Table 1, there are genres – e.g. wills, contracts and insurance policies – which combine highly formal traits with features typical of the written mode. Others, although written (e.g. statutes, briefs, appellate opinions) exhibit a lower degree of formality, on a par with that of witness examinations and motions, which belong to the oral mode. Also oral texts, however, may contain highly formal traits, as observed for example in verdicts, wedding vows, oaths and indictments. These genres are highly codified and typically exhibit standardised, easily predictable sentences, often amounting to formulaic expressions. There are also less predictable genres, however, which allow for a greater degree of spontaneity and variation, both in content and expressiveness. They are usually oral and take on different levels of formality: higher in witness examinations or expert statements, lower in non-expert statements and client-lawyer conversation, right down to the informality of private conversation between lawyers.

Depending upon their communicative function and speaker's/writer's intention, legal genres differ as follows: legislative texts mainly have a regulative function as they impose obligations or confer rights, while legal textbooks are essentially informative; instead, counsel/witness exchanges have both an evaluative and an informative function; lawyers' arguments are principally meant to persuade and convince. Legal genres also differ in the matter they cover: for instance, briefs and memoranda commonly focus on specific points, while statutes cover more extensive issues. Also the difference between a statute and a contract depends on the degree of extension: while a statute has effects on the whole society, a contract only concerns the people or firms mentioned in them.

A generic categorisation of legal documents is made by Tiersma (1999: 139), who distinguishes them into two main categories: operative legal documents and expository documents. The former have stronger legal power as they can create or modify legal relations. They have very formal and formulaic language (often expressing legal performatives) and follow a very rigid structure. Examples of operative legal documents are pleadings, petitions, orders, statutes, contracts and wills. Expository documents, instead, delve into one or more points of law with a relatively objective tone. Their structure is less rigid and their language, although formal and specialised, is less formulaic. Examples of expository documents are judicial opinions, legal letters and office memoranda.

Another generic categorisation of legal documents – partly based on Trosborg's (1997: 20) model – distinguishes them into two main categories: primary and secondary. The former produce legal effects, while the latter do not as their main purposes are informative, explanatory or pedagogic. Primary legal genres may further be distinguished into sources of law and legal documents. The former comprise legislation (statutes and delegated legislation), judicial precedent (judgements and law reports) and, where it exists, the Constitution; legal documents may be created by private individuals (such as articles of association, contracts, wills) or by institutions (such as affidavits, arrest warrants, divorce decrees). Examples of secondary legal genres are cases, law reviews, textbooks, and other works of legal reference.

Legal genres make use of specific discursive conventions which make them differ from other genres both in the legal field and in general language. For example, analyses of courtroom interactions during legal proceedings have shed light on the considerable divergences between the standard norms of verbal interaction and its construction in a specialised setting where cross-examination of suspects and witnesses is crucial to the outcome of the trial. The defending lawyer exploits all his linguistic skills to obtain admissions, substantiation, contradictions and other evidence to underpin his reasoning. A crucial factor is the way each question is put, how answers are exploited to support a line of defence (or accusation), how hesitations or flaws are emphasised, witnesses interrupted, topics introduced, main points listed, etc. The great difference between standard interaction vs. legal proceedings and the lawyer's role vs. that of the witness clearly underline the inadequacy of common interaction norms and general turn-taking rules in this kind of specialised context.

Also medical genres display great generic variation. For example, depending upon their degree of innovativeness, medical genres differ as follows: texts which are meant to convey original information and innovative data belong to the primary genres, which include research papers, case reports and editorials; those texts that instead rely on previous ones belong to the secondary genre category, such as review articles, book reviews and pedagogic texts. Medical texts also differ according to the degree of specialised knowledge of their readership: in this case texts will be divided into two main categories: professional and popular. Professional texts are aimed at medical professionals (researchers, practitioners and students of medicine), whereas popular texts are targeted at the general readership. Texts aimed at professionals are written by medical professionals, while the writers of popular texts include both medical professionals and non-professionals, such as popularisers or journalists. The two criteria illustrated above may be combined and exemplified in Table 2.

Table 2: Medical written genres, subdivided on the basis of their audience design.

Professional texts	**Popular texts**
Research papers	Newspaper/magazine articles
Case reports	Guidebook samples
Editorials	Informative material …
Review articles	
Book reviews	
Pedagogic texts …	

A third classification can be obtained if taking into consideration the communicative function of the texts and their writer's intention. In this case, texts may be divided into argumentative, directive and expository genres (Vihla 1999). Argumentative genres are meant to convince the readers, directive ones are those that provide advice on how to act, while expository genres have the purpose of explaining or describing.

This tripartite categorisation of genres reflects the complex and varied field of application of medicine: on the one hand medicine belongs to the world of science as it is the site where new scientific knowledge is constructed through hypotheses and tested through reliable methods. In this field of medical research, experimentation can be considered the main activity, and argumentative texts the main product, as they are meant to convince other medical professionals of the validity of the results achieved. Directive and expository genres, instead, relate to the practical side of medicine, as the function of the former is to provide recommendations on the best practices to professionals (e.g. handbooks and clinical manuals) and advice to non-professionals (e.g. guidebooks), while the latter are meant to disseminate scientific background knowledge to members of the in-group (e.g. medical textbooks) and the out-group (e.g. popularising articles and informative material). The complexity of the medical field and its genres is exemplified in Table 3.

Table 3: Three-dimensional genre classification based on audience design, genre and communicative function (adapted from Pahta 2006: 362).

	Argumentative	**Directive**	**Expository**
Professional	Research articles Editorials	Handbook samples Clinical manuals	Medical textbooks
Popular		Guidebook samples	Popularising articles Informative material

5 Intertextuality and interdiscursivity in specialised genres

The evolution of specialised genres has promoted great variation in professional genres as well as phenomena of intertextuality and interdiscursivity (Bakhtin 1986; Fairclough 1992). These phenomena are now considered an inherent property of specialised texts and genres, favoured by the intensity in communication flows and the ubiquity of the media.

Legal discourse is characterised by a high degree of intertextuality and interdiscursivity, particularly in such genres as legislation, judgements, cases and textbooks. For example, a law case is basically a report based on the judgement of a particular judge deciding on the proceedings of a trial. Records of court proceedings are also used as precedents for future judgements. They are also reported in textbooks and commented on in university lectures for teaching purposes. The interpretation of legal argumentation in previous law cases is considered an extremely relevant basis for the understanding of legal action. Furthermore, previous laws and regulations are

commonly referred to when drafting new legislation, which must fit in consistently in the existing body of legal texts.

Business letters are perhaps one of the richest generic forms of all professional genres in terms of intertextuality and interdiscursivity. Indeed, business communication often makes use of prior texts (or parts of them) in the formulation of new textual realisations, commonly forming chains of business communication of the following kind (see Figure 2):

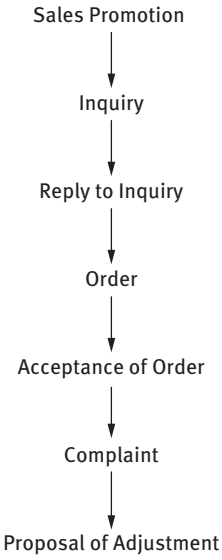


Figure 2: Chain of business communication.

Each step in the chain is linked to the previous one by the use of similar linguistic elements, thus creating a sort of interactive dependency which is both intertextual as well as interdiscursive. Table 4 shows some instances of this process of interactive dependency (the linguistic elements that are similar are shown in italics):

Table 4: Instances of interactive dependency.

GENERIC MOVE IN TEXT 1	LINGUISTIC REALISATION	→	GENERIC MOVE IN TEXT 2	LINGUISTIC REALISATION
Statement of one's own requirements	*We are especially interested in boxes of mixed plain and milk chocolates and also jellies with liquid centres*, which we have seen advertised in …	→	Assurance that the goods can be supplied	We have received your letter of 31st August and were pleased to learn that *you are interested in our plain and milk chocolates and jellies with liquid centres*.

(continued)

Table 4: (continued)

GENERIC MOVE IN TEXT 1	LINGUISTIC REALISATION	→	GENERIC MOVE IN TEXT 2	LINGUISTIC REALISATION
Request for an offer, a sample, a price-list, a brochure, etc	We should be pleased if you could let us have *some samples of the above, together with your price-list*.	→	Mention of the offer sent together with a sample, a price-list, a brochure, etc	We have sent you, therefore, *some sample boxes of some of our most popular lines together with the price-list* you requested.
Order for the goods required	Your offer dated 4th September has reached us, and since *we find both your products and sales conditions satisfactory,* we are pleased *to pass you an order* as per the order-form herewith enclosed.	→	Reference to the order received	We are pleased that *you have found both our products and sales conditions satisfactory*, and thank you for *the order you have passed*.
Reference to the order for which a complaint is being made	We regret to inform you that on opening the boxes you sent us on 10th September *we found that the goods were not those requested*	→	Reference to a complaint made	With reference to your letter of 20th September, we are very sorry that *the goods you received were not those you had requested*.

As Bhatia (2008b: 41) aptly remarks, "the copying of lexico-grammatical expressions transforms these letters into dialogues that are constructed interactively and hence must be understood, analysed and interpreted interactively and not in isolation. Although intertextuality is crucial in all forms of discourse, in the case of such business letters, it is an essential prerequisite to any form of interpretation and analysis."

6 Generic variation

The availability of a diverse range of methodological tools for specialised genre analysis – some of which include ethnographic, corpus-based, socio-cognitive, and socio-critical discourse analytical approaches – has expanded the range of genres targeted by analysts. Such work includes interesting studies of 'mixed', 'embedded' or 'hybrid' genres across generic boundaries and disciplinary domains (Fairclough 1993; Bhatia 2004). Genre theory has also encouraged researchers to explore some of the lesser known 'occluded' genres (Swales 1990; Berkenkotter and Huckin 1995; Hyland 2011) and to identify discrepancies between global textual conventions and their actual realisations, through new concepts such as *genre mixing*, *genre*

repurposing and *genre hybridisation* to account for generic dynamism. The complex interaction of genres is clearly evidenced by the use of such terms as *genre repertoire* (Orlikowski and Yates 1994) and *genre colony* (Bhatia 1999). Moreover, research has shown how single genres often rely on other related genres, thus forming systems of genres (Bazerman 1994; Paltridge 2000).

Indeed, hybridity in genres seems to be the norm rather than the exception. An example is the migration of features of advertising English into the texts used in public information campaigns. Thus many government documents and information leaflets are using styles of verbal English and visual presentation more commonly found in commercial advertising; moreover, these texts are becoming increasingly market-oriented and subject to political expediency and/or commercial pressures. The following quotation shows the similarities of the linguistic expressions in two texts apparently belonging to different genres: some expressions are taken from a Singapore government text explaining to taxpayers the advantages of their paying their contributions for the public health service; the other expressions are from a private insurance company advertisement (Sharon Goodman does not specify which is which):

(1) HIGHER Sum Assured ... LONGER Protection ... LOWER Premium ...
TRIPLE cover from one plan ... VITAL protection for you and your family (Goodman 1996: 153, original emphasis)

Phenomena of genre mixing and hybridisation are also the result of globalisation and cultural interaction. Specialised communication is prone to the pressures of intercultural variation, as it is not only the sociocultural factors inherent in a text but also the interpretive schemata which deeply affect its realisation and decoding within the host professional community (cf. Gotti 2011). When an international audience is involved, local identities are adapted to a wider framework of values and shared behaviours (Becher 1989; Bazerman and Paradis 1991). Moreover, intercultural communication is often made more complex by the locutors' need to make their texts as adaptable as possible to contextual features and pragmatic purposes. There are situations for which the boundaries and expectations of the genre may be overruled by inventiveness and creativity and by the specificity of the cultural context. The multilayered, evolving, competitive and highly dialectical nature of contemporary specialised discourse calls for textual and ethnographic evidence which requires an in-depth exploration of the actual linguistic and rhetorical practices of transnational communication in the global village.

7 Technological innovations and changes in specialised genres

The globalised use of technology too has contributed to the promotion of recent innovations in specialised genres (e.g., for the field of dispute resolution cf. Gotti and

D'Angelo 2014). For example, today many texts published on the Internet show clear features of a multimodal approach which exploits the options offered by the new media to accommodate the taste of an audience increasingly accustomed to visual communication and take full advantage of the visual/multimodal options offered by the computer mediated environment. Recent technological developments have promoted the emergence of new genres in a range of different contexts. These new genres show a great reliance on the use of visual and hypertextual modes of representation, which – combined with their greater interactive features – thus offer better possibilities for interaction and 'communicational action' (Kress 2003). The new technologies have made it easier to create multimodal texts that make use not only of printed texts, but also of other modal resources such as images, audio and video in order to make meaning. Moreover, the growth of the Internet has facilitated the dissemination and appropriation of digital texts, thus granting media consumers a more active role.

Such changes have led not only to the emergence of new genres, but also often to the migration of existing genres into computerised, digital settings, resulting in a reorganisation of their textual and semiotic features (cf. Askehave and Swales 2001; Askehave and Nielsen 2005; Candlin 2006). While traditional models and categories of linguistic/textual analysis are not in themselves inadequate for this purpose, their use calls for a multimodal conceptual framework incorporating analytical categories that includes not only text, but also non-linguistic, non-linear elements (i.e. visual, iconic and functional content).

An example of generic change deriving from technological innovations could be provided by the case of annual reports on company websites, which no longer concern one genre, but the interaction between genres within the genre system of a company's website. Indeed, the financial and economic information given on the website aims at keeping or acquiring the confidence of current and potential stockholders of the company, thus repurposing information into persuasion. At the same time disclaimers are added to renounce any responsibility for the information given – a clear case of genre bending and of the intertwining of the letter genre with law and business. Also the letter to the stockholders in an annual report contains both persuasive and personal elements that categorise it as an example of an evaluative text type.

In the last few years the annual company report has evolved into new forms, which have changed its discursive makeup as a consequence of the widening of its communicative purposes. These changes have been facilitated by the vast diffusion of electronic communication and the spread of multimodality. Indeed, the publication of company reports on the Internet has caused great modifications in their status, as they are no longer merely seen as informative texts addressed to financial analysts and the company's shareholders, but also as a means of more general communication and an instrument for image building and for the promotion of effective public relations. The presence of these 'external' participants has not certainly eliminated the original informative and evaluative purposes of this genre, but has introduced a new promotional dimension. This dimension is strengthened by the semiotic configuration of the

website itself, which embeds this document in a frame of promotional pages. Indeed, the company reports themselves show clear features of a multimodal approach, as they no longer make use of mere linguistic forms for the presentation of data and information, but resort to complex images and even to animation and sound. As Garzone (2007: 318) aptly remarks, "the function of the visual or multimodal component is not only illustrative, entertaining or didactic, but interacts with textual material, contributing substantially to the generation of the message. The integration between image and text is governed by complex, and often, indirect, mechanisms aimed at perlocution, similar to those relied upon in advertising."

Another example of generic change deriving from technological innovation can be found in virtual business communication, a phenomenon which has become particularly frequent in recent years. Here too the interplay between the visual and the verbal resources typical of online communication is an instance of the process of *remediation* (Bolter and Grusin 1999) which is involved in the transfer of discourse from traditional media to the new ways of electronic communication. Particularly in the field of promotional discourse, traditional correspondence has often been replaced by highly interactive texts embedded in the hypertextual approach of the computer world. In this way hyper-links capture the attention of potential customers and direct them towards deeper layers of hypertexual information which is meant to persuade them to buy a product, take advantage of a service or make an investment. In order to do this effectively, the computer screen presents various text-types with different functions: advertisements, questionnaires, surveys, lists, etc. In these texts language often loses its privileged meaning-making role in favour of image and sound; the creation of sophisticated websites is meant to make communication an easy and enjoyable experience. The level of immediacy of the interaction is made higher by the use of pull-down menus, clickable icons and draggable scroll bars. This visual and animated environment is designed to attract the reader's attention; its synchronous and dynamic interactional mode aims to stimulate and direct the customer through the various layers of the company's website. The dominant register is dialogic, and replaces the customer's traditional way of contacting the company by telephone or by post. Similarly, the traditional letter promoting the sale of a product/service has been transformed into a new semiotic object that makes extensive use of dynamic graphics and attractive colours to draw the reader's attention to the offer, with a limited use of linguistic elements, thus making the text easier to process. Also the page layout differs from that of printed promotional literature as it enables the prospective customer to navigate it in a non-linear fashion.

Further processes of discursive variation have recently involved the business letter genre. Since the introduction of the Internet, the interest in the genre has increased once again, because of the digital format of the letter. E-mail has partially taken over the multiple functions of the traditional business letter and bypassed, again partially, the fax. As a consequence, email messages are now very common in corporate communication. These, however, have become very complex in nature as

MS1: *Chain initiator*

Alice,
I spoke to AG about interception matters. In CS's absence, I spoke to SW, who is the officer handling the [*name of company*] ICP (Interception Capability Plan).

[…]

We (PM and I) have also received a draft of the opinion from L in regard to the export of intercept related information under the UK laws. We will review and come back to you on this.

All the best,
James

MS2

James,

Thanks for this follow up. S did not leave any hint about what to expect? Agree to work towards the deadline; end of that week 9th of May should be fine. We should have a draft ready by 2nd of May. Does 5th or 6th arrange you for a conference call?
Look forward to the legal opinion

Alice

MS3

Alice,

A conference call on 6th May would be fine. Shall we say 11am your time? I will speak to S again tomorrow about the amended plan and the letter.

James

MS4

Could you do 2nd of May?

MS5

Yes, 2nd May is probably better as it gives us a bit more time to finalise the amended plan.
What is a good time for you? I can do from 9.30 am through to midday (your time).

James

MS6

9.30 is fine.

Figure 3: Chain of email messages (from Gimenez 2008: 252–254).

a result of the pressing needs of business companies to enhance ease of reference and guarantee a high degree of accountability. Therefore, business emails now tend to include in them the whole chain of messages generated in response to the original message thus giving rise to a series of 'embedded emails' (Gimenez 2008) which exploit the dialogic nature of this means of communication and its adoption of the features of spoken as well as written genres. Embedded emails are made up of an initial message which starts the communication event, a series of internal, subordinated messages which depend on the first message to make complete sense, and a final message which brings the communication event to an end. This complex generic structure shows features deriving from the users' highly proficient exploitation of the

various capabilities offered by the medium, and emphasises the dialogic relationship established by the chain of messages exchanged by the interlocutors. The dialogic features of embedded messages are further highlighted by the fact that they allow participants to see all parts of the communicative event as in a written dialogue. Indeed, the use of the carbon copy (CC) facility allows other people to be involved in the communication event acting as witnesses. A further feature of the dialogisation of embedded emails is the tendency to drop greetings and names as the message progresses. As can be seen in the following example (Figure 3), the same seems to hold for closures. Such omissions may be attributed to the higher degree of informality which parallels the strengthening of the personal relationship which takes place as the communicative process goes on.

The shorter length of each subsequent text and its more frequent use of phenomena of ellipsis and abbreviation depend on the fact that email messages can rely on the information reported in the previous one(s). The great difference with business letters is that here there is no need to reproduce some of the linguistic elements used in previous texts (as instead was the case in Table 4) as these elements are shown below/above the message being written. Moreover, the email that initiates the chain is much longer than the following messages; the reason for this greater length relies on the fact that the purpose of the initiator is to set the scene for the discursive event and thus has to provide all the necessary details that are required for successful communication to take place.

8 Conclusions

The developments discussed in the previous section explain the increasing interest in phenomena that lie beyond single genres, including texts realised through a variety of non-traditional semiotic modes, visual presentations and the Internet (Lemke 2002; Bateman 2008). However, the inclusion of non-linguistic elements as essential to the identification of a specific genre has placed analysis under pressure. Genres have been found sometimes so open and boundaries so flexible that it has been difficult to establish what should fall under a specific genre and what not. Particularly when approaches to genre analysis are explicitly 'transmedial' or 'intermedial', it is often unclear to specify which properties can be considered genre-related and which not.

The various research approaches reviewed above have highlighted the complexity and flexibility of genres and have shown how they have been subject to a continuous tension between stability and change as well as between convention and innovation (Schryer 1993). Despite the problematic conceptual issues and the debated methodological questions raised in the last few years, genre analysis has remained remarkably productive in terms of new findings and applications. Indeed, genres have proved to be

a very versatile tool that can easily be adapted to new communicative situations and to the specific needs of the participants involved. Moreover, the recent innovations in Information and Communication Technology tools have not only favoured important changes in existing genres and the creation of new ones to meet emerging needs of the community of specialists but they have also promoted a serious discussion about the construct of genre itself.

References

Askehave, Inger and Anne Ellerup Nielsen. 2005. Digital Genres: A Challenge to Traditional Genre Theory. *Information Technology & People* 18(2). 120–141.

Askehave, Inger and John M. Swales. 2001. Genre Identification and Communicative Purpose: A Problem and a Possible Solution. *Applied Linguistics* 22(2). 195–212.

Bakhtin, Mikhail M. 1986. *Speech Genres and Other Late Essays*. In Caryl Emerson and Michael Holquist (eds.), McGee, Vern W. (trans.). Austin: University of Texas Press.

Bateman, John A. 2008. *Multimodality and Genre: A Foundation for the Systematic Analysis of Multimodal Documents*. London: Palgrave Macmillan.

Bazerman, Charles. 1994. Systems of Genres and the Enactment of Social Intentions. In Aviva Freedman and Peter Medway (eds.), *Genre and the New Rhetoric*, 79–101. London: Taylor and Francis.

Bazerman, Charles and James Paradis (eds.). 1991. *Textual Dynamics of the Professions: Historical and Contemporary Studies of Writing in Professional Communities*. Madison: University of Wisconsin Press.

Becher, Tony. 1989. *Academic Tribes and Territories: Intellectual Enquiry and the Culture of Disciplines*. Milton Keynes: Open University Press.

Berkenkotter, Carol and Thomas Huckin. 1995. *Genre Knowledge in Disciplinary Communication – Cognition/Culture/Power.* Hillsdale, NJ: Erlbaum.

Berkenkotter, Carol, Vijay K. Bhatia, and Maurizio Gotti (eds.). 2012. *Insights into Academic Genres.* Bern: Peter Lang.

Bhatia, Vijay K. 1991. A Genre-based Approach to ESP Materials. *World Englishes* 10(2).153–166.

Bhatia, Vijay K. 1993. *Analysing Genre: Language Use in Professional Settings*. London: Longman.

Bhatia, Vijay. 1999. Integrating Products, Processes, Purposes and Participants in Professional Writing. In Christopher Candlin and Ken Hyland (eds.), *Writing: Texts, Processes and Practices*, 22–39. London and New York: Routledge.

Bhatia, Vijay K. 2004. *Worlds of Written Discourse: A Genre-based View*. London: Continuum.

Bhatia, Vijay K. 2008a. Genre Analysis, ESP and Professional Practice. *English for Specific Purposes* 27. 161–174.

Bhatia, Vijay K. 2008b. Interdiscursivity in Business Letters. In Paul Gillaerts and Maurizio Gotti (eds.), *Genre Variation in Business Letters*, 31–54. Bern: Peter Lang.

Bhatia, Vijay K. 2012. Critical Reflections on Genre Analysis. *Ibérica* 24. 17–28.

Bhatia, Vijay K. 2016. *Critical Genre Analysis: Investigating Interdiscursive Performance in Professional Practice*. London and New York: Routledge.

Bhatia, Vijay and Maurizio Gotti (eds.). 2006. *Explorations in Specialized Genres*. Bern: Peter Lang.

Bolter, Jay D. and Richard Grusin. 1999. *Remediation: Understanding New Media*. Cambridge, Massachusetts: MIT.

Breeze, Ruth 2013. *Corporate Discourse*. London: Bloomsbury.

Breeze, Ruth, Maurizio Gotti and Carmen Sancho-Guinda (eds.). 2014. *Interpersonality in Legal Genres*. Bern: Peter Lang.
Brodkey, Linda. 1987. *Academic Writing as Social Practice*. Philadelphia: Temple University Press.
Candlin, Christopher. 2006. Accounting for Interdiscursivity: Challenges to Professional Expertise. In: Maurizio Gotti and Davide Giannoni (eds.), *New Trends in Specialized Discourse Analysis*, 21–45. Bern: Peter Lang.
Candlin, Christopher, Jonathan Leather and Clive Bruton. 1976. Doctors in Casualty: Applying Communicative Competence to Components of Specialist Course Design. *International Review of Applied Linguistics* 14(3). 245–272.
Candlin, Christopher and Maurizio Gotti (eds.). 2007. *Intercultural Aspects of Specialized Communication*. 2nd edn. Bern: Peter Lang.
Charles, Mirjaliisa. 1996. Business Negotiations: Interdependence Between Discourse and the Business Relationship. *English for Specific Purposes* 15. 19–36.
Cope, Bill and Mary Kalantzis. 1993. *The Powers of Literacy. A Genre Approach to Teaching Writing*. London: The Falmer Press.
Danet, Brenda. 1980. Language in the Legal Process, *Law and Society Review* 14(3). 445–564.
Devitt, Amy J. 2004. *Writing Genres*. Carbondale: Southern Illinois University.
Dressen-Hammouda, Dacia. 2008. From Novice to Disciplinary Expert: Disciplinary Identity and Genre Mastery. *English for Specific Purposes* 27. 233–252.
Fairclough, Norman. 1992. *Discourse and Social Change*. Cambridge: Polity Press.
Fairclough, Norman. 1993. Critical Discourse Analysis and the Marketization of Public Discourse: The Universities. *Discourse and Society* 4(2). 133–168.
Firth, Alan (ed.). 1994. *The Discourse of Negotiation. Studies of Language in the Workplace*. Oxford: Pergamon.
Garzone, Giuliana. 2007. Annual Company Reports and CEOs' Letters: Discoursal Features and Cultural Markedness. In Christopher Candlin and Maurizio Gotti (eds.), *Intercultural Aspects of Specialized Communication*, 311–341. 2nd edn. Bern: Peter Lang.
Garzone, Giuliana and Maurizio Gotti (eds.). 2011. *Discourse, Communication and the Enterprise. Genres and Trends*. Bern: Peter Lang.
Gerritsen, Marinel, Catherine Nickerson, Andreu van Hooft, Frank van Meurs, Ulrike Nederstigt, Marianne Starren and Rogier Crijns. 2007. English in Product Advertisements in Belgium, France, Germany, the Netherlands and Spain. *World Englishes* 26. 291–315.
Ghadessy, Mohsen and Jonathan Webster. 1988. Form and Function in English Business Letters: Implications for Computer-based Learning. In Ghadessy, Mohsen (ed.) *Registers of Written English*, 110–127. London: Pinter Publishers.
Ghauri, Pervez N. and Jean-Claude Usunier (eds.). 1996. *International Business Negotiations*. Oxford: Pergamon.
Gillaerts, Paul and Maurizio Gotti (eds.). 2008. *Genre Variation in Business Letters*. 2nd edn. Bern: Peter Lang.
Gimenez, Julio C. 2008. Unpacking Business Emails: Message Embeddedness in International Business Email Communication. In Paul Gillaerts and Maurizio Gotti (eds.), *Genre Variation in Business Letters*, 235–255. 2nd edn. Bern: Peter Lang.
Goodman, Sharon. 1996. Market Forces Speak English. In Sharon Goodman and David Graddol (eds.), *Redesigning English: New Texts, New Identities*, 141–180. London: Routledge.
Gotti, Maurizio. 2010. 'A New Genre for a Specialized Community'. In Heidrun Dorgeloh and Anja Wanner (eds.), *Syntactic Variation and Genre*, 85–110. Berlin and New York: Mouton de Gruyter, 85–110.
Gotti, Maurizio. 2011. *Investigating Specialized Discourse*. 3rd edn. Bern: Peter Lang.
Gotti, Maurizio. 2013. Investigating the Generic Structure of Mediation Processes. In Nils-Lennart Johannesson, Gunnel Melchers, Beyza Björkman, Beyza (eds.), *Of Butterflies and Birds, of*

Dialects and Genres: Essays in Honour of Philip Shaw, 61–76. Stockholm: Acta Universitatis Stockholmiensis.
Gotti, Maurizio and Carmen Sancho Guinda (eds.). 2013. *Narratives in Academic and Professional Genres*. Bern: Peter Lang.
Gotti, Maurizio and Larissa D'Angelo. 2014. 'Genre variation in mediation practice: Traditional vs online processes'. In Paola Evangelisti Allori, John Bateman and Vijay K. Bhatia (eds.), *Evolution in Genre*, 209–234. Bern: Peter Lang.
Gotti, Maurizio, Stefania Maci and Michele Sala (eds.). 2017. *Ways of Seeing, Ways of Being: Representing the Voices of Tourism*. Bern: Peter Lang.
Hendon, Donald W., Rebecca Angeles Hendon and Paul Herbig. 1996. *Cross-Cultural Business Negotiations*. Wesport, Connecticut: Quorum.
Hyland, Ken. 2011. Projecting an Academic Identity in some Reflective Genres. *Ibérica* 21. 9–30.
Joos, Martin. 1961. *The Five Clocks*. New York: Harcourt, Brace and World.
Kankaaranta, Anne. 2006. 'Hej, Seppo, could you pls comment on this!' Internal Email Communication in Lingua Franca English in a Multinational Company. *Business Communication Quarterly* 69. 216–225.
Kress, Gunther. 2003. *Literacy in the New Media Age*. London: Routledge.
Kurzon, Dennis. 1989. Language of the Law and Legal Language. In Christer Laurén and Marianne Nordman (eds.), *Special Language: From Humans Thinking to Thinking Machines*, 283–290. Clevedon: Multilingual Matters.
Lemke, Jay. 2002. Multimedia Genres for Science Education and Scientific Literacy. In Mary Schleppegrell and Cecilia Colombi (eds.), *Developing Advanced Literacy in First and Second Languages*, 21–44. Mahwah, NJ: Erlbaum.
Martin, James R. and David Rose. 2008. *Genre Relations: Mapping Culture*. London: Equinox.
Mellinkoff, David. 1963. *The Language of the Law*. Boston: Little, Brown and Co.
Miller, Carolyn R. 1984. Genre as Social Action. *Quarterly Journal of Speech* 70. 151–167.
Neeley, Stacia. 2005. *Academic Literacy*. New York: Pearson Education.
Orlikowski, Wanda J. and JoAnn Yates. 1994. Genre Repertoire: The Structuring of Communicative Practices in Organizations. *Administrative Sciences Quarterly* 33. 541–574.
Paivi, Pahta. 2006. This is Very Important: A Corpus Study of Amplifiers in Medical Writing. In Maurizio Gotti and Françoise Salager-Meyer (eds.), *Advances in Medical Discourse Analysis: Oral and Written Contexts*, 357–381. Bern: Peter Lang.
Paltridge, Brian. 2000. Systems of Genres and the EAP Classroom. *TESOL Matters* 10(1). 12.
Planken, Brigitte. 2005. Managing Rapport in Lingua Franca Sales Negotiations: A Comparison of Professional and Aspiring Negotiators. *English for Specific Purposes* 24. 381–400.
Poncini, Gina. 2007. *Discursive Strategies in Multicultural Business Meetings*. 2nd edn. Bern: Peter Lang.
Rogerson-Revell, Pamela. 1999. Meeting Talk: A Stylistic Approach to Teaching Meeting Skills. In M. Hewings and Catherine Nickerson (eds.), *Business English: Research into Practice*, 55–72. London: Longman.
Rogerson-Revell, Pamela. 2008. Participation and Performance in International Business Meetings. *English for Specific Purposes* 27. 338–360.
Sarangi, Srikant and Stefan Slembrouck. 2014. *Language, Bureaucracy and Social Control*. London: Routledge.
Schryer, Catherine. 1993. Records as Genre. *Written Communication* 10. 200–234.
Smart, Graham. 1998. Mapping Conceptual Worlds: Using Interpretive Ethnography to Explore Knowledge-making in a Professional Community. *The Journal of Business Communication* 35(1). 111–127.
Swales, John. 1990. *Genre Analysis. English in Academic and Research Settings*. Cambridge: Cambridge University Press.

Swales, John. 1998. *Other Floors, Other Voices. A Textography of a Small University Building*. Mahwah, NJ: Earlbaum.
Swales, John. 2004. *Research Genres: Exploration and Applications*. Cambridge: Cambridge University Press.
Tiersma, Peter M. 1999. *Legal Language.* Chicago: The University of Chicago Press.
Todorov, Tzvetan. 1990. *Genres in Discourse*. Cambridge: Cambridge University Press.
Trosborg, Anna. 1997. *Rhetorical Strategies in Legal Language: Discourse Analysis of Statutes and Contracts*. Tübingen: Gunter Narr.
Vihla, Minna. 1999. *Medical Writing. Modality in Focus*. Amsterdam: Rodopi.

Peter Kastberg

2 Languages for special purposes as instruments for communicating knowledge

Abstract: This article develops and proposes a conceptualization of Languages for Special Purposes as instruments for communicating knowledge. As such it is a theoretical contribution to an ongoing debate as to the nature of Languages for Special Purposes. As such the topics presented and discussed in this article are derived from a history of formative ideas within Languages for Special Purposes research. In terms of the specific arguments put forward in this article they are centered on discussions of instrumentality, specialized knowledge and communication theory respectively. These discussions pave the way for an appreciation of the knowledge communicative potential of Languages for Special Purposes. Following this, the article synthesizes the insights gained through these discussions into a theoretically informed stand as to 'how' we may conceptualize Languages for Special Purposes in their capacity as instruments for communicating knowledge. The article ends by pointing to 'what' such a conceptualization may allow us to see in terms of a novel research agenda.

Introduction

The focal point of this article is to present an approach to viewing Languages for Special Purposes (henceforth LSPs) in their capacity as instruments for communicating knowledge. In order to do so it will be necessary to develop and propose a theoretical basis for viewing LSPs as instruments in the first place. This opening statement contains an apparent contradiction concerning what I perceive to be an intuitively accepted, and in that sense unreflected, notion of the instrumentality of LSPs. That is, since any LSP is in fact stipulated as a language for a special purpose, the functionality of an LSP and – derived from that notion – the instrumentality of an LSP may seem intuitively obvious. But that is an intuition akin to the Maslowian "golden hammer", i.e., "I suppose it is tempting, if the only tool you have is a hammer, to treat everything as if it were a nail" (Maslow 2004 [1966]: 15). In general terms, then, what this article sets out to do is to conceptualize – based on a sound LSP research foundation – a theoretical framework for seeing an LSP *as* an instrument for communicating knowledge. Consequently, a specific perspective has been chosen, and while it must be acknowledged that any perspective-taking imposes unavoidable limitations to the scope of a study, conscious "perspective taking" is also a prerequisite for any systematic analysis (e.g. Perner, Brandl and Garnham 2003: 358). As I will return to this condition

Peter Kastberg, Aarhus (Denmark)

https://doi.org/10.1515/9783110228014-002

throughout this article, I will proceed to frame the agenda of the paper at this point. The aim of this paper is threefold, i.e., first of all to develop and to present a theoretically informed stand as to 'how' we may view an LSP as an instrument for communicating knowledge; secondly to advance 'what' insights the LSP research community may gain from such a perspective, and last but not least to point to avenues of research derived from this approach. This entails that the article proper begins by presenting a brief history of formative ideas of a primarily continental European LSP research strand (section 1). This presentation serves two purposes. Besides situating this paper firmly within LSP research it also advocates that communicating knowledge (Kastberg 2007 et passim) can be seen as a capstone, in the sense of Lakatos (see section 1.1), for much of much LSP research. Emerging from this stand, two intermediate observations are made with regards to the theoretically informed prerequisites of viewing LSPs as instruments for communicating knowledge (section 2). These observations are subsequently synthesized and core implications for acknowledging LSPs as instruments for communicating knowledge are presented – both in terms of meta-theoretical implications as well as impetuses for interdisciplinary (or even inter-paradigmatic) research stemming from such a conceptualization (section 3).

1 A brief history of formative ideas of (primarily continental European) LSP research

Due to the fact that this article focuses on the theoretical development of a certain aspect of LSP research – namely that of LSPs as instruments for communication knowledge – it seems appropriate to begin by situating the topic of this article in relation to the more general field of LSP research.[1] Naturally, it is beyond the scope of this paper to present in extenso the multi-faceted history of LSP research.[2] This brief history of ideas[3] of (primarily continental European) LSP research serves its purposes of embedding this paper in LSP research in general and – more specifically – as a point of departure for presenting and discussing LSPs as instruments for communicating knowledge. Being an account of a history of ideas, the governing framework behind this presentation is not one of fixed historical dates, but of establishing a progressing timeline onto which formative ideas are attached. Formative ideas, in this sense, are ideas which serve as the guiding undercurrent of a particular school of thought, or a framework for a conglomerate of research interests within a particular time span.

1 When referring to LSP research, I limit myself to a continental European LSP research tradition, and more specifically, to the German strand of LSP research, called "Fachsprachenforschung" (see e.g., Roelcke 1999 for an overview).

2 For a concise presentation see Kalverkämper 2004: 11–27.

3 Regarding the concept of history of ideas, see for instance Lovejoy (1976 [1936]).

Traditionally, continental European LSP research has strong ties to applied linguistics.[4] It is therefore no coincidence that the particular strand of the history of ideas in LSP, which will be developed here, is centered on objects of study which are linguistic in nature. It is generally accepted that in the early decades of the twentieth century the beginning of modern LSP research was focused on the study of the specialized lexicon of trades, professions and disciplines – specialized as opposed to the standard lexicon of everyday life. This gave rise to terminology studies in general (for an overview see Drozd and Seibicke 1973) and to the LSP ur-research discipline of "Allgemeine Terminologielehre" in particular (Wüster 1966 [1931][5]), a framework which is still today a predominant school of terminological thought (e.g., Budin 1996 et passim and Hennig and Tjarks-Sobhani 2008). Spurred on by the reinventing of thoughts from "the Prague School of Business Linguistics" (Messing 1932), the focus of attention in LSP research gradually shifted from lexicon to syntax. Here the primary research interests were centrered on morpho-syntactical and grammatical features of LSPs (e.g., Hoffmann 1976). Based on the (statistical and other) evidence that any LSP was indeed in many ways something else than everyday language, many scholars saw these characteristics as signs of a special LSP style or styles (e.g., Spillner 1986). With stylistics as a stepping stone the LSP text came into focus. This eventually gave rise to a new LSP discipline, i.e., LSP text linguistics (Kalverkämper 1983 et passim), within which trans-syntactic aspects of LSP texts were being researched – again – for different professions, domains, and sciences. Emerging out of the interest into understanding LSPs as texts came an increased interest in genres (e.g., Swales 1990 and Bhatia 1993). Based on an understanding of genre stemming from sociological action theory (e.g., Lewin 1951), genre as a concept and as a tool for genre analyses within LSP was developed.[6] As was the case previously the notion of genre was also applied to the LSPs of different trades, professions, sciences etc., leading to, among other things, the development of generic descriptions of a wide range of professional genres and to the establishment of entire genre systems of professions (e.g., Göpferich 1995). With a growing emphasis on generic features, among which we find the broader social context of LSPs, a strong line of research emerged dealing with such features as the accessibility and comprehensibility of LSP texts (e.g., Schüttler 1994), the cognitive operations involved in producing, receiving and understanding them (Baumann 1996), their mediality (Schröder 1993), their ideology (e.g., Fairclough 1989) etc. In sum, the broad field of pragmatics was invoked to encompass the complexity of these new-found LSP features.

4 I acknowledge that LSP research draws on other disciplinary strands than those encompassed by the label – however broad – of applied linguistics, e.g., cognition studies, cultural studies, and the sociology of knowledge to mention but a few (see Baumann and Kalverkämper (eds.) 2004 for an extensive overview).

5 It was not, however, presented under that label until some five decades later (Wüster 1974).

6 This understanding of genre differs somewhat from the classic literary or aesthetic genre (Andreotti 1990) but may be compared to Miller's conceptualisation (1984).

Out of this reading of the history of ideas in LSP research a pattern emerges with regard to an almost organic development of the objects of study.[7] In the sense that, incrementally, the objects of study grow ever more encompassing and ever more complex in nature – basically from lexemes to genres and to the communicative setting in which these entities are embedded, i.e., from the relatively speaking smaller dimension of the lexeme to the relatively speaking larger dimension of communication proper. But it is not this widening of the scope of LSP research, this expanding linguistic ontology, which in and of itself allows one to see LSPs as instruments for communicating knowledge, the rationale for doing so comes from the way in which this scope is widened.[8]

1.1 A Lakatosian evolution rather than a Kuhnian revolution

The question arises as to how such a multifacetted body of research survives as one field, why it has not fragmented into a myriad of isolated research interests. The answer which most readily springs to mind is that there must be a unifying force at play in the LSP research community which is stronger than whatever centrifugal forces are at play trying to disintegrate it. In a Popperian sense there must be a sort of acceptance in the research community that its members share a conglomerate of problems and proposals for their solutions (Popper 1979 [1962]: 108). Indeed, in order to establish this joint conglomerate of problems and proposals for their solutions one need not look very far. Any LSP discourse community is constructed along the lines of their professional, disciplinary or otherwise domain-specific knowledge; i.e., socially formed and institutionalized activities or practices, which have to a large degree been systematized and sanctioned by some sort of (typically official) authority, e.g., a university, a committee, a board or the like. Prototypical examples of such discourse communities (e.g., Swales 2016) could be lawyers, engineers or management executives. Each of these discourse communities owns, so to speak, an LSP, e.g., legal English or technical German etc. (including its discourses, genres, communicative actions and settings). Speaking in more general terms an LSP comes into existence in a profession, a trade, a discipline or the like when actors within such a knowledge community need to communicate with one another (or outsiders for that matter)[9] about their common specialized (e.g., professional, disciplinary or otherwise domain-specific)

7 Due to the fact that I have discussed the two other patterns emerging from this history of ideas previously (i.e., an ideology of opposition and the commensal relationship with non-linguistic host disciplines) I will refrain from doing so here (see Kastberg 2010).

8 Neither is it this expanding linguistic ontology that defines an LSP *as* an instrument; I will return to this topic in section 2.

9 Framed by Möhn and Pelka (1984:26) as intra-, inter-, and extra-disciplinary LSP communication respectively.

knowledge. What, in turn, unifies the LSP research field, is an appreciation that all LSP discourse communities – different though they may be individually – do in fact constitute a sort of site[10] for LSP researchers to explore; and that, in order to explore it as a site, coherent research calls for a joint conglomerate of problems and proposals for their solutions.

With this we may return to the before-mentioned LSP research trajectory and to the way in which its scope has widened over time; for even if it features a quite substantial expansion in terms of objects of study it nevertheless revolves around the same site, i.e., the LSP discourse community. The fact that – as stated earlier – the progression is incremental implies that (relatively) 'older' ideas are *not* mechanically substituted by (relatively) 'newer' ones. It is rather the case historically that newer ideas are derived from an understanding of a 'lacking', a lacuna, in the older one. In that sense each new formative idea is an answer to a perceived lacuna in a previous formative idea, and as such they did (and do) live on side-by-side; in as much as traces of older ideas are to be found in newer ones. It is therefore quite pertinent to state that the above LSP research trajectory does not feature Kuhnian revolution(s) (Kuhn 1962 et passim) in the sense that an older paradigm is exchanged for a newer one and that the (proverbial) state of incommensurability exists between them. It is rather the case historicaly that we are dealing with Lakatosian evolution; i.e., a development within the same general research program:

> [...] within a research programme a theory can only be eliminated by a better theory, that is, by one which has excess empirical content over its predecessors, some of which is subsequently confirmed. And for this replacement of the one theory by a better one, the first theory does not even have to be 'falsified' in a Popper sense of the term. Thus the progress is marked by instances verifying excess content rather than by falsifying instances; empirical 'falsification' and actual 'rejection' become independent. (Lakatos 1978: 112–113)

It is this Lakatosian undercurrent of LSP as a body of research which, for instance, makes it possible for the LSP genre scholar to seamlessly incorporate minute lexical, syntactic and, say, stylistic, analyses in order to deepen his or her insight into any given genre. That is: In the history of formative reseach ideas newer ideas have been able to encompass older ones without necessarily discarding of them ("falsification"). It is, therefore, obvious that in tems of quantity ("excess empirical content") LSP research has widened its scope radically over the course of a little over a century. But in terms of quality, too, ("better theory") this means that the (post) modern LSP researcher – whatever (isolated) LSP dimension s/he may wish to engage in – has a multifacetted research vocabulary at his or her disposal when it comes to asserting the explanatory force of his or her claims. This perspective does not overlook the fact that each phase in the trajectory is a research tradition in its own right, each with its

10 In the sense of "multi-sited ethnography" (Marcus 1995).

own fully fledged disciplinary doxa. It merely states that it is in their integration that the explanatory value of LSP research is developed to its fullest (see section 3.1).

As may be inferred from the above discussion, an understanding has emerged which will frame the following: That any LSP is a site that the LSP researcher may (legitimately) approach from a variety of different angles; that which is 'special' about LSP is the fact that it is used primarily as a means of communication by a specialized knowledge community when this community communicates about its community-specific subject matter. Having thereby stipulated that the notions of (some kind of specialized) knowledge and of (some kind of specialized) communication are equally critical in appreciating the nature of any LSP[11] I will proceed to present the frame of reference which allows for such an encompassing appreciation of LSP research, i.e., Knowledge Communication research (Kastberg 2007 et passim).

2 Communicating knowledge

Emerging from the above discussions a fundamental insight emerges, namely that two pivotal concepts, one of specialized knowledge and one of specialized communication, unite the field of LSP research. They are quite literally pivotal in the sense that they are the concepts around which LSP research agendas evolve. But it nevertheless still remains to be discussed what it means for an LSP to be an instrument for communicating knowledge.[12] In order to approach an answer to that question we need to take a closer look at the three core concepts inherent in the title of this paper: The notion of instrumentality (section 2.1), as well as the concepts of specialized knowledge (2.1.1) and of communication (section 2.1.2) respectively.

2.1 LSP and instrumentality

All instruments are, mutatis mutandis, means to an end. This notion entails that an instrument is something which is employed strategically in order to obtain a certain

11 At this point two comments are in order: First of all, it needs to be stated (and *unequivocally* so) that LSP research communities not (merely) communicate their specialized knowledge. They do in fact also produce, maintain, and develop it (e.g., in formal as well as informal educational and other activities etc.) as well as sanction the vehicles in which it is codified (e.g., in certain genres, scientific journals, data bases, a professional or disciplinary Body of Knowledge etc.). Secondly, that "no man is an Island" (as the English poet John Donne stated in his XVII Meditation from 1624), and neither is an LSP research community – nor the research it carries out. LSP research communities in fact do not construct, represent and communicate specialized knowledge in a vacuum; they are, naturally, doing so within a wider historical, societal and political framework.

12 In the non-intuitive sense that is sought after here (cf. section 0).

goal (Heinemann and Viehweger 1991); typically this is a goal which resides outside of the instrument itself. Viewing an LSP exclusively from this perspective means that evaluating it becomes a matter of if or to what extent it *as* an instrument serves as a means to fulfilling a particular goal in question.[13] Viewing an LSP as an instrument in this sense implies two things: First of all, that this perspective of LSP is quite a pragmatic one[14] and, secondly, that as an instrument, an LSP can – naturally – be used for all sorts of communicative and other purposes. For the sake of the current argument, my point of departure is, however, summed up by evoking a central, quite pragmatic, quote by von Polenz where he states that:

> Human beings have created language as a tool with which to reach agreement (or disagreement) about themselves and the world.
>
> (von Polenz 1988: 24)[15]

In accordance with von Polenz in this respect stands the Habermasian credo that the *telos* of language use is facilitating understanding (1987 et passim). Taking this stand seriously, we end up with an idea (indeed: an ideology) for language use, i.e., communication, as such, for if indeed the "genuine purpose"[16] (Wiegand 1988) of language use is that of facilitating understanding then this has one overarching consequence for how we may appreciate any LSP as an instrument: It becomes a means employed in the service of facilitating understanding.[17] Even if the frame of reference in the quote by von Polenz is language use in general, the idea that LSPs do in fact also serve as means of facilitating understanding is quite obvious, too, in Hoffmann's seminal definition of LSP:

> LSP – that is he sum total of all linguistic means used in a limited, domain-specific field in order to ensure communicative agreement among the people who are working within that field.
>
> (Hoffmann 1987: 53)[18]

13 Naturally, one may look at and evaluate instruments from a myriad of other perspectives, but that is beside the point here.

14 Pragmatic, is should be added, in the sense of Deweyian pragmatism; I will return to this notion in the final section of this paper.

15 My translation of the original German: "Sprache haben die Menschen als Werkzeug entwickelt, um sich miteinander (oder gegeneinander) über sich und die Welt verständigen zu können."

16 I.e.,"genuiner Zweck".

17 Naturally, any LSP may be used for all kinds of (non-genuine) purposes; I do not overlook that fact, but refrain from widening the scope at this point.

18 My translation of the original German: "Fachsprache – das ist die Gesamtheit aller Sprachlichen Mittel, die in einem fachlich begrenzbaren Kommunikationsbereich verwendet werden, um die Verständigung zwischen den in diesem Bereich tätigen Menschen zu gewährleisten." Hoffmann's original focus on intra-disciplinary communication has since been expanded on to also include inter-, as well as extra-disciplinary communication, e.g., in the sense of Möhn and Pelka (1984) (cf. footnote 9 and section 2.1.1).

Returning once more to the notion of instrumentality it is critical to reiterate that being an instrument employed in order to facilitate understanding; an LSP is to be evaluated on the basis of its capacity to achieve this goal. In order to appreciate an LSP as an instrument for communicating specialized knowledge it is therefore paramount that the notions of specialized knowledge and of communication be presented and discussed within this particular framing.

2.1.1 LSP and specialized knowledge

Due to the fact that the concept of knowledge has been pondered upon since even before the *Theaetetus*, I cannot – for obvious reasons – present a discussion with any claims to representativeness whatsoever.[19] Even limiting the interest from knowledge in general to specialized knowledge(s), the research field, again, is much too broad to consider here. What I can do, however, is to make my own appreciation of knowledge clear; an appreciation which is in line with the above notion of instrumentality and the ensuing notion of communication (section 2.1.2).

From a constructivist perspective (with a general reference to Kant and the strand of constructivism of which he is the founding father) knowledge is neither a matter of one's representation of the world[20] nor the degree to which this representation may or may not correspond to the world.[21] Accordingly, knowledge is not, in a constructivist optic, a context-free representation that would allow an observer to "simulate [...] a knowledge without knowers" (Barth 2002: 2).The most important implication of this understanding of knowledge is that knowledge is not equal to its representation in a medium (for further elaborations on this topic see Kastberg et al. 2007). On the contrary, the constructivist position holds that knowledge is "somehow a product of a knower" (von Glasersfeld 1974[22]). From the constructivist perspective, knowledge is basically a matter of a knower collating experiences and integrating these according his or her ability to infer (Russell 1961 [1948]: 9), in turn, aiming at allowing the knower to navigate meaningfully in his or her environment.

A core problem of meaningful navigation in an environment of specialized knowledges is, of course, that these specialized knowledges stem from the kind of quasi-autonomous knowledge communities presented earlier in this paper (section 1.1.). This also implies that these specialized knowledges have a tendency to develop, quantitatively as well as qualitatively, along other routes than general knowledge (Berger and Luckmann 1991 [1966]: 95). This tendency, in turn, gives rise to what may be called

19 I refer to Kastberg 2011 for a more elaborate discussion of select perceptions of knowledge.

20 That would generally be referred to as a "classic" cognitivist approach in the sense of (and criticized by) von Krogh (1998).

21 That would concur with the so-called correspondence theory of knowledge (e.g., Childe 1956).

22 An appreciation which is in accordance with Polanyi's (1974).

mutual alienation between stocks of knowledge(s) and their knowers. This, inevitably, renders meaningful navigation between knowers of different knowledge stocks difficult. It does so, because a primary difficulty accompanying the differences in knowledge(s) is the formation of knowledge asymmetries (Kastberg 2011) between knowers (e.g., between the inhabitants of the different communities). But even if knowledge asymmetries are most often noticed in the relation between the layperson (the holder of a relative knowledge deficit) and expert (the holder of a relative knowledge surplus), it is important that we not forget that knowledge asymmetries are not limited to the prototypical ones between social classes, between institutionalized social roles such as 'expert' and 'layman'. They also – and quite frequently – emerge within institutions themselves, between experts from different fields, and increasingly between experts of the same field but with different agendas or of different persuasion – politically or otherwise. Acknowledging that knowledge asymmetries may be found in all these settings also means that the goal of facilitating understanding is not a goal exclusively for extra-disciplinary communication efforts, but indeed an effort that applies to inter-, as well as intra-disciplinary communication constellations as well (e.g. Möhn and Pelka 1984).[23] These considerations, in turn, lead to the first of two intermediate prerequisite (cf. section 0), i.e., that with the genuine purpose of facilitating understanding, an LSP seen as an instrument for communicating knowledge is strategic communication. As strategic it is deliberately goal-oriented, the goal being the mediation of understanding across knowledge asymmetries (based on Kastberg 2007).

This constitutes a stepping stone to the last of the core concepts to be considered here, namely that of communication. The question arises as to what appreciation of communication allows us to follow through on the first prerequisite. For if we take the above constructivist understanding of knowledge seriously, pairing it with the ideal of the genuine purpose of language use, we realize that this has far-reaching implications for how we may regard communication of knowledge. As may be inferred from the previous paragraph, a constructivist appreciation of knowledge bars us from seeing knowledge as something that we transmit – the act of transmitting understood in the sense of, say, the transmission of a radio broadcast. As seen from the constructivist point of view that, which we transmit, is not knowledge; it may very well be data and / or information (in the sense of e.g. Davenport and Prusak 1998) which, in turn, may or may not enable a communication partner to construct knowledge – but knowledge as such cannot be transmitted. The point of entry for considering any LSP as an instrument for communicating knowledge cannot, consequently, be the various vehicles of communication – be it a lexeme, a text or a genre. All these vehicles may (and, according to Grice's 1975 maxim of quantity: should) contain information, but cannot

23 The means, methods and matters may (and will probably) differ according to the specificities of any given communicative constellation at hand, but that does not impair the theoretical scope of the statement.

contain knowledge in the above sense. This, in turn, makes it critical that we take a closer look at what appreciation of communication would allow us to talk about communicating knowledge in the first place.

2.1.2 LSP and communication

As is obvious from the above research trajectory, LSP research has always dealt with linguistic and (more recently also) pragma-linguistic vehicles for communication (section 1) but not necessarily with communication *per se*. However, speaking about an LSP as an instrument for communicating knowledge makes it critical to do just that. Let me substantiate this shift not only of focus but also of underlying ideology by way of an illustration, in which the traditional vehicle par excellence for LSP communication, i.e., the text, is used. I agree unconditionally with the strand of LSP research that says that the problem of knowledge asymmetry needs to be addressed with reference to communication. But although it is a non-negotiable point of departure that communication takes place in and by means of semantically meaningful entities, i.e., texts, I cannot subscribe to the notion that the 'good' text in and of itself is the key to overcoming the problems of knowledge asymmetry.[24] What I am advocating is *not* that we should abandon the text[25] but rather that we need to broaden the scope contextually and not be lured into seeing the 'good' text in itself as a kind of panacea with which to overcome all difficulties in communication, including that of knowledge asymmetries. What I am advocating is that whereas the text – or any other vehicle for LSP communication – is a necessary condition for dealing with knowledge asymmetries it is not in and of itself a sufficient one. Two issues stand in the way of the text being perceived of as both necessary and sufficient. First of all: The pre-scientific, yet crucial, fact that no text in and of itself holds the key to its being used as a means for facilitating understanding. While a text in question may very well honor generic conventions, feature the privileged style of a certain knowledge community etc. etc. these – and other similar traits – are not enough to ensure that the text is understood – let alone read/heard/seen. I will come back to this below. Secondly: Obviously, we can evaluate the 'good' in the good text on the premises of text internal qualities, but that, unfortunately, is not what is being evaluated when considering an LSP as an instrument for communicating knowledge. As an instrument

24 As an example of this strand of research see for instance Göpferich where she states that "that functionally adequate and receiver-oriented texts … can overcome barriers of communication". My translation of the original German: „[d]ass funktions- und adressatengerechte Texte […] die […] Kommunikationsbarrieren überwinden können […]"(2002: 5).

25 Or any other of the vehicles for LSP communication presented in section 1, for that matter, but for the sake of ensuring consistency in the ensuing argumentation I will use the text as an illustration throughout.

an LSP is evaluated on the basis of "if or to what extent the instrument serves as a means to fulfilling a particular goal in question" (cf. section 2.1); the goal in question being the mediation of understanding across knowledge asymmetries. Even if a text lives up to the above conventions there is no causal, no 1:1 relationship between certain semantico-syntactical features and the degree to which a text may serve as a means of facilitating understanding. That is: Since there is no way of evaluating the text per se as an instrument for communicating knowledge based on its intra-textual 'goodness',[26] there is a compelling case for why we need to look at the instrumentality in question from an extra-textual, a communicative perspective.

This, in turn, takes us to communication proper; for from the point of view of communication studies, we cannot overlook one of the central issues of communicative interaction, namely that of how a text – or any other vehicle used for communicative purposes – is received (if at all) is not exclusively dependent upon textual qualities, its being 'good' as such. This becomes evident when thinking about the mundane fact that what may be deemed 'good' to one individual in one communicative setting may be offensive, patronizing, opaque, boring, or simply untrue to another individual – be it in the same or another setting. From the perspective of communication theory the idea of the 'good text' *per se* as being both necessary and sufficient in order to communicate specialized knowledge across knowledge asymmetries with the aim of facilitating understanding is an expression stemming from the so-called transmission paradigm, i.e., that communication be "[...] linear, with meaning sent or transferred from source to receiver" (e.g., Beebe et al. 2004: 15). Communication-wise the underlying ideology of transmission is oriented towards the sender, i.e., communication is primarily a matter of distributing messages while trying to avoid "noise" (Shanon and Weaver 1949). Within this paradigm, it is, strictly speaking, not of primary interest what the receiver may take in from the communication, since, again strictly speaking, it goes without saying that (ideally) the receiver takes in what is transmitted. The primary interest, consequently, is that the sender delivers or produces a 'good' text. But if communication ends with (in fact: is) the act of sending out a message then we have no way of knowing if or to what extent the text has helped fulfill the purpose of mediation across knowledge asymmetries; i.e., we quite simply cannot appreciate an LSP as an instrument for communicating knowledge.[27] I am not proposing that any text is not potentially an instrument for communicating knowledge. I do, however, hold that it is so in much the same way as the hammer is potentially an instrument for striking and pounding – or for serving as a door stop for that matter – when it is lying idle in the tool box. The overall point being that in order for LSP communication to

26 I am not saying that statistically and / or experimentally some correlations cannot be established when it comes to, say, certain, specific communicative constellations, but that – needless to say – is not causation.

27 The only thing the sender can say is that s/he has composed a text (filled with codified information), and that it has been distributed.

be seen as an instrument (cf. section 2.1), it is not enough to produce and distribute a text – however 'good' it may be – for something to be perceived as communication an agent and a reactant need to enter into a relationship (Anderson and Meyer 1988: 161). If – for one reason or another – the intended reactant (i.e., reader/listener/viewer) does not enter into the relationship with the agent (e.g., reads/listens to/views whatever vehicle provided by an author) no communication can take place. And if for some reason the intended reactant does not enter into the relationship with the agent in the way the agent had envisioned, then that too may very well hinder communication. To sum up, this implies that from a communication theory perspective the 'good' in a 'good text' is not a textual attribute but a trans-textual, a con-textual one. A transmission approach to communication would, in other words, bar us from evaluating an LSP as an instrument for communicating knowledge in the sense introduced above.

In stark contrast to viewing communication as transmission, stands the interactive appreciation of communication.[28] As seen from the point of view of interactive communication theory, LSP communication does not, in fact cannot, take place merely because a sender or agent has sent a piece of information or a message. Communication cannot be said to take place until a receiver or reactant has – in one way or the other – interacted with a sender or agent (e.g., Katz and Kahn 1978); a prerequisite which is simply not present if we see communication as transmission. It is a premise for this understanding of LSP communication that it comes into existence in the various interactions between actors involved in a communicative endeavor. Needless to say, this understanding is closely related to *dialoguous* – as opposed to monologuous – communication formats. What is more important in relation to the aim of this paper is that it is also due to this take on communication that we may appreciate LSP communication as an instrument for communicating knowledge. For it is in the interaction that we may see if or to what extent an LSP serves as a means to overcoming knowledge asymmetries. Even if the archetypical communicative interaction is that of the dialogue, interaction need not necessarily be in the form of hic-et-nunc, real-time and synchronous face-to-face dialogue; a wide variety of (synchronous as well as asynchronous) media may also be used interactively. The so-called 'new' media, with integrated functionalities allowing for (and often encouraging) user-driven content development and exchange spring to mind. Naturally, this does not mean that the so-called 'old' media, like the written text, cannot be interactive. What distinguishes a dialoguous communicative format from a monologuous one is the fact that participation by both 'sender' and 'receiver' is a constitutive factor (Craig 2007: 127); a trait typically discernible in the form of inherent feed-back loops – in old and new media alike. Compared to the transmission approach, which does not recognize interaction, this is a decisive development, for it allows us to

28 The frame of reference for seeing communication as an interactive endeavor draws on Systems Theory of communication (e.g., Luhmann 1992 et passim) as well as a networks' approach to communication (e.g., Rogers and Kincaid 1981).

evaluate LSP communication as an instrument, e.g., on the number and relevance of questions, on critical remarks put forward, on the basis of the outcome of, say, a workshop, on the basis of the level of compliance (or non-compliance respectively) after having read an instruction manual etc. Agreeing with Carey (1989) that every model *of* communication is also a model *for* communication, i.e., that the model of communication one adheres to (be it consciously or unconsciously) determines how one 'sees' and 'does' communication, implies that if we change from seeing and doing LSP communication as transmission and instead see and do LSP communication as interaction, then the very nature of our understanding of LSP as an instrument itself changes. From the point of view of communication theory this corroborates the argument that the genuine purpose of an LSP as an instrument for communicating knowledge is not one of distributing texts – or any other vehicle for that matter – but one of facilitating understanding. Far from being a trifling issue this change in the perspective of LSP as communication is a significant one. This, in turn, informs the second and last intermediary prerequisite (cf. section 0): That viewing an LSP as an instrument for communicating knowledge implies an interactive appreciation of communication (based on Kastberg 2007).

3 LSP as instruments for communicating knowledge

In their synthesis, the two intermediate prerequisites merge into a theoretically informed understanding of an LSP as an instrument for communicating knowledge. As strategic communication (cf. above) it aims at the mediation of understanding across knowledge asymmetries, and – as we have seen – understanding is not so much a matter of sending out messages as it is a matter of taking in messages. This leads to a theory-consistent tendency to favor an interactive appreciation of communication. This synthesis serves as the transition to the final section or this paper in which this perspective is employed in order to present and discuss what this perspective entails in terms of how we may see and what we may see.

In terms of "how we may see" an LSP as an instrument for communication knowledge in the sense presented above, the arguments put forward have drawn us from text to context.[29] That is, we are drawn away from the (relatively speaking) narrower scope of (applied) linguistics to the (relatively speaking) wider and more encompassing scope of communication proper. Distilled from the above, contexts of interest are sites in which communicators or positions may be stimulated to interact with one another in order to overcome knowledge asymmetries.[30] As the main thrust of this paper has

29 The communicative context has been discussed in detail elsewhere, for an overview see e.g., Cragan & Shields (1998: 208, 233); for an early, formative work see Bitzer (1968).

30 And / or: Sites in which communicators or positions may be stimulated to interact in, with or via one or more media (a book, the Internet, a DVD etc.) in order to overcome knowledge asymmetries.

focused on conceptualizing a perspective of "how we may see", it is quite appropriate that the final section of the paper be devoted to central prospects of "what we may see".

3.1 Impetus for a research agenda

Needless to say, this article gives rise to a complex horizon of "what we may see", but before I go on to deal with this as a research agenda, it is pertinent to reiterate that – in accordance with a Lakatosian stand (cf. Section 1.1.) – the above notion of LSPs as instruments for communicating knowledge does not call for discarding previous insights in order to establish a research agenda of its own. On the contrary, in line with much LSP research the pivotal point here is still specialized knowledge and communication. It does, however, differ with regards to approach and scope. It does so because it is not defined along the lines of any one particular discipline, like for instance LSP genre linguistics or any other well-established discipline, and because its frame of reference is consequently neither confined nor driven by the orthodoxy of an established discipline. In order to illustrate some of the more salient impetuses which this (unorthodox) understanding of LSPs as instruments for communicating knowledge gives rise to, the figure below serves as a point of departure.

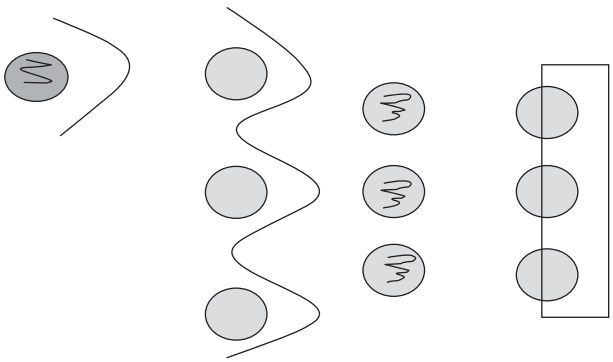


Figure 1: Ordering of disciplinarities.[a]
[a] The figure as a graphical representation is based on von Hentig (1987: 40); however, in terms of content it has been re-interpreted.

From left to right 1st, 2nd and 3rd order disciplinarities are illustrated.[31] A 1st order disciplinarity is the product of the classical break-down of university disciplines. It is

31 The notion of ordering used here comes from Bateson (1972). Using a more common vocabulary, a 1st order disciplinarity translates to the archetypical mono-discipline, 2nd order disciplinarities translate to inter-disciplines, whereas a 3rd order disciplinarity translates to a trans-discipline.

depicted in the image to the far left. A first order disciplinarity comes into existence when a particular object of study is being examined exclusively by a fixed, an orthodox conglomerate of theories and methods, sanctioned by the research community in question (e.g., Stichweh 2001: 13727). An example could be terminology studies carried out according exclusively to one school of thought, e.g., the aforementioned "Allgemeine Terminologielehre" (section 1), discarding of all other terminological schools of thought – or any other school of thought for that matter. The two middle images depict 2nd order disciplinarities. The first of the two middle images shows the kind of 2nd order disciplinarity which comes into existence when different objects of study are examined by means of one overarching theory. It could be the application of, say, 'critical theory' on LSP discourse analysis or applying a critical theoretical perspective when examining LSP didactics. The latter of the two middle images shows the kind of 2nd order disciplinarity which comes into existence when different objects of study are examined by means of one all-pervading method. It could be the application of, say, statistical methods when examining LSP syntax or LSP corpora.[32] The image to the far right depicts a 3rd order disciplinarity. A 3rd order disciplinarity comes into existence when the common denominator is not one overarching theory and not one pervading method. The common denominator is the research interest itself and to this research interest (in principle) any theory and any method may be applied. An example could be the use of cognitive and psychological theories, genre linguistic methods and media studies as a frame of reference when examining the impact of, say, an instance of LSP communication in a certain segment of society. As may be inferred, as a third order disciplinarity how a research interest is studied is independent of the restraints of any one theory, any one method, any one discipline; its only obligation being to match the complexity of the research interest in question with modes of examinations befitting said complexity.[33] It can come as no surprise that to view LSPs as instruments for communicating knowledge (in the sense presented here) is an expression of a 3rd order disciplinarity. It is so due to the fact that it is derived from the research interest of examining the mediation of understanding across knowledge asymmetries (section 2), without the pre-set disciplinary confines of a theoretical and/or methodological canon. The question now arises as to what this implies in terms of "what we may see", if the driving force behind the research agenda is not framed with reference to an existing LSP discipline (e.g., section 1), but with reference to an overarching research interest.

First of all, the transcendental nature of an LSP seen as an instrument for communicating knowledge implies that even if one perspective is singled out, analyzed, discussed etc. individually, the frame of reference is always the overarching research interest. One of the advantages of this more complex, and potentially

32 What formally establishes these as 2nd order disciplinarities is the fact that they imbed the possibility for 1st order disciplinarities.

33 What formally establishes this as a 3rd order disciplinarity is the fact that it imbeds the possibility for 2nd order disciplinarities.

multi-perspectival frame of reference, apart from avoiding a sort of 'isolationists' view on LSP research, is that it adheres to a holistic view, and thus research into LSPs as instruments for communicating knowledge is able to engage in several theory discussions, foremost between[34]:

1. cognition and linguistics (knowledge <–> discourse)
2. linguistics and communication (knowledge <–> discourse <-> context)
3. communication and society (knowledge <–> discourse <–> context <–> cooperation)

Summarizing the dominant research interests of cognition to be those of construction and representation of conceptual/cognitive knowledge and those of linguistics to be centered around linguistic (semantic, syntactic, pragmatic) features of discourse, potentially fruitful theory discussions emerge between the two in relation to the integration of knowledge representation into linguistic and discursive structures. Compared to the discursive focus of linguistics, the research interests of communication are primarily directed at interactional aspects, the object of study being centered on aspects of the discourse-in-use. Not, as it were, discourse per se. Potentially fruitful theory discussions between the two can be established where for instance speech act structures influence the communicative effect or where the communicative conditions influence the structure of the discourse. The final theory discussion is that which comes into existence between communication (with its point of departure in contextual issues) and social sciences with their focus on cooperative relationships between systems (e.g., in the sense of Systems Theory). Potentially fruitful theory discussions between context and cooperation can be opened where the relatively micro-oriented communicative theories meet and overlap with the relatively macro-oriented social science theories.[35]

Secondly, when the driving force behind the research is not framed with reference to an existing LSP discipline, but with reference to an overarching research interest, this opens up for a theory-consistent possibility of looking at how, where and why contextual variables (e.g. organizational, social, sociological, societal, disciplinary, historical, cultural etc.) may influence how understanding is facilitated in the various instantiations and practices of LSP communication. Turning to practices (e.g., Schatzki 2001:48) would subsequently imply that any LSP communication activity should not – maybe even cannot – be seen in isolation but as an instantiation of a social system in its own right which, in turn, consists of "[...] ongoing, self-reproducing arrays of shared practices and structured dispositions to generate such practices [...]"

34 This section is based on Kastberg 2007.

35 Even if being able to engage the ideas of disciplines spanning from cognition to social science is in itself a property, which is probably unique to research into the instrumental nature of LSP (in the sense of this article) and thus a characteristic which is relevant in and of itself, it is not an avenue of thought that I want to go down here. At this point I would like to use it as a framework for paving the way for appreciating the novel disciplinarity which this notion holds for LSP research (as seen from this view).

(Barnes 2001: 17). Such a perspective holds out the promise that the LSP research community may over time – and quite boldly stated – take LSP research to a level where it aims at explaining the fluid interdependencies of "[...] continuities of commonalities among the activities of social groups" (Turner 1994: 190) participating in LSP communication practices – be it intra-, inter- or extra-disciplinary practices.

Taking as step back, we may say that viewing an LSP as an instrument for communicating knowledge features a worldview much in tune with that of (Deweyian) pragmatism, which presents itself as an "[...] attractive philosophy for integrating perspectives and approaches" (Johnson and Onwuegbuzie 2007: 125). With a point of departure in this worldview, two far-reaching consequences can be summed up: First, and this can come as no surprise, that seeing an LSP as an instrument for communicating knowledge (in the above sense) lends itself to a research ideology which is inherently attuned to an idea of being driven by real-life problems (of asymmetric communication). Secondly, that research into LSP as an instrument for communicating knowledge (in the above sense) harbors the promise that the LSP research community may constitute a hub, as it were, for conducting inter-paradigmatic research.

References

Anderson, James A. and Timothy P. Meyer. 1988. *Mediated Communication: A Social Action Perspective*. Norderstedt: Books on demand.

Andreotti, Mario. 1990. *Die Struktur der modernen Literatur*. Bern and Düsseldorf: Verlag Paul Haupt.

Barnes, Barry. 2001. Practice as Collective Action. In Theodore R. Schatzki, Karin Knorr-Cetina and Eike von Savigny (eds.), *The Practice Turn in Contemporary Theory*, 17–28. London and New York: Routledge.

Barth, Fredrik. 2002. An anthropology of knowledge. *Current Anthropology* 43(1). 1–18.

Bateson, G. 1972. *Steps to an ecology of mind*. New York: Ballentine Books.

Baumann, Klaus-Dieter. 1996. Fachtextsorten und Kognition – Erweiterungsangebote an die Fachsprachenforshung. In Hartwig Kalverkämper and Klaus-Dieter Baumann (eds.), *Fachliche Textsorten – Komponenten – Relationen – Strategien*, 355–388. Tübingen: Gunter Narr Verlag.

Beebe, Stephen A., Susan J. Beebe and Diana K. Ivy. 2004. *Communication – Principles for a Lifetime*, 2nd edn. Boston: Pearson Allyn and Bacon.

Berger, Peter L. and Thomas Luckmann. 1991 [1966]. *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*. Garden City, New York: Anchor Books.

Bhatia, Vijay K. 1993. *Analysing genre: Language use in professional settings*. London: Longman.

Bitzer, Lloyd. 1968. The Rhetorical Situation. *Philosophy & Rhetoric* 1. 1–14.

Budin, Gerhard. 1996. *Wissensorganisation und Terminologie – Komplexität und Dynamik wissenschaftlicher Informations- und Kommunikationsprozesse*. Tübingen: Gunter Narr Verlag.

Carey, J. W. 1989. *Communication as culture: Essays on media and society*. Winchester, MA: Unwin Hyman.

Childe, V. G. 1956. *Society and Knowledge*. New York: Harper.

Cragan, John F. and Donald C. Shields. 1998. *Understanding Communication Theory: The Communicative Forces for Human Communication*. Boston: Pearson Allyn and Bacon.

Craig, Robert T. 2007. Pragmatism in the Field of Communication Theory. *Communication Theory* 17. 125–145.

Davenport, Thomas H. and Laurence Prusak. 1998. *Working Knowledge – How Organizations Manage What They Know*. Cambridge, MA: Harvard Business School Press.
Drozd, Lubomir and Wilfried Seibicke. 1973. *Deutsche Fach- und Wissenschaftssprache. Bestandsaufnahme – Theorie – Geschichte*. Wiesbaden: Brandstetter.
Fairclough, Norman. 1989. *Language and Power*. London: Longman.
Glasersfeld, E. von. 1974. Epistemology and education: The implications of radical constructivism for knowledge acquisition (Report 14). Athens, GA: Follow Through Publications. University of Georgia Press.
Göpferich, Susanne. 1995. *Textsorten in Naturwissenschaft und Technik. Pragmatische Typologie – Kontrastierung – Translation*. Tübingen: Narr Verlag.
Göpferich, Susanne. 2002. *Textproduktion im Zeitalter der Globalisierung: Entwicklung einer Didaktik des Wissenstransfers* (Studien zur Translation 15). Tübingen: Stauffenburg Verlag.
Grice, H. Paul. 1975. Logic and conversation. In P. Cole, P. and J.L. Morgan (eds.), *Speech Acts*, 41–58. New York: Academic Press.
Habermas, Jürgen. 1987. *The Theory of Communicative Action*. T. McCarthy (trans.). Boston: Beacon.
Heinemann, Wolfgang and Dieter Viehweger. 1991. *Textlinguistik – Eine Einführung*. Tübingen: Max Niemeyer Verlag.
Hennig, Jörg and Marita Tjarks-Sobhani (eds.). 2008. *Terminologiearbeit für Technische Dokumentation*. Lübeck: Schmidt Römhild.
Hentig, Hartmut von. 1987. Polyphem oder Argos? Disziplinarität in der nicht-disziplinären Wirklichkeit. In Jürgen Kocka (ed.), Interdisziplinarität: Praxis – Herausforderung – Ideologie. Frankfurt am Main: Suhrkamp Verlag. 34–59.
Hoffmann, Lothar. 1987. *Kommunikationsmittel Fachsprache – Eine Einführung*. 3rd edn. Berlin: Akademie-Verlag.
Johnson, Burke R., Anthony J. Onwuegbuzie and Lisa A. Turner. 2007. Towards a Definition of Mixed Methods Research. *Journal of Mixed Methods Research* 1(2). 112–133.
Kalverkämper, Hartwig. 1983. Textuelle Fachsprachenlinguistik als Aufgabe. *Zeitschrift für Literaturwissenschaft und Linguistik* 51/52. 124–166.
Kalverkämper, Hartwig. 2004. Die Fachkommunikationsforschung auf dem Wege der Pluralität. Pluralität in der Fachsprachenforschung. In Klaus-Dieter Baumann and Hartwig Kalverkämper (eds.), *Pluralität in der Fachsprachenforschung* (Forum für Fachsprachen-Forschung 67), 11–49. Tübingen: Gunter Narr Verlag.
Kastberg, Peter. 2007. Knowledge Communication – The Emergence of a Third Order Discipline. In Claudia Villiger and Heidrun Gerzymisch-Arbogast, *Kommunikation in Bewegung – Multimedialer und multilingualer Wissenstransfer in der Experten-Laien Kommunikation*, 7–24. Bern: Peter Lang Verlag.
Kastberg, Peter. 2010. Knowledge Communication: Formative Ideas and Research Impetus. *Programmatic Perspectives* 2(1). 59–71.
Kastberg, Peter. 2011. Knowledge Asymmetries – Beyond to Have and Not. *Fachsprache – International Journal of Specialized Communication* XXXIV (3–4). 137–151.
Kastberg, Peter, Trine Schreiber, Ditlevsen, Marianne Grove, Karen Harbo, Karen and Ole Lauridsen. 2007. *Personligt Knowledge Management. Fra information til viden via læring*. København: Samfundslitteratur.
Katz, D. and L. R. Kahn. 1978. *The Social Psychology of Organizations*. New York: Wiley & Sons.
Krogh, Georg von. 1998. Care in Knowledge Creation. *California Management Review* 40(3). 133–153.
Kuhn, T. 1962. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.
Lakatos, Imre. 1978. The Methodology of Scientific Research Programs (Philosophical Papers, volume 1). Cambridge, UK: Cambridge University Press.
Lewin, Kurt (ed. by Dorwin Cartwright). 1951. *Field theory in social science. Selected theoretical papers*. New York: Harper.

Lovejoy, Arthur O. 1976 [1936]. *The Great Chain of Being: A Study of the History of an Idea*. Cambridge, MA: Harvard University Press.
Luhmann, Niklas. 1992. What is Communication? *Communication Theory* 2(3). 251–259.
Marcus, George E. 1995. Ethnography in/of the world system: The emergence of multi-sited ethnography. *Annual Review of Anthropology* 24. 95–117.
Maslow, Abraham. 2004 [1966]. *The Psychology of Science. A Reconnaissance*. Chapel Hill: Maurice Bassett Publishing.
Messing, E.E.J. (ed.). 1932. *Zur Wirtschaftlinguistik*. Rotterdam: Nijgh & van Ditmar.
Miller, Carolyn R. 1984. Genre as Social Action. *Quarterly Journal of Speech*. 151–167.
Möhn, Dieter and Roland Pelka. 1984. *Fachsprachen. Eine Einführung*. Tübingen: Max Niemeyer Verlag.
Perner, Josef, Joahnnes L. Brandl and Alan Garnham. 2003. What is a perspective Problem? Developmental Issues in Belief Ascription and Dual Identity. *Facta Philosophica* 5. 355–378.
Polanyi, Michael. 1974. *Personal Knowledge: Towards a Post-Critical Philosophy*. Chicago, IL: University of Chicago Press.
Polenz, Peter von. 1988. *Deutsche Satzsemantik: Grundbegriffe des Zwichen-den-Zeilen-Lesens*. Berlin and New York: de Gruyter.
Popper, Karl. 1974 [1962]. Die Logik der Sozialwissenschaften. In Theodor W. Adorno (ed.), *Der Positivismusstreit in der deutschen Soziologie*, 103–123. Hrsg. von Heinz Maus und Friedrich Fürstenberg. Darmstadt/Neuwied: Hermann Luchterhand Verlag.
Roelcke, Thorsten. 1999. *Fachsprachen*. Berlin: Erich Schmidt Verlag.
Rogers, E. M. and L. D. Kincaid. 1981. *Communication Networks – Towards a Paradigm for Research*. New York: Free Press.
Russell, Bertrand 1961 [1948]. *Human Knowledge: Its Scope and Limits*. London: George Allen and Unwin Ltd.
Schatzki, Theodore R. 2001. Practice Minded Orders. In Theodore R. Schatzki, Karin Knorr-Cetina and Eike von Savigny (eds.), *The Practice Turn in Contemporary Theory*, 42–55. London and New York: Routledge.
Schröder, Hartmut (ed.). 1993. *Fachtextpragmatik*. Tübingen: Gunter Narr Verlag.
Schütller, Susanne. 1994. *Zur Verständlichkeit von Texten mit chemischem Inhalt*. Frankfurt: Peter Lang Verlag.
Shannon, C. and W. Weaver 1949. *The Mathematical Theory of Communication*. Illinois: University of Illinois Press.
Spillner, Bernd. 1986. Fachtext und Fachstil. *Jahrbuch Deutsch als Fremdsprache* 12. 83–97.
Stichweh, R. 2001. The History of Scientific Disciplines. In N. J. Smelser and P. B. Baltes (eds.), *International Encyclopedia of the Social and Behavioral Sciences*, 13727–13731. Oxford: Elsevier Science.
Swales, John M. 1990. *Genre Analysis: English in Academic and Research Settings*. Cambridge, UK: Cambridge University Press.
Swales, John M. 2016. Reflections on the concept of discourse community. *ASp. la revue du GERAS* (69). 7–19.
Turner, Stephen. 1994. *The Social Theory of Practices: Tradition, Tacit Knowledge, and Presuppositions*. Chicago: University of Chicago Press.
Wiegand, Herbert Ernst. 1988. Vorüberlegungen zur Wörterbuchtypologie. Teil I. In Karl Hyldgaard-Jensen, and Arne Zettersten (eds.), *Symposium on Lexicography III. Proceedings of the Third International Symposium on Lexicography*, 3–105. Presented at the University of Copenhagen, 14–16 May 1986. Tübingen: Niemeyer.
Wüster, Eugen. 1966 [1931]. *Internationale Sprachnormung in der Technik, besonders in der Elektrotechnik*. (Die nationale Sprachnormung und ihre Verallgemeinerung), 2nd edn. Berlin: VDJ 1931. Bonn: Bouvier.
Wüster, Eugen. 1974. Die Allgemeine Terminologielehre – Ein Grenzgebiet zwischen Sprachwissenschaft, Logik, Ontologie, Informatik und den Sachwissenschaften. *Linguistics* 119. 61–106.

Marie J. Myers

3 LSPs as instruments for intercultural communication

Abstract: Some key elements relative to today's thinking on the topic are first delineated in the broader context in the introduction, followed by background information, and societal and literacy aspects. Subsequent topics have to do with aspects of communication in general, awareness-raising, dialogue, global competence and intercultural competence. Then, problems encountered come under scrutiny, such as aspects in research findings around situational orientation, after which, personal factors are examined, in an attempt to shed light on the whole picture. Finally, we take a close look at specific implications of more challenging language use with the objective of achieving integrative intercultural communicative competence (IICC), synonymous to acquiring advanced levels of competence through aspects of acculturation. We suggest that although not achievable by all, IICC in LSPs as evidenced through language use during interactions, should be aimed at for successful intercultural communication.

1 Introduction

Effective intercultural communication requires discovering the culturally conditioned images that are evoked in the minds of people when they think, act, and react to the world around them, according to Seelye (1984). Culture includes symbols, language values, norms and material aspects. Intercultural communication encompasses a broad spectrum of communication processes and problems that naturally appear within an organization or social context, made up of individuals from different religious, social, ethnic, and educational backgrounds. In business as in other diverse fields, culture determines how individuals encode messages, what medium they choose for transmitting them, and the way messages are interpreted. When this happens in the same culture, the way the message is interpreted by the receiver is likely to be fairly similar to what the speaker intended. However, when the receiver of the message is a person from a different culture, the receiver uses information from his or her culture to interpret the message. The message that the receiver interprets may be very different from what the speaker intended. In monochronic cultures, time is experienced linearly and as something to be spent, saved, made up, or wasted. Time orders life, and people tend to concentrate on one thing at a time. In polychronic cultures, people tolerate many things happening simultaneously and emphasize

Marie J. Myers, Kingston (Canada)

https://doi.org/10.1515/9783110228014-003

involvement with people. In these cultures, people may be highly distractible, focus on several things at once, and change plans often. LSP is the means of communication in a specialized field and one would expect a degree of seriousness governing interactions along Grice's (1975) principles of cooperation including the maxims of quantity, quality, relation and manner.

We live in pluralistic societies with everything inherently subject to reinterpretation and the potential for misunderstanding exists, especially given our participation in globalization. Although LSP is seen as working in one language, one cannot ignore the cultural translational shifts across the Englishes of the world. Moreover, in bilingual or pluri-lingual contexts more care has to be taken. When we engage in meaning-making we first need to be aware of how the communities of practice in which we participate influence our ways of being. The fact is that their genres, discourses and styles have a great impact on our cultural context in an integrative way. Moreover, we need to remain aware of the different uses for language which are either for representation, for identification or for action. Therefore, there is a need to differentiate according to situations keeping in mind variation and variability. All these contextual aspects should be in our mind when we interact and negotiate various positions through communication events and negotiations, knowing that one discourse will dominate. Therefore, one has to carefully monitor the on-going transposing from one unit of meaning to the next one.

In the past, people believed that they had to come together, that the pressures applied caused a streamlining, ending-up in a consensus, and problem solving was the result, much along the lines of evolution (Olson 2003). More recently, researchers, such as Deacon (1997), came to believe that divergent thinking may have aided in our evolutionary process. He suggests that a rather generalized kind of relaxed selection might have occurred, when a move into a new environment free of competitors took place, and caused a process of dedifferentiation which allowed behavioural complexity. When people of very diverse backgrounds are placed together we might assume that this type of challenge is present. In such contexts new learning both at personal and emotional levels has to take place. When LSPs are used in these interactions, increased levels of complexity come into play. The new notion of multi -membership work also affects the language we use and requires a greater openness to interpretation and an understanding of shifting realities. Hence acceptability is crucial as interlocutors mediate sometimes across murky water. Neutral acceptable respectful words only can be used to establish a climate of trust even when we know that meanings might get lost in transcultural contexts. However, in life-and-death situations, one might have to involve an expert.

What difference the information given above makes in interactional success depends on our ability to identify that a person adopts a certain perspective and what the intentions for that perspective-taking might be. When interacting using LSPs in the process of borrowing other people's voices becomes a negotiation in "brokering-transferring some element from one practice into another" (Wenger

1998: 109) and one could add that in intercultural communication with LSP a whole 'new practice' might be created. The chances for misinterpretation are huge and flexibility of mind is a necessity as is good-will. This added transformation could very positively affect the new positioning of persons in our ever-increasingly fast-paced society. For the purposes of generalization, it would be helpful to find out the usefulness in adopting one versus another perspective in communication and then learn the relevant behaviours so that it is possible to identify the perspective taken by an interlocutor from another culture. Regarding interactions in diplomatic circles one often tends to think that a neutral approach is possible; however, it is more about reaching common ground. This would shed light on the other's cultural orientation, could prevent failures in the identification of a given perspective and in this way, hopefully avoid miscommunication. A position that is not tenable is to only function in a given LSP in a narrow sense. For instance, hotel front desk employees may know the requirements of their desk duty, and use politeness and know-how to be welcoming, but they should also know how to express the fact that they do not understand a query and how to refer the client to a resource person. When I stayed at a luxury hotel in China, I asked for information about a few things, the answer was always yes and as a consequence, no taxi had been hired for me and I was charged for extras I used although I did not need them and would have done without if given the correct information. These desk clerks did not possess English for general purposes, they navigated through their LSP knowledge only and unfortunately in a very narrow sense. The field of hospitality is one of the largest fields worldwide and is quickly expanding, thus placing more constraints on the use of LSP in different countries.

Wiseman and Abe (1986) suggest that a person who is cognitively more complex is able to better arrive at accurate representations of the interlocutor and to adapt better to the demands of a given situation. Increased difficulty has to be faced when communicating across languages with LSPs, which is more often the case nowadays. Communicating specialized knowledge in a professional situation across cultures entails carrying a lot more responsibilities. I personally think that a person's flexibility and creativity also play an important part in the process, given the fact that what is needed is the ability to think outside of the box and sort of rotate one's minds' eye and situate observed data at different levels of processing for data treatment. Such intricate thinking followed by attempts to make the procedures operational is possible. To simplify, in everyday life, this can be seen as an ability to put oneself in the other person's place. In LSP employment contexts there should be a tier system with employees with higher communication levels present at some point to be referred to, or else make use of a drop-box for customers with specific enquiries that will be followed-up upon later if not possible immediately. Deferring a task completion to a more specialized individual for completion requires taking some distance, evaluating one's possibilities and admitting that a proposed solution needs verification and/or postponement. From a practical perspective, LSP specialists, given the added complexity in today's world, could be trained to have staggered specializations and then

in the work place they would be able to connect their strengths as well as piggyback to reach out further to garner added support by accessing on-line platforms with the information they need. The specialists could also be named on a tree organized along neighbouring semantic areas to enable more networking.

2 Background information

2.1 Meaning

Nothing is a sign unless it is interpreted as a sign. So, to start with, the meanings attached to LSPs have to be well anchored to provide 'stability' in some sort of meaning realm. In LSP, in order to avoid communication failure, given terms, or the word phrase they are part of, have to take on the characteristics of stable mobiles (Gee 2005). If these take-on additional meanings in related fields or activities, the specialists in these areas also have to stick to the described meanings. As well, the symbols, values, norms and aspects of the material culture have to be understood along with the language. Nevertheless, areas of specialty have to be constantly updated with new lexical items, shifts in meaning as well as new special semantic areas created, with the increasing pace of new developments. In the context of technologies, the English terms are often imported and accepted for usage in the French language in France, however in Québec there is a tendency to translate all English words and only use the French version. Nevertheless, for instance in the context of new educational approaches, "living lab" is not "laboratoire vivant" but defined by the French commission on terminology as "recherche participative" and is stated to correspond to an activity of applied research, either public or private, associating users to the designing or experimenting of innovative products or services. Along similar lines, "Fablab" = "atelier de collaboration par la fabrication" is elaborated upon as a place open to everyone, in which intellectual and material resources are shared to facilitate innovation, the process of creating and of building prototypes. "social learning", corresponds to "apprentissage par les réseaux" and is defined as a mode of acquisition and of sharing knowledge and competences and which takes place outside an institutional context and relies on the use of collaborative tools offered by Internet and social networks. It will be important to keep track of shifts in meanings as these new strategies are adapted in daily life contexts within the languages and the usages. In our fast-paced global economy where LSPs in intercultural communication are concerned, we have to take into account the concepts of keyness and 'aboutness'. In ethnicity, keyness has two main underlying aspects namely importance and 'aboutness'. Key means more importance than ordinary, so if key is missing, it becomes a problem. But this concept is fluid. An item might be a key element at a given time and later that item may no longer be key. Importance is attached to the here and now but later

the item may be ordinary. Aboutness is a term also connected to ethnicity by Phillips (1989). In linguistics, aboutness is simply meaning, in psychology it is intentionality, in psycholinguistics it is language of thought in vogue, which obviously changes over time. In library and information sciences, the term was coined in 1969 by Fairthorne, but only recently has it entered general discourse. For example, an indexer working on a document's aboutness takes into account both the document and its potential users while considering the question it may seek answers for.

Familiarity with such concepts and their connoted representations at a given time in intercultural communication stresses the fluidity involved and shows the importance of being current or in other words staying in contact with a given language in its cultural developments. This implies a process of participation with participation defined as learning and doing in a historical and social context (Wenger 1998: 47), as action and connection, which means an activity that will at some point affect others even if carried out alone. According to Latour (1987) and actor network theory, it corresponds to the mobilization of resources or agents. Relative to this, Gee (2005) lists physical materials, representations, people and the creation of 'stable mobiles' which he qualifies as portable and accumulated, combined in new ways at a distance to coordinate action in centers of power. In addition, a distinction has to be made between localizing and globalizing moves. Localizing moves have to do with making choices, local interpretations and re-combinations in new ways. Globalizing moves align with collective ways and imply the synchronization of actions with those of others. With such views in mind, a fluid moving in and out characterizes the moves, reinforcing the necessity to stay on top of new developments. Moreover, one needs to arrive at a clear picture of how power works and have a methodology ready for the analysis of a social project. The theoretical tools to do so are available and how to connect the local with the global can be learnt. It is also crucial to acquire the analytical strategies for dealing with conflict, competition and multiple and shifting perspectives, all hinging upon effective use of LSPs.

2.2 Literacy practices in society

Literacy artifacts are an example of stable mobiles, linking across local and global practices, stabilizing connections and networks across time and space. Such ways to sustain cultural views helped transmit them not only intra-culturally like what was the case through oral tradition but also across cultures through the media. Intercultural communication becomes increasingly difficult when having to unpack information in 'globalizing' communications (not only through conversations but also with forms to be filled out, messages on voicemail or email, with different ways of calculating by transposing operations from language to language, with the internationalization of the way taxes are applied, insurance claims, etc.). Realizing interconnectedness helps, like for instance if you are familiar with the spoken form of a language it can

help when filling out forms, the ability to access internet resources can help provide additional support.

For some newcomers to a country, LSPs are used differently; for instance it could be in the context of workplace literacy while the heritage language i.e. the mother-tongue or a language that has become the L1, remains the home language, or LSPs are used to gain educational literacies. Newcomers may use LSP in the mother-tongue in their community of practice, or if their professional expertise was learned in the new country, they may not be able to use LSP in their first language. However, for harmonious integration into a host society social literacy has to be demonstrated daily. It is often recommended to combine resources when using LSPs for intercultural communication like for example keeping a journal or a diary can help in workplace reporting. The incorporation of practices of others into one's own can help alleviate some communication difficulties and as well getting involved into societal practices of others will give one more of a sense of belonging. Today the borders across time and place are becoming blurred and not only when looking at historical accounts but taking stock of present practices, in subcontracting for instance, as well as the example of the world-wide callcentres located in India from where people in any English-speaking country are solicited to subscribe or purchase some item or another. Although these people speak English and learned the communication patterns of salespeople and can be quite convincing, they often get very impatient when the prospective customer questions and declines their offer, a fact that would not happen in North American seller-customer relations. Moreover, the way to process orders is changing: the processing order is not just a part of a form, it provides on-line access to the merchandise that comes in and this, arranged in order. A new dynamic is coming to the fore with individual cybernetics in the mix with the social, including multiple and conflicting exchanges. So much so that dialogue or conversation and conversation 'analyzing' are becoming even more prominent.

For instance, although an international business culture exists, with LSPs as instruments in intercultural communication, outcomes could be improved by maintaining trust and cooperation. Cultural mediators can increase transparency, and carry out conflict analysis and resolution. Areas to be concentrating on include dealing with subtle biases, greatly different communication styles, divergent worldviews and sensitivity to special peoples.

There is some urgency to new investigations of multi-languaging, re-contextualizing and intertextuality with a view to moving text across increasingly diverse contexts and languages and more linking of local and global practices. One has to identify what is important and up to what level of detail to proceed. For instance, practical experience would be important to help with making choices in language use and diaries of daily experiences and contextual language use would prove very useful. A basis is needed to obtain a certain job or position and it probably would be safer to be able to engage socially even though 'social language use' may not be as fluid initially. Follow-up practices can be set up to bridge the gaps in LSP practice.

3 Aspects of communication

3.1 General overview

A progression in workplace literacy for intercultural communication should be developed. There is a need for a concept system and perhaps a graphical representation as well as the need for standardization. Borden (1991) distinguishes three dimensions of communication. The *situational dimension* which includes all the contextual features of a communication event, relates to our interpretation of the situation. The *personal dimension* that is connected to internal variables which influence a person's choice in communicative behaviours, takes aspects such as self-imposed limitations in decision-making into account. The *cultural dimension* involves the mental programming that members of a culture share as it is related to the subconscious factors that influence behaviour.

In the use of LSPs as instruments of intercultural communication it is important to explore the ways in which people acquire *cultural sensitivity*. Even people from different cultures who share the same native language have difficulties explaining certain culture-specific constructs to each other. The technical writer plays an important part, transmitting information from one community to another that has a very different technical culture, hence taking on an intercultural role. In a sociological sense, aspects of culture are often characterized in terms of the material aspects of a society, the nature and organization of family, life in the home, interpersonal relations, customs, institutions, work expectations and leisure time activities. Adaskou, Britten and Fahsi (1990) and also Bussmann (1996) add two additional perspectives that should be considered in this approach towards culture. These are a *semantic* and a *pragmatic perspective*. The *semantic perspective* is "concerned with the literal and contextually non-variable meaning of linguistic expression or with the contextually non-variable side of the truth conditions of propositions or sentences" (Bussmann 1996: 374). The *pragmatic perspective* "deals with the functions of linguistic utterances and the propositions that are expressed by them" (Bussmann 1996: 374). When trying to achieve an appropriate level of oral and written communication, people have to train their social skills, paralinguistic skills and rely on general knowledge, this is specially important in business communication and in critical care contexts. Adaskou, Britten and Fahsi (1990) discuss appropriateness, politeness (face-maintaining strategies), conventions of interpersonal relations and the conventions of different written genres. Their definition, useful as a starting point in a discussion can include the ways in which people deal with culture-specific conventions of speech acts such as, for example, making a reservation, ordering, honouring guests and introducing appropriate dinner topics at different social events, as well as the ways in which the audience is taken into account and the ways in which silence influences conversation in different cultures either as expected waiting time, for topic avoidance or other

reasons (Myers 1998). Interpreters need to be aware of such issues around etiquette, especially their possible impact in business contexts.

In intercultural communication, non-verbal aspects of communication such as gestures, time, protocol, distance, touching, eye contact and others also have to be taken into account by all the participants in interactive communication. Behavioural aspects of intercultural communication, or social amenities, include etiquette, seating arrangements, gift-giving, meal times and tipping and have to be made known across cultures.

Another important aspect besides comprehensibility of language use has to do with trust. For example a Canadian firm with a worldwide reputation as being the best for train brakes was commissioned to make brakes for the trains in India. Brake installation documents were prepared very carefully, seeing to every necessary detail in the descriptions so as to enable the local engineers in India, totally fluent in English to proceed with brake installation and avoiding having to send a technical team from Canada. Money was spent to have a writing expert write out the instructions. However, this expert was neither an LSP specialist nor was he familiar with culture in India. He did spend a large amount of time with the technical staff at the brake making company and took all the notes he felt were needed. The language expert employed was not an expert in writing directions for use either. It is clear that an LSP specialist would have had the necessary insights required to bring this project to fruition in a timely way. The Company in India was not satisfied with proceeding by just following the instructions which they also had difficulty with, despite using their local engineers and experts. The issue was trust both from a cultural perspective and a technical one. Not being able to be in touch with the person who wrote the instructions and the persons who gave the instructions did not allow further verifications to make sure that the instructions led to the proper installation, and besides there was a need to interact to test the instructions and assess if the persons involved could be trusted. The technical aspects coming into play had the potential to impact a life and death situation. As a consequence, a technical Canadian team still had to be sent to ensure that all the brake purchasers were satisfied. This example points to the need of an expert who oversees processes from a more detached positioning and seeing to procedural aspects in negotiations as regards both technical aspects and language interpretation across cultural contexts with different ways of being and doing. In contrast to the lack of trust in the Indian anecdote above, an accident in France could have cost lives because of too much trust and not enough suspicion or checking into things.

The TGV accident in Eastern France in 2015 is another example to illustrate the need for an operation “overseer” in the general sense. In this case deaths were caused by overconfident employees, in contrast to the situation in India where people were suspicious, employees who felt that things were fine and allowed passengers on board which is not permitted on a test train. In addition, trains with passengers on-board are not allowed to go at the more advanced speed really

intended to test the train, so regulations were not observed or there was a lack of communication between the train engineers and the employees who let the passengers on, possibly all due to confidence in the technology. Moreover, it appears that the brakes to slow down the train before it engaged into a curve were applied only one kilometer later than prescribed. So had someone reviewed the whole trajectory with an eye to the speed, safe enough to negotiate the turn that caused the accident, the situation could have been avoided. Some employees clearly were confident that this test ride would go without a hitch as family was welcomed on board, however nobody had foreseen that centrifugal forces would break up the train in a difficult turn. A similar accident happened in Québec and in the Northern States at about the same time, so perhaps there is a need in investigating people's changing actions.

LSP plays a fundamental role in the cross-over of information and it is clear that experts at different levels can provide support in different areas.

3.2 Integrative Intercultural Communicative Competence (IICC)

Awareness and resourcefulness in intercultural situations are key features. Awareness is concerned with comprehending the specific elements and situations in which problems can occur. It should help if one became pre-emptive. Two concepts that are vital for effective communication in an intercultural setting are awareness of *intercultural situation* and of *intercultural communicative competence*.

The notion of *intercultural situation* awareness emerged from participants in an intercultural interaction who were looking for a common ground of understanding when facing a problem (Asante and Gudykunst 1989; Brislin 1981). However, when faced with a problem these participants did not develop clear-cut strategies for dealing with it. Samovar and Porter (1972) had explored intercultural communication and found various coping strategies to enhance communication and a way to master the processes of mutual adaptation, integration and mediation. As an example, depending on the culture concerned peripheral situational elements are either included in the verbalization or left out in interaction; in the latter case it is assumed that the participants were all aware of them and they needed not be brought into the discussion as it would be superfluous to do so. In order to become aware of and to deal with intercultural differences, Meyer (1990: 137) points out that we need to develop qualities such as "adequacy and flexibility" and learn the needed language items. In LSP this would require more fine-tuning and a more sophisticated ability to judge what best words or phrases to pick, while at the same time keeping contextual clues in check. For instance, in Germanic languages more contextual details are included in actual conversations whereas in Romance languages and Mediterranean cultures, as more visual contextual awareness is a given, there is no perceived need to contextualize as much during interaction (Glenn 1981).

Intercultural communicative competence awareness, which involves both a pragmatic linguistic knowledge base as relevant in LSP, and a socio-cultural one, has to be learned and "relates to both the exchange of messages and information, and the establishment and maintenance of relationships" (Byram 1997: 3). The problem of insufficient *intercultural communicative competence* in interacting can potentially be solved through training modules. Many existing training modules are mostly based on case studies (e.g. Brislin and Yoshida 1994; Pedersen 1979; DiStephano 1979; Schnapper 1979). There is clearly a need to adjust information on an on-going basis and this could be done through the findings from continuous or regular case studies especially in countries with high immigration rates. We know that, as regards the means of communication in a specialized field, there is a new dynamic that affects processing order. In addition, individual cybernetics play a role, and language use has to be understood around that. This communicative competence can be achieved and maintained by regularly adding to and monitoring a repository on the Web like in Wikipedia entries. Wikipedia is a great tool for LSP specialists, inter-language specialists and intercultural communication.

So overall, intercultural awareness, a concept used to express the degree of awareness that people have of the different interpretation paradigms of language use, requires special intercultural sensitivity and understanding. Myers (2004) looked at the ways in which 'social pragmatics' and 'pragmatics in linguistics' influence *intercultural awareness*. We need to bridge the gap between theory and practice with the goal of integrating language use and procedural aspects of communication situations. Specific skills in both areas have to be acquired and used in order to achieve levels of IICC in some situations. In LSP there is a need to keep track of how to bridge gaps as regards interactional aspects, often across stylistic levels and also in the cross-over between the theoretical knowledge and practical use of terms in intercultural communication. These LSP specialists could monitor the definitions and on-going cross-overs from language to language like the commissions on terminology do as technology takes big steps.

A practical framework linked to IICC is needed to minimize cross-cultural communication failures. In order to develop this framework, the aspects underlying communication have to be documented. Below, I attempt to distinguish between the many features of communication in order to make an integrative model work. In discussing this model, I pay particular attention to dialogue, global interactive competence, intercultural communicative competence and intercultural communication in today's world tending more to a transcultural shift.

3.2.1 Dialogue

Hofstede (1980) believes that beyond questions of cross-cultural communication, each person has the ability to anticipate and, as a follow-up, we are able to measure

the gap between our actual perception of a speech event and our prior predictions. This shows a certain cognitive stability in that it permits to display a more or less similar behaviour in similar situations (Hofstede 1980: 14). Auerbach (1992) suggests that it is through meaning-making that change can come about. Therefore, engaging in dialogue repeatedly would help anchor the desired habits of mind over time, to effect almost automatic processing by making the adjustments effortless and very time-efficient, thus enabling the time sensitive crystallization of the beliefs needed to achieve IICC. These authors wrote about L1. Across languages there is added complexity.

Being open to the fluidity inherent in our ever-changing world is a must to stay competitive. In the past we had stories passed on to us orally, but did we ask ourselves about who was conveying the stories and how they were adapted from context to context? It is quite obvious that we use different forms of language depending on the context and the interlocutors, therefore a reflective attitude in that regard is also required.

Gee (1999: 23) says our personal grid that constitutes the sum of our interactive capabilities establishes the limits to our understanding. This refers to a mental planning ability that exists in each of us through which we comprehend our own thoughts, our use of language, plan our behaviours and interactions, and through which we comprehend those of others. This represents a fluid non-stop planning in action to which we look for our interpretations. Gee adds that it is also at the origin and the end-product of discourses in the world, as this planning exists across people and social groups and is either synchronous or asynchronous and spans not only in the present time but also through history. He gives the example of what happens with traffic lights: They can cause chaos when the power is out, or traffic jams when lights are not well synchronized (Gee 1999); in the same way comprehension can be affected by disruptions. In order to prevent or minimize negative incidents, devising grids would be useful, as they could serve as springboards to initially support users until effortless implementation occurs so as to enable automatic use of the content.

The American Council on the Teaching of Foreign Languages (ACTFL) stipulates that people have to be able to "recognize that cultures use different patterns of interaction and apply this knowledge to their own culture" (ACTFL 1996: 216). When viewing cultural knowledge as a prerequisite for language proficiency, it is more important to view it as "the community's store of established knowledge" according to Fowler (1986: 19). Nostrand's (2003) objectives for cross-cultural learning are relevant in intercultural communication and include the following abilities to react appropriately in a social situation; to describe, or to ascribe to, the proper part of the population a pattern in the culture or social behavior; to recognize a pattern when it is illustrated; to "explain" a pattern; to predict how a pattern is likely to apply in a given situation; to describe or manifest an attitude important for making one acceptable in the foreign society; to evaluate the form of a statement concerning

a cultural pattern; to describe or demonstrate defensible methods of analyzing a socio-cultural 'whole'; to identify basic human purposes that make significant the understanding which is being taught. Beyond contents of the given LSP language patterns used, emphasis should be placed on the ones that are deemed most acceptable or endearing. There are many textbooks such as by Gudykunst (2005), Kim and Gudykunst (1988), Banks (2001) and Choudhury (2015) that provide starting points for LSP researchers in various contexts, and their contents can be edited and improved upon.

As regards dialogue in intercultural communication we are all subjected to contextual, personal and cultural communication constraints (Borden 1991: 35). The immediate situational context of the communication event has an impact on us. Variables in our enunciations are based on personal choices we make at the specific instant we express ourselves in contrast to other possible choices. Non-conscious cultural ideological influences also affect our choices according to expectations of the culture we were brought up in (Wertsch 1991). Factors having to do with one's openness on the other culture could play a crucial part according to Downs (1971). The author warns us against prejudging others' behaviours through our own cultural filters. It is a matter of individual cybernetics (Harré and Gillett 1994). Life experiences should inform us and guide us in questioning our interlocutors' contributions. To analyze problems in intercultural contexts, needs analysis is recommended (Long 2005) because it looks at sources, ways of operating, and how the source and the ways of operating interact, thus providing the opportunity to better round up the relevant segments.

Learning occurs through centrally participating in the learning curriculum of the ambient community (Lave and Wenger 1991: 100). When dealing with an unfamiliar community, effort and stress increase. In intercultural communication, learning new practices is learning through tension, because of constant changes and learning gaps and this increases cognitive fatigue. Palmer (1983) succinctly and thoughtfully sums up this problematic situation when he writes: "As long as we inhabit a universe made homogeneous by our refusal to admit otherness, we can maintain the illusion that we possess the truth about ourselves and the world – after all, there is no other to challenge us! But as soon as we admit pluralism, we are forced to admit that ours is not the only standpoint, the only experience, the only way …" (38). Attitudinal factors also play a part. The challenge today would be to also chart patterns corresponding to the needs of diverse populations in addition to those who could fit in some more general "catchment" area pattern. These patterns can be regularly updated in a repository for language for special purposes in technical and special areas.

When looking at Tomalin and Stempleski 's (1993) "seven goals of cultural instruction", one can identify the crucial aspects of intercultural communication that require teaching, with the aim of developing an understanding of: the fact that all people exhibit culturally-conditioned behavior, social variables such as age, sex,

social class, and place of residence that influence the ways in which people speak and behave; conventional behavior in common situations in the target culture; the cultural connotations of words and phrases in the target language, the need to develop the ability to evaluate and refine generalizations about the target culture, in terms of supporting evidence; the necessary skills to locate and organize information about the target culture; the need for intellectual curiosity about the target culture, and to encourage empathy towards its people (7–8).

3.2.2 Global communicative competence

For the American Council on International Intercultural Education (1996), the four stages of development for a global competence development process are starting with the recognition of global systems and their interconnectedness (including openness to other cultures, values, and attitudes); followed by intercultural skills and experiences; then adding general knowledge of history and world events and finally detailed area studies specialization (i.e. language). This overview could serve as a basis to expand horizons of LSP specialists where needed.

So, where LSPs are concerned, area studies specialization becomes intrinsic to the whole communication process, language and culture have to be seen as tightly connected, the tasks consist of reflecting on how to develop trans-language-intercultural competence through developmental stages. Before getting people to use LSPs in highly sensitive intercultural communication situations one has to assess their cultural competence. For this, Bartz and Vermette (1996) outlined 16 prototypes which include: portfolio assessment; semantic-differential tests; solving cross cultural "conflict situations," including culture assimilators; answering written or oral questions on appropriate behavior or about the significance of a fact; analyzing visual examples of authentic cultural situations; giving verbal descriptions of a typical or an unlikely situation; reports on reading; simulated interactions or situations; examining the cultural significance of underlined words or phrases; identification of significant features in a literary passage; describing a photo or drawing of a culture-specific situation showing social behavior; observing an audio or video document for sociolinguistic behavior; organizing and making sense of one's cultural observations; and demonstrating knowledge or courses of information.

The Common European Framework of Reference provides support for the use of LSPs in intercultural communication aiming at interlocutors to become pluri-lingual and develop inter-culturality. The linguistic and cultural competencies in respect to each language are modified by the knowledge of the other and contribute to intercultural awareness, skill and know-how. The authors of the framework mention that it enables the individual to develop an enriched, more complex personality and an enhanced capacity for further language learning and greater openness to new cultural experiences (Council of Europe 2001: 43).

3.2.3 Intercultural competence

Deardorff's (2004) process model of intercultural competence, emphasizes the importance of the meaning systems of a culture, highlighting their role in shaping the cultural products and fostering the ways in which people in the culture behave and interact with each other (2004: 90). By arranging interaction in the "Three Ps" of a culture in a triangle with Perspectives, Products and Practices at each point with open back and forth flow, Tang's (2006) model embodies both the concepts of cultural facts and cross-cultural awareness. Placing the emphasis on cultural perspectives and meanings, requiring a greater consideration for intercultural competence, Tang states that, "culture as a source of meanings also comprises complicated knowledge structures. Whereas some are specific, observable, and easily expressible, others are tacit and invisible, resisting an easy explanation and defying culturally uniformed emulation by outsiders". This statement supports and summarizes a number of the points made earlier. The field of LSP indeed has to broach these wider aspects. Aligning LSP domains according to perspectives, products and practices would no doubt be enabling. For instance in order to be well rounded a technical document designer would start looking at his problem from different perspectives within the field specialization, think of a product but also look at existing similar products around the actual work, and before final decision making also investigate the various practices around and involving the product, i.e. reflect upon what happened during similar uses in the past in the same situation and what others have done in different situational contexts.

Deardorff (2006) proposes a pyramid framework with a unique element: an emphasis on the internal as well as external outcomes of cross-cultural awareness. The internal outcome, which involves an internal shift in frame of reference, although not requisite, enhances the external (observable) outcome of intercultural communicative competence. The external outcome can be described as essentially "behaving and communicating appropriately and effectively in intercultural situations" (Deardorff 2004: 196). In this instance, definitions of *appropriate* and *effective* are taken from Spitzberg's (1989) work, where appropriateness is the avoidance of violating valued rules and effectiveness is the achievement of valued objectives. Although conceived in a slightly different way, Deardorff's framework, as presented, validates conclusions drawn from the discussion above and may facilitate their articulation.

3.2.4 Intercultural communication in today's world

With intensified competition, new problems emerge and new skills are required. In the new knowledge economy, according to Lundvall (2002) emphasis should be put on, in decreasing order, first on feelings, then on innovation and following

these on community. Feelings are seen as the soft aspects of innovation. Lundvall includes under 'feelings' the role of human resources, competent users, demand factors, network building and organizational change. The next factor noted is innovation, moving away from a linear understanding because it is too limited, taking distance from anchoring the formation of technical systems in their socio-economic context and in this way, getting out of habitual contexts. The third factor mentioned is community in the sense that the focus ought to be more inclusive, not only being partial in focus on science and technology, but he believes in a mixture of competition and co-operation as being more effective (Lundvall: 287). He recommends that new modes for the development of co-ordination regarding information and competence be devised. With critical thinking and understanding emphasized in intercultural training programs, the media will no longer manage to do the interpreting for new generations as it has done for some time in the past, as fast-paced multimedia communication will strengthen interconnectedness between people and at the same time develop their ability to have independent critical mindsets. Co-creation of lexical items rather than borrowing would culturally be more appropriate.

The transformation of knowledge is also of utmost importance. According to Nyholm et al. (2002: 258) under the new logic we see the sharing of knowledge in networks and work teams. People will have to focus on core competencies connecting and transposing information. Hierarchy is losing to networking with continuous learning and innovation. In intercultural communication key issues for innovation policy have to be examined; namely how to use knowledge and innovation across cultures and work on knowledge development protection. This is a necessary feature to add as regards professional aspects. One of the effects of globalization is that many people in business will increasingly gain IICC in their professional field as they come into contact with more different cultures. Therefore, it is important that they learn about the aspects that make intercultural communication even more effective. Moreover, people from different cultures also assign different meanings to the same words when using LSPs in professional communication, as some terms may be seen as monosemic by terminologists, which creates even more obstacles for effective interaction (Asante 2001: 71). For instance "pancake" becomes "crêpe" in French and "Pfannkuchen" in German, but all possess different cultural representations. Gaudin (2003: 208) brings up the question of "nomadic terms" (our translation). As well, often one seme as a component of a morpheme, can become dominant and then give rise to clusters around one concept although such types of transfers can be very problematic. For instance, the notion of "flat" in pancakes has been extended to a car or an airplane being pancaked. Along the same lines terms coming from designations of animals and plants are found to describe sea creatures, words designating animals enter in the composition for names of flowers and tools and are shared among several languages, like for instance the word "crane" used in construction, corresponding to the bird, also similarly becomes "grue" in French" and "Kran" in German.

4 Barriers

In this section we summarize potentially problematic aspects of intercultural communication that have been identified in the literature and how they relate to problems in communicating specialized knowledge. First, we explore language use and roles, then personal characteristics, following which we attempt to see how barriers could be removed or minimized.

4.1 Language use and roles

Skehan (1996) introduced the notion of an *implicit grammar of intonation*. This implies that non-native speakers may be misinterpreted because they use intonation patterns that are inappropriate in a particular communication context, yet adequate in their mother-tongue. These features are often used subconsciously. Adding to the difficulty is the fact that such cross-cultural differences at the level of intonation are often ignored in second language teaching.

Cultural attribution theory accounts for crucial information that is not expressed in a speech act. During a conversation, for example, people can use *silence* strategically. This could signify that something was inadvertently omitted or purposely or subconsciously hidden and perhaps due to prejudice or topic avoidance. In professional situations one cannot afford to omit any meaning as it would skew the understanding of the given task.

According to Foster (1990), a distinction can be made between the physical context ("the set") and the psychological context ("the scene") of communication. This is also illustrated by Laing, Phillipson and Lee's (1966) model of *situational orientation*. In an intercultural situation, when language habits subconsciously are copied from those in the first language when communicating in LSPs, speakers need to select speech acts that render the full richness of their intentions even though they may not be literal translations of expressions in their native language. This has to be kept in mind as well when decoding someone's utterances.

Glenn (1981) turns to cognitive constructs to explain differences between cultures and subcultures that are manifested in cognitive behaviours. In various cultures, knowledge is structured differently, because the members of that culture use preferred *cognitive styles*. Glenn makes a distinction between different aspects of cognitive styles and links them to a general division of cultures in the world. During interactions LSP habits can be developed, like, for instance, allowing oneself more time to mentally run through the communication process, if need be, to reassess the situational context along some intercultural patterning to see where things fit. As an example, Glenn contrasts the dimensions of *particularism*, indicating a bias towards in-group, kin and acquaintances versus *universalism*, the term is meant to indicate that during interactions in a culture, speakers refer more to categories or

roles. The problem with this distinction is that it restricts freedom of expression and informs speakers of the more general boundaries within which interactions are contained in different cultures across these two dimensions. It would appear that such judgments should only be made by degrees. Even though this could become very controversial, it allows a glimpse at possible mind-sets one might encounter, that are difficult to change, and may set some parameters within which interaction should take place. Glenn (1981) and Borden (1991) suggest that a culture that is categorized as *abstractive* is also more dominantly *universalistic* and *open-minded* than a culture that is categorized as *associative* and as it would pay closer attention to mostly the surrounding people might be more *closed-minded*.

In the theory of speech acts (Austin 1962; Searle 1983), utterances are seen as narrowing a larger cooperative joint activity to a more specific one to find common ground (Clarke 1996). Issues of power and of allocation of resources have to be dealt with. There is then a need to reconceptualise knowledge, ability and virtue (Olson 2003). Diversity has to be accommodated. Access to particular roles includes rights and responsibilities but also an identity. Living up to that identity is where the problem might lie. In multicultural contexts like in the Canadian context, some people prefer to participate only on the periphery, especially when they are newcomers to the country. This according to Lave and Wenger's (1991) model of situated cognition also corresponds to legitimate participation. However, we ought to find ways of helping participants to move to the centre from the periphery and vice versa depending on the state of mind. In the complex mix of aspects to keep in mind, there is also personal agency.

4.2 Personal characteristics

Important aspects of personal communication are interlocutors' perception of different elements. In many cultures, the notion of time, *chronemics* (Henley 1977), can vary greatly. For example, the question whether one has to be on time or not for different social events in a given culture, and even in the same culture the answer may also vary according to the event and the length of time people will be waiting for you. According to customs, the choice of different colours, *chromatics* (Borden 1991), can be associated to happy or sad events and across cultures the choices can be blurred as the same colour can correspond to very different events. As regards touching or contact, *haptics* (Borden 1991), also including facial expressions, habits vary greatly and cannot be interpreted as meaning the same thing from one culture to the next, although there appears to be intra-cultural understanding. Cultural habits of body movement, *kinetics* (Morris, Collett, Marsh and O'Shaughnessy 1979), can be very misleading as often they are also unconscious. The notion of physical distance kept between people, *proxemics* (Burgoon, Buller and Woodall 1989; Burgoon and Saine 1978; Hall 1969), maybe the most difficult aspect to interpret in multicultural societies

as one could witness a number of positionings, yet, decoding them would require knowing the cultural backgrounds of the people in contact as well as the specific communication situation. For instance, a French Canadian would tend to stand closer to an English-speaking Canadian for whom an acceptable distance may correspond to at least a foot in a business context and in turn witness the English speaking colleague back off a little. The aspect of smell, *olfactics* (Hopson 1979), is also influenced by culture, whether consciously or not; not liking a smell will make you move away and appear distant, whereas at the same time someone from a Muslim culture may move close to smell a person's breath. Moreover, people react to taste and intake, *gustics* (Hopson 1979), as can reasonably be observed in the case of too much coffee or alcohol for example. The example of eye movement, *occulemics* (Hess 1975) can have great implications, as staring can be very unwelcomed, just as much as not looking people in the eyes, which in aboriginal cultures corresponds in fact to showing respect. The impact of tones of voice, silence and noise, *acoustics* (Hall 1969), can also greatly affect communication; for instance, in some cultures, it is acceptable to talk on top of each other, in others a long silence is making people uncomfortable just as speaking loud might be in a culture where one is expected to speak softly. These culturally implicit features play a role in addition to a person's beliefs and physical characteristics (biology) and the impact of gender, family, the environment and language use on communication.

The most recent aspects identified by researchers as important for establishing intercultural contacts is *rhochrematics*, which is related to people's view and understanding of the globalized world. It is based on the ability to achieve an integrated view of the world and mankind. Although this term is borrowed from management where it is used for, and applied to, one's knowledge of different markets, I felt it to be most useful in communication in the globalized world.

4.3 Making it work

Dealing with people who have a different native language requires both an understanding of the world of that person and an acceptance of cultural differences. Merleau-Ponty (1962) refers to the power of expression of a language as comprising ambiguities, suggestions and overtones of meaning in linguistic systems. No quick fix solution is available. Below, we outline a number of possible pathways. Intercultural communication training programmes try to prepare people to make the required adjustment if they have an interest in becoming better communicators for either business or private reasons. To achieve success, much hinges on the degree of interaction with the members of the other culture involved (Berry and Ushida 1987). Developing awareness of self and of how people interact in their native language is a crucial aspect of this process. In order to stimulate intercultural interaction as a process to attain further levels of IICC, we propose the following steps. There is a need to first

expand the learner's horizon by identifying the issues, the difficulties and situations not understood etc. that stimulate awareness of aspects related to intercultural communication. Then, experience in the specific intercultural settings concerned, helps to develop a mental filtering system. Following this, the accumulated experience can be used to continuously improve by focusing on discourse situations, speech acts, intonation, and non-verbal aspects. More refined intercultural awareness can be developed by systematically reflecting upon each topic listed during an interaction and through a broad sweep retain elements that might prove valuable if retained. Over time, the processing speed for the treatment of such information would increase considerably as to make the internalizing of characteristic elements seem automatic because they would become effortless and provide an economy of time.

The development of intercultural competence can also be supported by exploring language acquisition theory. According to Krashen (1994), language learners usually need a transformational period when they are learning a new language. He suggests that students must apply and compare the structures of their mother tongue to the new language in order to understand its patterns. In theory, the same process can be applied to cultural learning. This would suggest that for people to understand a second culture, they must examine its values against their own, or in other words, increase their cross-cultural awareness or IICC.

Along the same lines, Byram (1997) proposed very detailed objectives for the "intercultural speaker" in the European context, related to attitudes, knowledge, skills of interpreting and relating, skills of discovery and interaction, and also critical cultural awareness as political education, a summary of which is presented below. As far as attitudes are concerned he includes both willingness to genuinely engage with the other culture and to question your own and an interest in understanding how people make interpretations across cultures. In the context of questions of knowledge, Byram suggests compiling information about past and current relationships between the countries concerned including difficult past stands they took and consequences they bear in memory, ways of establishing contacts, understanding communication failure, contextualizing activity in geographical contexts, aspects of socio-economic impact and the importance of institutions in the mix for perspectives on how to navigate through interactions. Among skills of interpreting and relating, Byram selects the ability to sort out cultural perspectives in situations and an ability to clarify reasons for miscommunications as they stem from the specific cultures concerned. The skills of discovery and interaction he lists, rest mainly on abilities in language use, first to be able to identify sources of information through documents, references and possibly informants and actually glean needed information through questioning and seeking explanations. Byram identifies two key elements in gaining critical cultural awareness which have to do with clearing up denotations and connotations as well as taking an evaluative stand on the perspectives and criteria being adopted (Byram 1997: 57–64). This, in professional situations, corresponds to taking some distance and carrying out a verification process.

5 A culminating judgment process

Using LSPs in intercultural communication is complex, both because of layered interpretative steps plus the more sophisticated aspects involved when proverbs, idiomatic expressions and metaphors come into play.

5.1 Interpretation

Having accumulated bits and pieces of information on how to proceed with the task at hand, does not equate to actually expressing yourself and 'performing' when a situation calls upon the knowledge acquired. One ought to be able to mentally activate a broad sweeping movement over the background of all possible aspects to be involved, filtering out what is not possible and learn through practice to make it work in an almost automatic fashion. Once the more relevant elements are retained, the possibilities of working through situations are greatly increased. The thinking processes involved, although they might tend to be somewhat intuitive, with reference made to the importance Lundvall attributes to professional gut feelings, should also remain analytical with, as well, an incorporation of analogical thinking in cases where it is necessary.

Culture can easily be interpreted in many different ways. However, it is certain that culture is the way people live. It is a complex combination of the biological and technical behavior of human beings with their verbal and non-verbal systems of expression starting from birth, and this combination is acquired as the native culture. It most certainly includes all explicit and implicit patterns of life that are in constant dynamic interaction, intercultural and intra-cultural, resulting in the constant shaping and modification of the cultural identity and consequently the language. Culture corresponds to a processing of non-static facts leading to patterned behavior and language. A view that is also shared by Nilsson and Nocon (2005), who also highlight the importance of the fact that culture is an active, ongoing and constantly changing process people live by on a daily basis, not only located in cultural products and forms, but in the active lives of those who share those forms, not excluding new expressions and newly created words. According to Brown (1994: 170), culture is present in every part of the fiber of our being, but language – the means for communication of any culture – is the most tangible and available expression and reflection of the existence of that culture. It is no wonder, then, that new language learners would be faced with the fact that in order for them to learn the Target Language (TL), they would have to process the TL culture as well; the second step in the acculturation process refers to the cultural shock during which most resistance to change and learning occurs and which also constitutes a vital valuable step for language and cultural transactions when cultural commodities are bartered. Another view of culture is that of Tang (1999), who states that culture is language and language is culture. Deardorff

(2006) indicates that in order for a learner to speak a language well, the learner has to be able to think and act in that language which corresponds to an acculturation of behavior. Therefore, language and culture are unavoidably related and totally inseparable, which would also mean that the inclusion-exclusion of culture in a foreign language curriculum is equally an essential matter to deal with and cannot be waived against the argument that language classes should only be concerned with linguistic competence. This view is also shared by Brown (1994: 163), who states that culture is a way of life and is the true reflection of binding relations among the people of the same culture and their evident behavior that could be similar or different from other cultures. It is the seal of authenticity of the language it uses. This plays out among specialists in a given LSP. However LSP crosses over areas and specialists have to get accultured in several areas, especially the ones bordering onto their field.

Learning the communication aspects of LSPs culture and language also includes getting familiarized with the role of metaphors, idiomatic expressions and proverbs, with the ability to rely on them in interactions. A certain importance is attached to our use of phrases and given the links we make to proverbs, idiomatic expressions and metaphors, it is of utmost importance to also establish links between similar or different proverbs, idiomatic expressions and metaphors in different cultures. Some researchers in LSP such as Rossi (2015) have explored these aspects.

5.2 Exploring Metaphors, idiomatic expressions and proverbs

Many researchers looked at the role of metaphors, idiomatic expressions and proverbs in intercultural understanding. Leary (1990) states *"metaphor permeates all discourse, ordinary and special,"* and is *"particularly vital"* at the *"growing edges of science"* (Leary 1990: 357). Leary suggests that over the years many writers recognized that human thought expanded to cover new areas and new problems by way of metaphor. Pribram wrote that *"Brain scientists have, in fact, repeatedly and fruitfully used metaphors, analogies, and models of their attempts to understand their data. [...] only by the proper use of analogical reasoning can current limits of understanding be transcended"* (1991 79). Searle (1969: 17) defines metaphor from the perspective of speech act theory. For him, a statement possesses both a Speaker Utterance Meaning (SUM) and a Literal Sentence Meaning (LSM). Moreover, the SUM of a statement is that meaning the speaker wishes to convey to the hearer, while the LSM refers to the meaning to be found by the listener's analysis, in total independence of the speaker's intentionality, of the truth conditions of the sentence. Hence a statement is thus 'literal' when the SUM and LSM are the same; i.e., the speaker both means what he says and says what he means. However, a metaphorical utterance, as other rhetorical devices, such as the use of irony and hyperbole, exhibits a rift between SUM and LSM, which is reconciled by the hearer via the construction of a figurative interpretation. That explains why metaphors are perfect tools when the SUM and LSM of the

target language share all or some of the values of the learner's SUM and LSM; i.e., the concept or idea in a certain metaphor or proverb has similar significance (symbolic) and meaning (literal) in both language cultures. Accordingly metaphors project the cognitive map of a source domain (the vehicle) onto a target domain (the tenor), thereby causing the target to become grounded in the experience of the source. Thus a unifying framework that links a conceptual representation to its sensory and experiential ground is provided. Such acculturation processes need adjustments beyond the contents of simpler interactions and require specific instruction and lived experience in the language culture.

When contrasting more divergent cultures, more culturally distant Eastern and Western cultures, it would be useful to identify common references related to both linguistic and cultural aspects. These could be transmitted through either metaphors and proverbs or any other linguistic delivery device that can promote a 'coming together' of minds (Olson 2003) and cultures. We then would have common shareable cultural commodities of a linguistic nature, to be used in linguistic transactions. They could be used extensively in order to rapidly and efficiently transmit and convey our ideas without having to waste a lot of effort mentioning details about a certain idea. Metaphors, idiomatic expressions and proverbs can be used for shared experiences. A common example would be the popular English proverb "Birds of a feather flock together," which has a similar representation in French and is the exact equivalent in meaning to the Arabic proverb "Tell me who you hang out with, and I will tell you who you are." Both refer to the same idea of identifying individual character traits through the collective of a certain group of people transposing it to a collective of shared sub-culture behaviour. Within technical fields, groups often create their own language items in order to expedite things and hence communicate more effectively. When using proverbs and metaphors in intercultural communication with LSPs, even when unfortunate inferences or a lack of understanding surface, the communicative event provides good practice, showing what elements people can share to start with. As proverbs and metaphors can be used as shortcuts to avoid lengthy explanations they can be used in LSP as a time saving device. It is quite obvious that like-minded individuals in the workplace would develop groupthink with the relevant language attached to it. Keeping in mind this last distinction could set the groundwork to cover needs in LSP especially for cultural informants, mediators and caseworkers.

As for concluding remarks it would seem appropriate to not only reiterate the need for advanced understanding but also to point to the need for on-going shifts and transpositions in behaviours based on acute awareness of inner proceduralization. The objective is to make communication work which could entail pressing into a certain direction at times and also increasing the number of interactions beyond what would seem necessary. Personal cybernetics and agency will help some people to better develop a good balance including in cultural and linguistic understanding in forming their judgment scheme for weighing facts more accurately.

To interact successfully, people must be linguistically trained and culturally conscientious in their interpretations. Using LSPs as instruments in intercultural communication becomes complicated as it requires multiple shifts when moving trans-linguistically and transculturally across people from multi-language backgrounds and dealing with multiple cultural affinities. When different people use language for special purposes, they learn how to use them and hence they can become specialists. Needless to say, only plurality in the backgrounds of LSP specialists can ensure the variety, variation and variability in insights coming together for problem solving (Choudhury 2015).

References

Adaskou, Kheira, Donald Britten and Badia Fahsi. 1990. Design decisions on the cultural content of a secondary English course for Morocco. *English Language Teaching Journal* 44(1). 3–10.

American Council on the Teaching of Foreign Languages (ACTFL). 1996. *Standards for Foreign Language Learning: Executive Summary*. The author is the publisher.

Asante, Molefi Kete. 2001. Transcultural realities and different ways of knowing. In Virginia H Millhouse, Molefi Kete Asante and Peter O. Nwosu (eds.), *Transcultural Realities*, 71–82. Thousand Oaks, CA: Sage Publications.

Asante, Molefi Kete and William Gudykunst. 1989. *Handbook of international and intercultural communication.* Newbury Park, CA: Sage Publications.

Auerbach, E. R. 1992. *Making meaning, making change.* Washington, DC: Centre for Applied Linguistics.

Austin, John Langshaw. 1962. *How to do things with words*. Oxford: Clarendon.

Banks, James, A. 2001. *Cultural diversity and educational foundations, curriculum and teaching.* Boston: Allyn and Bacon.

Bartz W. and Vermette R. 1996. Testing cultural competence. In A. J. Singerman (ed.), *Acquiring crosscultural competence. Four stages for students of French*, 75–84. Lincolnwood, Illinois: National Textbook Company.

Berry, John andKim Ushida. 1987. Psychological acculturation of immigrants. In Young Yun Kim and William Gudykunst (eds.), *Cross-cultural adaptation: Current approaches*, 62–69. Newbury Park, CA: Sage Publications.

Borden, George. 1991. *Cultural Orientation: an approach to understanding intercultural communication.* Englewood Cliffs, NJ: Prentice Hall.

Brislin, Richard. 1981. *Cross-cultural encounters: face to face interactions.* New York: Pergamon Press.

Brislin, Richard W. and Tomoko Yoshida. 1994. *Intercultural communication training: an introduction*. Thousand Oaks, CA: Sage Publications.

Brown, Douglas. 1994. *Principles of language learning and teaching*. New York: Prentice Hall Regents.

Burgoon, Judee, David Buller and Gill Woodall. 1989. *Nonverbal communication: The Unspoken Dialogue.* New York: Harper and Row.

Burgoon, Judee and Thomas Saine. 1978. *The unspoken dialogue.* Boston: Houghton Mifflin.

Bussmann, Hadumod. 1996. *Routledge Dictionary of Language and Linguistics*. London, UK: Routledge.

Byram, Michael. 1997. *Teaching and assessing intercultural communicative Competence.* Clevedon: Multilingual Matters.
Carter B. and Luminet J.-P. 1982. Pancake detonation of stars by black holes in galactic nuclei. *Nature 296*. 212–214.
Choudhury, Shakil. 2015. *Deep Diversity: Overcoming us vs them.* Toronto: Between the lines.
Clarke 1996. English rampage. *IATEFL newsletter* 132. 10–13.
Council of Europe. 2001. *Common European Framework of Reference for Languages: learning, teaching, assessment.* Cambridge: Cambridge University Press.
Deacon, Terrence W. 1997. *The symbolic Species: the co-evolution of language and brain*. New York: W.W. Norton.
Deardorff, Darla K. 2004. *The Sage Handbook of intercultural competence.* Thousand Oaks, California: Sage Publications.
Deardorff, Darla K. 2006. Identification and assessment of intercultural competence as student outcome of internalization. *Journal of Studies in Intercultural Education* 10. 241–266.
Diki-Kidiri, M. 2007. Éléments de terminologie culturelle. *Cahiers du RIVAL 26*. 14–25.
DiStephano, Joseph J. 1979. Case methods in international management training. In Molefi Kete Asante, Eileen Newmark and Cecil A. Blake (eds.), *Handbook of intercultural Communication*, 421–446, Beverly Hills, CA: Sage Publications.
Downs, J. F. 1971. *Cultures in Crisis.* Beverley Hills, CA: Glencoe Press.
Fairthorne, Robert. 1969. Content analysis, specification, and control. *Annual Review of Information, Science and Technology* 4. 73–109.
Foster, Susan. 1990. *The communicative competence of young children*. London, UK, New York: Longman.
Fowler, R. 1986. *Linguistic criticism*. Oxford: Oxford University Press.
Gaudin, F. 2003. *Socioterminologie. Une approche sociolinguistique de la terminologie.* Bruxelles: De Boeck/Duculot.
Gaudin F. 2005. La socioterminologie. *Langage 1*(157). 81–92.
Gee, James Paul. 1999. *An introduction to discourse analysis*. London and New York: Routledge.
Gee, James Paul. 2005. Semiotic social spaces and affinity spaces. In David Barton and Karen Tusting (eds.), *Beyond Communities of Practice*, 214–232. Cambridge: CUP.
Glenn Edmund S. 1981. *Man and mankind.* Norwood, NJ: ABLEX Publishing Corporation.
Grice, H. P. 1975. Logic and conversation. *Syntax and semantics* 4. 22–40.
Gudykunst, William B. 2005. *Theorizing about intercultural communication.* Thousand Oaks, CA: Sage Publications.
Hall, Edward Twitchell. 1969. *The Hidden Dimension*. New York: Anchor Books.
Hall, Edward Twitchell. 1988. Context and meaning. In L. A. Samovar and R. E. Porter (eds.), *Intercultural communication: A reader*, 44–54. Belmont, CA: Wadsworth Publishing.
Harré, Rom and G. Gillett. 1994. *The discursive mind.* Thousand Oaks, CA: Sage Publications.
Henley, Nancy. 1977. *Body politics: Power, sex and nonverbal communication.* Englewood Cliffs, NJ: Prentice Hall.
Hess, Eckhard Heinrich. 1975. *The tell-tale eye*. New York: Van Nostrand Reinhold.
Hofstede, G. H. 1980. *Culture's Consequence: Intercultural differences in work-related values.* Beverly Hills, CA: Sage Publications.
Hofstede, G. and M. H. Bond. 1984. Hofstede's cultural dimensions: an independent validation using Rokeach's value survey. *Journal of cross-cultural psychology* 15. 417–433.
Hopson, J. 1979. *Scent signals.* New York: William Morrow and Co. Inc.
Kelly, G. A. 1963. *A theory of personality: The psychology of personal constructs.* New York: W.W. Norton & Co. Inc.

Kim, Young Yun and William B. Gudykunst. 1988. *Cross-cultural adaptation.* Newbury Park, CA: Sage Publications.
Krashen Steven. D. 1994. Bilingual education and second language acquisition theory. In Bilingual Education Office (ed.), *Schooling and language-minority students: A theoretical framework*, 2nd edn, 47–75. Los Angeles: Evaluation Dissemination and Assessment Center, California State University.
Lafayette, R. C. and R. A. Schulz. 1997. Evaluating cultural learnings. In P. R. Heusinkfeld (ed.), *Pathways to culture*, 39–56. Yarmouth, ME: Intercultural Press.
Laing, Ronald David, Herbert Phillipson and A. Russell Lee. 1966. *Interpersonal Perception: a theory and a method of research.* New York: Springer Publishing Company.
Latour, Bruno. 1987. *Science in action: how to follow scientists and engineers through society.* Cambridge: Harvard University Press.
Lave, J. and E. Wenger. 1991. *Situated Learning: Legitimate Peripheral Participation.* Cambridge: Cambridge University Press.
Leary, David E. 1990. *Metaphors in the history of psychology.* Cambridge: Cambridge University Press.
Long, Michael H. 2005. *Second Language Needs'Analysis*. Cambridge, UK: Cambridge University Press.
Lundvall, Bendt-Ake. 2002. Innovation policy in the globalizing learning economy. In Daniele Archibugi and Bendt-Ake Lundvall (eds.), *The globalizing learning Economy*, 273–291. Oxford: Oxford University Press.
Merleau-Ponty, Maurice. 1962. *Phenomenology of Perception*. New York: The Humanities Press.
Meyer, Meinert. 1990. Developing transcultural competence: case studies of advanced foreign language learners. In Dieter Buttjes and Michael Byram (eds.), *Mediating languages and cultures: towards an intercultural theory of foreign language education,* 136–158. Clevedon: Multilingual Matters.
Morris, Desmond, Peter Collett, Peter Marsh and Marie O'Shaughnessy. 1979. *Gestures: their origins and distribution.* New York: Stein and Day Publishers.
Myers, Marie J. 1998. Facilitating socio-centered learning with possible computer applications. In Licia Calvi and Walter Geerts (eds.), *CALL, Culture and the Language* Curriculu, 37–59. London, UK: Springer Verlag.
Myers, Marie J. 2004. *Modalités d'apprentissage d'une langue seconde.* Bruxelles: DeBoeck Université.
Nilsson, Monica and Honorine Nocon. 2005. *School of tomorrow: teaching and technology in local and global communities.* Oxford, New York: Peter Lang.
Nostrand, Howard Lee. 2003. *Finding common ground: from the polarizing mind-set to productive discussion*. Chicago: Edwin Mellen Press.
Nyholm, J., L. Normann, C. Frelle-Petersen, M. Riis and P. Torstensen. 2002. Innovation policy in the knowledge-based economy-Can theory guide policy making? In Daniele Archibugi and Bendt-Ake Lundvall (eds.), *The globalizing learning Economy*, 253–272. Oxford: Oxford University Press.
Olson, David R. 2003. *Psychological theory and educational reform.* Cambridge: Cambridge University Press.
Palmer, Parker, J. 1983. *The company of strangers*. New York: Crossroads.
Pedersen, Paul. 1979. Counselling clients from other cultures: two training designs. In Molefi Kete Asante, Eileen Newmark and Cecil Blake (eds.), *Handbook of intercultural Communication*. 480–484, Beverly Hills, CA: Sage Publications.
Phillips, M. 1989. *Lexical structure of text* (*Discourse Analysis Monographs 12).* Birmingham: University of Birmingham Department of English.
Pribram, Karl. 1991. *Brain and perception*. Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Rossi, Micaela. 2015. *In rure alieno: metaphors et termes nomads dans les langues de spécialité*. Berne: Peter Lang Verlag.
Samovar, Larry and Richard Porter. 1972. *Intercultural communication: a reader*. Belmont, CA: Wadsworth Publishing Company.
Schnapper, Melvin. 1979. Multinational training for multinational corporations. In Molefi Kete Asante, Eileen Newmark and Cecil Blake (eds.), *Handbook of intercultural Communication*. 447–474, Beverly Hills, CA: Sage Publications.
Searle, John. 1983. *Intentionality: an essay in the philosophy of mind*. Cambridge: Cambridge University Press.
Seelye, H. Ned. 1984. *Teaching culture: strategies for intercultural communication*. Lincolnwood Illinois: National Textbook Company.
Skehan, Peter. 1996. A framework for implementation of task-based instruction. *Applied Linguistics* 17 (1). 38–62.
Spitzberg, Brian H. 1989. *Handbook of interpersonal comprehension research*. Thousand Oaks, California: Sage Publications.
Tang, Y. 2006. Beyond behavior: Goals of cultural learning in the second language classroom. *Modern Language Journal* 90(1). 86–99.
Temmerman R. 2000. Une théorie réaliste de la terminologie: le sociocognitivisme. *Terminologies Nouvelles 21*. 58–64.
Tomalin, Barry and Susan Stempleski. 1993. *Cultural awareness*. Oxford, New York: Oxford University Press.
Wenger, Etienne. 1998. *Communities of Practice: Learning, Meaning, and Identity*. Cambridge: Cambridge University Press.
Wertsch, J. V. 1991. *Voices of the mind: A sociocultural approach to mediated action*. Cambridge, MA: Harvard University Press.
Wiseman, R. L. and H. Abe. 1986. Cognitive complexity and intercultural effectiveness: Perceptions in American-Japanese dyads. In M. L. McLaughlin (ed.), *Communication Yearbook* 9, 611–622. Beverly Hills, CA: Sage Publications.

Sandro Nielsen

4 LSP lexicography and typology of specialized dictionaries

Abstract: LSP lexicography is a term that covers many different subject fields treated by different types of dictionary based on various theoretical and methodical approaches. The object of LSP lexicography is lexicographical tools that function as utility products that provide specific types of help to specific types of user in specific types of user situation related to one or more subject fields and their LSP. This should be related directly to the objective of LSP lexicography, which is to develop principles and guidelines that help lexicographers design, evaluate, make and use lexicographical tools that fulfil specific types of need of specific types of user in specific types of situation in the real world concerning particular subject fields and their LSP. An appropriate approach to LSP lexicography and specialized dictionaries is based on lexicographical functions, such as communicative and cognitive functions, and the data that dictionaries contain should be specifically adapted to user needs and competences through user profiling. User situations are extrinsic lexicographical phenomena and are not related to lexicography but arise in the extra-lexicographical environment, while dictionary functions are intrinsic lexicographical phenomena and are directly related to the help dictionaries are intended to give in various situations. When planning, making, examining and describing specialized dictionaries, lexicographers should relate the selection, distribution and presentation of data to the objective of LSP lexicography. This contribution closes with a general typology of specialized dictionaries based on lexicographical functions, dictionary types and user types.

1 Introduction

Even though specialized dictionaries have existed for thousands of years, the theoretical branch of LSP lexicography is relatively young. At the beginning of the twentieth century, terminologists began to develop theoretical frameworks, and the first steps towards a modern theory of terminology were taken about 1930 (Cabré 1999: 5–9). The lexicographical community did not give LSP lexicography any significant attention until the last half of the twentieth century when linguists began to study specialized dictionaries in order to analyse and describe their constitution as repositories of lexicon and knowledge. In the 1980s, the first serious attempts were made to establish a theoretical framework for specialized dictionaries by scholars such as Frawley (1988) and Wiegand (1988). However, this framework is limited in several

Sandro Nielsen, Aarhus (Denmark)

https://doi.org/10.1515/9783110228014-004

respects: (1) it applies exclusively to printed dictionaries; (2) it applies exclusively to monolingual dictionaries; (3) it is based exclusively on linguistic and text-linguistic principles. Around 1990 lexicographers widened their range of interest to bilingual dictionaries, focusing first and foremost on equivalence and equivalents. At the same time, researchers extended the scope of LSP lexicography to include an analysis of dictionaries as complex units of components dealing with more than merely linguistic concepts and terms as described in e.g. Nielsen (1994), Schaeder and Bergenholtz (1994), Bergenholtz and Tarp (1995), and Bergenholtz (1996).

Since the mid-1990s, it has become increasingly clear that LSP lexicography needs a basis that can embrace the development of a modern world that is continually changing its reality. As described in e.g. Bergenholtz (1996), Tarp (2000), Tarp (2001), Nielsen and Mourier (2007), Fuertes-Olivera (2009), Nielsen (2010), Fuertes-Olivera and Tarp (2014) and Nielsen (2015b), both practical and theoretical LSP lexicography have shifted focus from documentation, description and analysis in a linguistic tradition to the development of lexicographically relevant principles and guidelines for producing dictionaries that help users solve specific types of problems in specific types of situation. In the early twenty-first century, LSP lexicography is concerned with analysing the needs users have in practical situations and proposing ways in which specialized dictionaries – whether printed or electronic – can best provide help that satisfies those user needs.

2 Two fundamentals of LSP lexicography

In order to give a proper account of LSP lexicography, it is necessary to start with a description of two fundamental elements. The first is *the object of LSP lexicography*. This object is part of the ontological position of LSP lexicographers, which is essentially the answer to the question: what is the nature of the object that is to be analysed, examined and investigated, i.e. the research object? The object of LSP lexicography is the specialized dictionary, which follows logically from the fact that the dictionary is the research object of lexicography. However, this raises another question: what actually is a specialized dictionary? The answer to this question is important because a clear understanding of the object of research is the foundation on which the entire discipline depends.

As a research object a printed or electronic specialized dictionary is a complex unit. Firstly, it has a number of surface features: the printed and the electronic dictionary contain several individual components that together make up the dictionary at the point of use. Printed dictionaries contain wordlists, which present headwords in alphabetical or systematic ordering, and other supporting components such as user guides and appendices. For example, *Larousse Agricole* (Mazoyer et al. 2002) has an alphabetically arranged wordlist, a preface, eight appendices and an index. Similarly, online

dictionaries contain several components, such as search sites, results sites, which show results according to a particular order of arrangement, and various supporting components. Secondly, the dictionary has three underlying features, namely:

(1) it has been designed to fulfil one or more functions, i.e. provide a specific type of help in specific types of situation to specific types of user;
(2) it contains data that have been selected because they help to fulfil its function(s);
(3) it has structures that marshal its data into the task of fulfilling its function(s).

The object of LSP lexicography should therefore be seen in the following light. In the first place, the theoretical framework for specialized dictionaries is not biased towards linguistics and text-linguistic categories; it focuses on the functions that dictionaries may have when consulted by users. For another thing, LSP lexicography emphasizes that the data to be included in dictionaries are not restricted to semantic or encyclopaedic data and that the data may be linked and presented in ways that directly support the functions of the dictionary. Thirdly, the lexicographical basis takes users into account because the functions of dictionaries can only be determined by analysing the types of situation in which users need help in real-life situations and therefore consult dictionaries. This means that users are introduced as "accessories before the fact", i.e. at the planning stage before the dictionaries are compiled. Finally, the above description of specialized dictionaries provides guidance that enables lexicographers to make a utility product with a solid foundation, good supporting structure and user-specific contents. Consequently, *the object of LSP lexicography* is lexicographical tools that function as utility products which, through their surface and underlying features, provide specific types of help to specific types of user in specific types of user situation related to one or more subject fields and their LSP.

The second fundamental element is *the objective of LSP lexicography*. Any discussion of the objective of LSP lexicography depends on the theoretical perspective adopted, and two general approaches can be identified. The first may be called the contemplative approach, as it takes a mainly retrospective look at the object. This approach examines published dictionaries and aims to develop a theoretical and practical framework consisting of generally applicable principles that can be used to analyse and describe existing specialized dictionaries. The other approach may be referred to as transformative, as it aims to develop a theoretical and practical framework of generally applicable principles that can be used to develop and propose new and better principles for the analysis, description, design and production of future lexicographical products. The transformative approach is thus predominantly prospective in nature. A study of the existing literature shows that both approaches to LSP lexicography exist side by side.

A detailed examination of the two approaches reveals further differences. The contemplative approach is based on established linguistic theories and principles that are applied to existing printed lexicographical tools and the theoretical principles are developed "after the fact", i.e. after the production of dictionaries has taken

place. In contrast, the principles of the transformative approach come into play "before the fact", i.e. before the design and production of dictionaries take place, and this approach is not restricted to applying established linguistic principles and theories, nor is it limited to printed dictionaries. Because the transformative approach appears to be better geared to future research and disciplinary development, it may be said that *the objective of LSP lexicography* is to develop principles and guidelines that help lexicographers design, evaluate, make and use lexicographical tools that fulfil specific types of need of specific types of user in specific types of situation in the real (extra-lexicographical) world relating to particular subject fields and their LSP. This objective can be achieved by a clear understanding of the key components of LSP lexicography and their interrelationship.

3 Profiling dictionary users

The first key component of LSP lexicography is the *type of user*, which involves the identification of user competences. Profiling intended users by describing their competences will help lexicographers identify which types of data they need to incorporate in their dictionaries so that they can provide assistance where user competences are insufficient, i.e. produce lexicographical tools that fulfil actual user needs. The important point is that the type of user is what Weber (1949: 89– 90) and Grix (2010: 23–25) call an "ideal type" in the sense that it is an intellectual construct identified by specific characteristics that are empirically observable.

Users of specialized dictionaries can be described in terms of two general characteristics. The first one concerns their relation to the subject field(s), i.e. the level of factual competence. Bergenholtz and Kaufmann (1997: 98–99) suggest a triadic typology of users: laypersons, semi-experts and experts in relation to the subject field in question. However, all subject fields are to a lesser or greater extent culture-dependent, as the culture surrounding the subject impacts on its contents and systematic structure. A specific culture only impacts slightly on the contents and structure of subject fields such as computer technology and physics, whereas it impacts considerably on subject fields such as law and sociology. Consequently, experts are "only" experts in their own culture and cannot be presumed to be experts in the corresponding subject field within another culture, an aspect that is of great significance in connection with dictionaries treating two or more cultures and hence languages. The result is that users have different levels of subject-specific knowledge in the relevant cultures.

Secondly, users may be characterised by their level of language competence. In this respect, the traditional distinction is between beginners, intermediate and advanced users of a language, whether native or foreign. This distinction implies that users have from little to considerable linguistic competence in their native language,

and in a foreign language if applicable. However, it is necessary to further subdivide language competence into general-language (LGP) competence and special-language (LSP) competence. Fluck (1985: 12) argues that the language of a subject field is characterised by the use of linguistic structures and options that is more or less frequent than in the corresponding general language. Users of specialized dictionaries may therefore be expected to have limited knowledge of the relevant degrees to which certain linguistic structures and other options are used in LSP texts in their native language as well as any foreign language.

Grouping users of specialized dictionaries into general types is not as simple as may first appear. Experts are likely to have considerable linguistic knowledge in their own language, but little to medium knowledge in a foreign language and are therefore beginners or intermediate language users. In addition, laypersons who are also beginners lack any significant factual and linguistic knowledge about a specific LSP and its usage. Finally, experts are specialists in one or perhaps two subject fields and will be laypersons and semi-experts in relation to other subject fields; advanced language users will also merely be advanced users within one or perhaps two LSPs and beginners and intermediate users in relation to other LSPs. This means that users of specialized dictionaries, individuals as well as groups, show a significant asymmetry of factual and linguistic competences, and authors of dictionaries should take this into account when they establish the theoretical foundation for new dictionaries intended to provide assistance to users.

The above triads of user groups in terms of factual and linguistic competence can be put to good use in a slightly different variation. Based on Bergenholtz and Nielsen (2006: 286) the following list provides some general questions for lexicographers to answer as appropriate in order to draw up a reliable profile of intended dictionary users:

1. Which language is their native language?
2. At what level do they master their native language?
3. At what level do they master a foreign language?
4. What is the level of their general cultural and factual knowledge in the relevant culture(s)?
5. At what level do they master the special subject field(s) in question in their own culture?
6. At what level do they master the special subject field(s) in question in the other culture(s)?
7. At what level do they master the corresponding LSP in their native language?
8. At what level do they master the corresponding LSP in the foreign language?

These general questions may have to be supplemented by one or more specific questions as the case may be. These additional questions concern aspects that give additional information about user competences in specific user situations and include textual competence, which is the knowledge of textual and genre conventions for LGP

and LSP texts in the relevant subject fields in one or more languages, and translation competence, i.e. knowledge about translation theories, strategies and processes in LGP and LSP translation. The relevant questions about user competences are:

9. At what level do they master the production of texts, their structure and genre conventions in their native language?
10. At what level do they master the production of texts, their structure and genre conventions in a foreign language?
11. At what level do they master the production of texts, their structure and genre conventions in the subject field(s) in question in their own culture?
12. At what level do they master the production of texts, their structure and genre conventions in the subject field(s) in the other culture(s)?
13. At what level do they master translation theories and strategies?
14. How extensive is their experience in translating between the languages in question?

When these competences have been identified, lexicographers will have a good indication of which types of data users need in extra-lexicographical user situations. User competences determine how users will actually use specialized dictionaries in particular types of user situation, because users need dictionaries to help them where their own competence is insufficient.

4 Describing relevant extra-lexicographical user situations

In general, lexicographers should study the human activities their dictionaries are designed to address. These activities may be divided into main types and then constitute the second key component of LSP lexicography: *user situations*. User situations are types of actual situation in the real (extra-lexicographical) world in which users encounter problems that may cause them to consult dictionaries in search for answers. Even though the concept of user situations is an ideal type, it is important to appreciate that actual user situations are not abstract concepts developed by and for academics. Lexicographers do not invent these situations of actual use; they are out there in the real world with real dictionary users. Moreover, user situations are part of events that basically have nothing to do with lexicography and dictionaries, but which lead, or may lead, to dictionary consultation: they arise in the extra-lexicographical environment and in the pre-consultation phase.

Two broad types of user situation extend to both general and specialized lexicography. People may need help in connection with ongoing oral or written acts of communication, and these types of user situation are called *communicative user situations*. Typical situations are where practitioners and students are writing texts,

either in their native language or in a foreign language, and they decide to consult dictionaries in order to find data that can help them to write these texts. Authors or copy editors may be revising or editing texts written in their native language or a foreign language and consult dictionaries to find help. Similarly, teachers correcting essays or marking examination papers may need to check something in dictionaries, either related to linguistic or extra-linguistic information. Professional translators and students often consult bilingual dictionaries when translating non-fictional texts from or into their native language. Readers of texts may need to consult monolingual and bilingual dictionaries in order to understand single words, collocations or phrases.

Other user situations are independent of ongoing communicative acts. Semi-experts and specialists may, for various reasons, want to acquire general knowledge about something, such as general cultural knowledge about LSP or nuclear physics because they have a desire to know more. Professionals and students may want to acquire specific knowledge about a particular topic almost sporadically, for instance the inflectional paradigm of an irregular verb or the official name of an international organisation. Finally, people may want to learn something specific about special-language usage or a subject field so that they will be prepared for discussions with colleagues, interpreting in court etc. These types of situation are called *cognitive user situations*; users want knowledge and lexicographers provide it at a cognitive level. In all these cognitive user situations, it is important to note that they do not arise from ongoing communicative acts, nor from a desire to get help in such acts; they arise from a desire to acquire knowledge. What the persons do with the knowledge after they have acquired it is of no concern to lexicography, however.

Specialized dictionaries are reference works that can provide help in situations other than communicative and cognitive. Tarp (2008: 127) and Fuertes-Olivera and Tarp (2014: 51–54) show how dictionaries may, at least partly, function as "how-to's", which are books giving instructions on how to do specific things such as how to operate machines, and in lexicographical terms such situations are referred to as *operative user situations*. For instance, a group of microbiology students may have been asked to cut a gene but have not received any instructions on how to carry out the task. In such situations they may consult one or more specialized dictionaries and find the necessary instructions either as written text, as series of illustrations or photos, as audio guides, or as video footage. Lexicographers have given only little attention to operative user situations but the future development in the field of online lexicography and dictionaries may pave the way for further studies in this type of user situation and thus extend the scope of LSP lexicography further.

In short, people are engaged in intellectual or practical activities that have nothing to do with dictionaries; they then encounter problems which they need help to solve; and in order to solve these problems, they decide to consult dictionaries. Not until they actually consult dictionaries do these people move from the extra-lexicographical into the lexicographical environment, thereby activating the potential of specialized dictionaries.

5 Establishing dictionary functions

Specialized dictionaries are activated by users who need information or knowledge. In this light, dictionary functions may be regarded as the lexicographical companions of extra-lexicographical user situations. A *dictionary function*, also called a *lexicographical function*, is the satisfaction of specific types of lexicographically relevant need of specific types of potential user in specific types of extra-lexicographical situation. Dictionary functions are answers to real-life problems in the extra-lexicographical environment and constitute the third key component of LSP lexicography.

Dictionary functions can be divided into broad types similar to user situations because they are directly linked to user needs. Some functions attempt to meet user needs in communicative user situations and are called *communicative functions*. Theoretically, dictionaries can have the same types of and just as many communicative functions as there are communicative user situations, and the following list contains the most important; specialized dictionaries may be designed to:

1. provide help to produce specialized texts in the native or a foreign language;
2. provide help to translate specialized texts into or from a foreign language;
3. provide help to edit and revise specialized texts in the native or a foreign language;
4. provide help to correct and mark specialized texts in the native or a foreign language;
5. provide help to understand specialized texts in the native or a foreign language.

Lexicographers may also design dictionaries to fulfil user needs in cognitive user situations and the relevant functions are referred to as *cognitive functions*. As these functions match types of user situation, dictionaries can have from one to many types of cognitive function. For example, specialized dictionaries can:

1. provide help to acquire general factual knowledge about a subject field in the native or a foreign culture;
2. provide help to acquire specific factual knowledge about a subject-field topic in the native or a foreign culture;
3. provide help to acquire general linguistic knowledge about the native or a foreign LSP;
4. provide help to acquire specific linguistic knowledge about the native or a foreign LSP.

Specialized dictionaries may be designed to satisfy a range of user needs. In numerical terms, the simplest dictionaries are those that have only one function, for instance to provide help to understand, i.e. read, LSP texts in a foreign language, or to provide help to produce specialized texts in a native language. *A Dictionary of Modern Legal Usage* is a dictionary whose function is to help users with legal usage in English. Dictionaries with only one function are called *monofunctional*. At the

other extreme, we find *polyfunctional dictionaries*, which are specialized dictionaries that have been designed to satisfy several types of user need arising from several types of user situation. Examples include dictionaries whose functions encompass one or more communicative functions as well as one or more cognitive functions; *Regnskabsordbogen Engelsk-Dansk* is an English-Danish accounting dictionary whose functions are to provide help when reading accounting texts, when translating accounting texts, when producing accounting texts, when editing and revising accounting texts, and when acquiring knowledge about accounting matters.

Lexicographers should carefully consider the number of functions their planned dictionaries are going to have. All other things being equal, the more functions dictionaries have the more difficult it will be for lexicographers to prepare high-quality products that satisfy all selected user needs to the necessary extent. However, different types of dictionary function that share many elements are relatively easy to combine in one and the same dictionary. By way of illustration, lexicographers can relatively easily prepare dictionaries that help users understand LSP texts within a particular subject field as well as help users acquire general knowledge about that subject field; similarly, the functions to provide help to write LSP texts in a foreign language and to provide help to translate LSP texts into the same foreign language may be combined in the same dictionary without much difficulty. In some cases, lexicographers may have to give more weight to one function at the expense of others, so that their dictionaries have one (or perhaps more) primary functions and one or more secondary, tertiary etc. functions.

6 Selection and presentation of data

Dictionaries only function if they contain the appropriate data. These data realise the potential of dictionaries as they help users by satisfying their needs for knowledge. Most people use the terms *data* and *information* synonymously; and in many instances, it is unnecessary to differentiate between the two. Nevertheless, when lexicographical practitioners and theorists analyse, describe, examine, make and use specialized dictionaries, it is important to distinguish between them. Wiegand (2000: 22–25) and Nielsen (2008: 175–176) argue that dictionaries do not contain information but data; and users can convert these data into information through a mental process thereby satisfying their needs for help in a given situation. In other words, data do not become information until processed by the human brain on the basis of knowledge, competence and experience, which accounts for the fact that two people may interpret the same data differently. This means that the fourth key component of LSP lexicography is *lexicographical data*: types of data selected for inclusion in dictionaries because they help to fulfil lexicographical functions. Three aspects are specifically relevant to LSP lexicography and data in specialized dictionaries.

6.1 Selection of data

Users have access to all data in printed and electronic dictionaries. However, some data are easier to find than others because users have direct access to them through the search options available, e.g. lemmas. *Lemma* is the lexicographical term used to describe what is often called entry word and headword. The lemma is a representation of the linguistic sign to which selected types of data are associated and addressed, e.g. definitions or translation equivalents, and many lemmas are not words in the sense that they are representations of concepts, ideas, objects or actions. Lemmas are finite strings of graphemes and can be single-word units, compound words, multi-word units, parts of words, abbreviations, consist of numbers, or be a combination of letters and numbers, as illustrated by the following list of lemmas from *Dictionary of Publishing and Printing*:

> **abstracting and indexing**; **AV**; **B2B**; **drilled and strong**; **-fed**; **height to paper**; **keyword out of context**; **.rtf**; **semi-**

Users have direct access to lemmas in printed and electronic dictionaries. In addition, users of electronic dictionaries may have direct access to other data units, e.g. collocations and phrases, if dictionaries allow users to search directly for these types of data, thereby leapfrogging lemmas. Many online dictionaries allow users to type strings of graphemes into search boxes and indicate that the searches are for graphemic strings "beginning with", "ending with" or "containing" the strings typed. It is important that lexicographers have a clear plan for which types of data to include in their dictionaries and the search options available to users (see 6.3.). No matter which data types they incorporate in their specialized dictionaries, lexicographers should base their selection on appropriate text corpora.

A thorough plan for selecting the texts that make up LSP text corpora is necessary. Corpora contain texts from one or several subject fields but each field should be treated separately. Compiling optimal text corpora for specialized dictionaries is a three-stage process. Lexicographers first delimit an individual subject field as against other subject fields, so that they have a systematic classification that clearly shows the boundaries of the subject field in question. This external subject classification will ensure that corpora only contain texts that are relevant for the subject-field(s) in question. Secondly, lexicographers prepare an internal subject classification for each subject field, which provides a systematic representation of the basic building blocks of the subject field and shows how it is structured. The last stage involves a classification of the terms found in the subject field, and this terminological classification ensures that all terms are found and included in the dictionary. If more than one culture is involved, lexicographers have to go through this three-stage process for each subject field in both or all cultures, because LSP text corpora are the basis for selecting source-language units as well as target-language units. Moreover, some dictionary functions make it necessary to compare the structure of a subject field in

two cultures and describe similarities and differences, and lexicographers can easily do this if they have made the external, internal and terminological classifications.

Text corpora can be used as the basis for the selection of lemmas, collocations, phrases, synonyms, antonyms and examples. The principle for the actual selection is that specialized dictionaries need to contain all those data that are required for fulfilling the relevant dictionary functions. Laurén (1993: 99–100) investigates the occurrence of terms in selected subject fields and shows that terms make up less than 20 percent of LSP texts. Consequently, traditional specialized dictionaries with focus on terms and terminological equivalence only provide help in connection with a small part of LSP texts and knowledge acquisition no matter which user situation is involved. Lexicographers therefore need to look closer at the extra-lexicographical user situations and user competences (see 3. and 4.) in an attempt to identify the needs specialized dictionaries must fulfil. This will invariably lead lexicographers to include in their selection data units other than nouns (i.e. the usual terms), and they should carefully consider whether, and to what extent, verbs, adjectives, adverbs, prepositions, phrasal verbs, abbreviations, prefixes, infixes, suffixes, collocations and phrases should be selected.

Many scholars have discussed the principles for selecting LSP terms and other data. For instance, Suonuuti (1997: 28–29) advocates the use of strictly terminological principles that will select purely technical terms and to a limited extent semi-technical terms, basically to record and document technical vocabulary. However, these are not lexicographical functions, though terminological products may provide help in actual user situations. In contrast, LSP lexicography is concerned with utility products that provide help in specific types of user situation and the traditional terminological solutions satisfy relatively few user needs arising from communicative acts and give only limited help with LSP usage.

As early as the mid-1990s, LSP lexicographers realised that the traditional terminological principles were insufficient. For example, Bergenholtz and Tarp (1995: 103) propose adding another criterion for selection: purely technical terms, semi-technical terms and general vocabulary as found in the text corpora. This principle allows lexicographers to take user needs and dictionary functions as the point of departure and then select the data that are needed to provide the necessary help, as discussed by Nielsen (2015a) for legal terms. This option appears to be the one best suited for LSP lexicography, as it will ensure that all data types that provide help in specific types of user situation are likely to be selected.

No matter which principle they adopt, lexicographers may base their selection on frequency of occurrence: they will select all those data units that occur with a specific minimum frequency in the text corpora. However, frequency counts do not guarantee that all relevant terms will be selected as text corpora have terminological lacunae. Secondly, units whose occurrence falls below the threshold figure are likely to be relevant for fulfilling specific lexicographical functions, but they will be excluded under this approach. Consequently, frequency counts cannot stand alone but may serve as

a basis for further work in the selection process, nor do frequency counts take user needs, user situations and dictionary functions into account. Finally, frequency counts do not catch all elements of LSP, because LSP covers terms, collocations, phrases, syntactic structures and textual conventions in a number of LSP text genres in one or more languages (see 6.2.). Having selected the different types of data as appropriate for a specific dictionary, lexicographers face the task of matching the data to its functions.

6.2 Data for communicative and cognitive functions

Well-crafted specialized dictionaries contain data that have been selected because they support specific lexicographical functions. Some data types support several functions whereas others support only one, and the task of LSP lexicographers is to select those data types that match user competences, situations and needs. It is beyond the scope of this contribution to examine all aspects involved so the discussion below will focus on selected examples of fundamental considerations that comply with the objective of modern LSP lexicography.

The asymmetry of user competences means that specialized dictionaries have to contain several types of data. Some authors emphasize the number of concepts explained in their dictionaries (Kaalep and Mikk 2008: 382–383), but the explanation of concepts do not always give users the necessary help. Lexicographers should attempt to match lexicographical functions and lexicographical data as appropriate and this requires data on more than concepts. One of the most comprehensive discussions of data types in specialized dictionaries is found in Bergenholtz and Tarp (1995: 22–28) and shows that LSP lexicography is concerned with satisfying user needs. Partly based on Bergenholtz and Tarp (1995), the following list gives an indication of data types lexicographers should consider including in their dictionaries, taking proper account of user competences and needs:

(1) For native-language production, users typically need data on: orthography; gender; pronunciation; grammatical irregularity; definition; collocations; phrases; usage.
(2) For understanding native-language texts, users typically need data on: word class; gender; pronunciation; grammatical irregularity; definition; collocations; phrases; synonyms; antonyms.
(3) For foreign-language production, users typically need data on: orthography; gender; pronunciation; derivation; syntax; grammatical irregularity; definition; translation equivalent; translation of collocations; translation of phrases; pragmatic and cultural restrictions.
(4) For understanding foreign-language texts, users typically need data on: word class; gender; pronunciation; grammatical irregularity; definition; translation equivalent; translation of collocations; translation of phrases; synonyms; antonyms.

(5) For translation into a foreign language, users typically need data on the native-language on: word class; gender; pronunciation; grammatical irregularity; definition. On the foreign language: orthography; gender; pronunciation; grammatical irregularity; translation equivalent; degree of equivalence; translation of collocations; translation of phrases; pragmatic and cultural restrictions.

(6) For translation from a foreign language, users typically need data on the foreign language on: word class; gender; pronunciation; grammatical irregularity; definition; collocations, phrases. On the native language: orthography; gender; pronunciation; grammatical irregularity; translation equivalent; degree of equivalence; translation of collocations; translation of phrases; pragmatic and cultural restrictions.

(7) For knowledge acquisition about native LSP, users typically need data on: orthography; grammar; syntax; derivation; definition; usage.

(8) For knowledge acquisition about foreign LSP, users typically need data on: orthography; grammar; syntax; derivation; definition; usage; data contrasting native and foreign LSP.

(9) For knowledge acquisition about a subject field, users typically need data on: structure of subject field; definition of concepts; conceptual relationships.

(10) For knowledge acquisition about a foreign subject field, users typically need data on: structure of subject field; definition of concepts; conceptual relationships; data contrasting structure of native and foreign subject field.

A few comments to this list are appropriate. First, definitions are generally regarded as central elements in specialized dictionaries as they support several functions. For example, definitions help users with problems understanding texts in their native or a foreign language; definitions help users to find the correct terms for text production in their native or a foreign language; definitions help users make correct translations of terms into or from a foreign language; definitions help users acquire knowledge about general or specific matters within a subject field. However, as pointed out by Harris and Hutton (2007: 49), "The notion of a definition adequate to all occasions and all demands is a semantic *ignis fatuus*." The implication is that different definitions are required for different users and functions.

Some lexicographical and terminological scholars distinguish between semantic and encyclopaedic definitions (Fuertes-Olivera and Arribas-Baño 2008: 48–68), but this distinction focuses on the types of linguistic data and not the needs and competences of dictionary users. In general, dictionaries contain *lexicographical definitions*, which are strings of data in dictionaries that explain the meanings of lemmas and to which lemmas are clearly associated. Sager (1990: 49) and Bergenholtz and Kaufmann (1997: 115–116) show that the best lexicographical definitions take the factual and linguistic competences of users into consideration because distinctive types of users have different levels of understanding. Consequently, dictionaries

can provide different lexicographical definitions of the same "term". For example, a specific term may be defined one way in dictionaries designed to help experts understand LSP texts and defined in another way in dictionaries designed to help laypersons translate LSP texts into a foreign language (see 6.3.).

Secondly, concepts, words, phrases etc. in a native LSP may not have equivalents or direct equivalents in a foreign LSP and vice versa. However, users of specialized translation dictionaries require help to translate as much of the source texts as possible, so their dictionaries should at least suggest how to translate these culture-bound concepts etc. The following example from *Norwegian-English Law Dictionary* illustrates how this can be done:

> **Kreditormora** NO EQUIVALENT. SUGGESTED Delay in accepting performance.

LSP lexicography thus gives priority to the interests of users by meeting lexicographical needs in real-life user situations. This is possible by studying the relevant type of user situation, *in casu* translation, relate this to the asymmetry of user competences, provide data that satisfy the identified needs thereby realising the function of dictionaries.

Thirdly, translating LSP texts from or into a foreign language is a complex process. Schneider (1998: 297–329), Nielsen (2000), Biel (2008) and Nielsen (2010) show that LSP translation has four focal points: terms, syntactic structures, genre conventions and translation strategies. These findings indicate how specialized translation dictionaries can help users translate as many of the features of LSP texts as possible, including syntactic structures and genre conventions. The point is that each subject field has its own way of structuring texts belonging to different genres and sub-genres, for instance patent specifications, product descriptions, operating manuals, statutes and contracts. The use of clausal complementation, sentence structures, capital letters and suprasegmental features characterize each of these genres. Furthermore, as illustrated by Nielsen (2000), it is important that lexicographers explicitly indicate whether – and if so when – terms, words, collocations, phrases and textual conventions are translated according to source-language or target-language oriented strategies to prevent users from being led astray. Due to the lack of knowledge about these features of LSP texts in their native and a foreign language, users need their dictionaries to help them and at least suggest ways in which to deal with the elements in translations. This means that the above list of data in dictionaries for translating into and from a foreign language should be extended as follows:

(11) Data on syntactic structures in native and foreign LSP.
(12) Data on genre conventions in native and foreign LSP genres and sub-genres.
(13) Data on how to translate syntactic structures and genre conventions using a source-language oriented strategy.
(14) Data on how to translate syntactic structures and genre conventions using a target-language oriented strategy.

6.3 Distribution of lexicographical data

When they have selected the data types that satisfy user needs, lexicographers consider the best way to present the data. Generally, lexicographers have two options: they can place data inside or outside dictionary articles, and the lexicographical structure that determines the interplay between data is the distribution structure. Bergenholtz, Tarp and Wiegand (1999: 1778–1791), Nielsen (1999: 98–110) and Bergenholtz and Nielsen (2006: 288–298) discuss the distribution structure and its options. In addition to individual articles, wordlists may also contain synopsis articles, which give an overview of the relevant knowledge related to several individual articles and their lemmas. Furthermore, the distribution structure allows lexicographers to place data in subject-field components, i.e. separate dictionary components outside the wordlist containing systematically arranged data relating to the relevant subject field(s). The simplest distribution of data is where they are all placed in individual dictionary articles. Alternatively, some or all data may be placed in individual articles as well as in synopsis articles and subject-field components. Lexicographers generally have six distribution relationships to choose from:

(1) All data are placed in synopsis articles and/or subject-field components and all individual articles merely contain cross-references.
(2) The data in synopsis articles/subject-field components are all restatements of the data in individual articles.
(3) The data in synopsis articles/subject-field components are partly restatements of the data in individual articles.
(4) The data in synopsis articles/subject-field components complement the data in individual articles.
(5) The data in synopsis articles/subject-field components are restatements of all the data in individual articles plus new and supplementary data.
(6) The data in synopsis articles/subject-field components are partly restatements of some of the data in individual articles and partly new and supplementary data.

The distribution of data in particular dictionaries follows from a range of theoretical and practical decisions. Lexicographers may decide to present all data addressed to lemmas directly next to them and are then likely to place the data in individual articles. If they want to reduce the length of articles but still provide a systematic overview of subject fields, lexicographers may instead elect to use synopsis articles or subject-field components, or a combination thereof. If such a solution is chosen, users will often have to make at least two look-up acts, first an individual article followed by a cross-reference to a synopsis article or a subject-field component. This also applies if illustrations are not placed immediately next to the particular articles whose lemmas they are intended to illustrate. The decisive criterion should be to select the distribution of data that is best for the function(s) of a particular dictionary giving due consideration to user competences and needs. When they have decided

how lexicographical data are to be distributed, lexicographers need to address the way in which these data are to be presented.

6.4 Presentation of lexicographical data

The arrangement, planning and writing of individual articles, synopsis articles and subject-field components require careful consideration. As illustrated in Bergenholtz and Nielsen (2002: 11–15), lexicographers should balance their texts so they comply with user profiles, competences and needs; this also applies to the language in which the texts are written. Individual articles, synopsis articles and subject-field components should be written differently depending on whether the intended dictionary users are experts, semi-experts or laypersons in respect of subject areas, and beginners, intermediate or advanced users of LGP and LSP. Furthermore, subject-field components may be written in one or more languages, as the case may be; for example in two parallel texts, one in the users' native language and one in a foreign language. This may help users to understand, produce and translate texts as well as to acquire knowledge. The above considerations all emphasise the importance user competences, needs and situations play in LSP lexicography in contrast to the terminological approach advocated in, for example, Hoffmann et al. (1999: 2096–2254) and Kageura (2015: 57). These texts show that terminologists and terminographers tend to focus on experts and advanced language users as target groups for dictionaries, but in reality many, if not most, users of specialized dictionaries are not experts nor advanced LSP users.

Printed and electronic dictionaries often require lexicographers to select different solutions for presenting lexicographical data. However, the technical options available illustrate how it is possible to arrange, plan and write different texts for different user groups. Online dictionaries are based on databases, but databases are not dictionaries. Databases contain the data lexicographers have selected for their dictionaries and graphical user interfaces allow users to get access to the data in the database and allow lexicographers to present the data in ways specifically targeted to the competences and needs of users and the required dictionary functions. Electronic dictionaries allow users to select particular functions for specific groups of users. Laypersons who need help to understand popular articles or popularised books on, *inter alia*, gene technology may consult dictionaries to find out what the word 'gene' means. An electronic dictionary designed to help laypersons understand texts may provide the following definition:

> **gene**
>
> A gene is the basic unit of inheritance which is transmitted from parents to offspring.

This definition contains data that are easy to understand by laypersons. It is factually correct, includes no technical jargon and helps users to understand texts in which the

term ‘gene’ occurs. In contrast, experts and semi-experts have factual and linguistic competences that differ from those of laypersons and therefore, they have different needs. Semi-experts may have difficulty understanding highly scientific texts on gene technology and want to know what the term ‘gene’ actually means. They consult the same electronic dictionary as the laypersons and select a set-up for semi-experts who want help to understand texts and are presented with the following definition:

> **gene**
>
> A gene is a DNA sequence ending a mRNA (protein), tRNA or rRNA.

This definition differs significantly from that written for laypersons: it uses the correct technical terms, which makes the definition impossible for laypersons to understand. The factual and linguistic competences of intended user groups and their needs in different user situations directly affect dictionary functions and the ways in which lexicographical data should be presented. Moreover, a reasonable level of comprehension-related information costs does not hinge on definitions being short or long (Nielsen 2008, 181); in fact, the definitions belong to different text genres based on what readers of the texts require in the same type of user situation. Definitions may be supplemented by adding domain-specific data, for example directing them specifically to the subject field microbiology or to an economic context, as in the following definition from *Longman Business English Dictionary*:

> **gold** [...] a valuable soft metal used to make jewellery, coins etc, and formerly used in a system in which the value of the standard unit of a currency is equal to a fixed weight in gold of a particular quality

This definition is for users who have little or no factual competence, little or medium LGP and LSP language competence, and who consult the dictionary for help in contexts related to economics. Authors of specialized dictionaries designed to help users understand LSP texts thus have various options when deciding which data to include in definitions. Furthermore, dictionaries whose function is to help users acquire general or specific knowledge may consider other options. Lexicographical definitions in those dictionaries should at least answer the following questions about a particular lemma: (a) what is it? (b) what does it do? (c) how does it relate to other terms and concepts?

Definitions in dictionaries whose function is to produce or translate texts also help users in real-life situations, as illustrated by the following example:

> **gold**
>
> Gold is a valuable yellow metal used for making jewellery, decorative objects, coins etc, and has the atomic number 79, the atomic weight 196.967; its abbreviation is AU.
>
> → § 10

This definition is based on the needs and competences of laypersons and semi-experts, e.g. students and professional translators, as it tells users whether they have

found the right word for production or translation of LSP texts, and it is easy to understand by most user groups, taking their factual and linguistic competences into consideration. Moreover, it contains a cross-reference to a specific section in a systematic subject-field component in which users can find additional data that help them to acquire knowledge and certainty. Domain-specific data may be added as appropriate if the dictionary focuses on, for instance, geology, science, economics or arts and crafts. All these examples may be presentations of data from one and the same database, but the interface solution adopted allows the database to be used as different dictionaries, providing users with data that have been selected on the basis of user competences and needs in specific user situations.

Subject-field components are either integrated or non-integrated. They are integrated if individual articles in the wordlist contain explicit cross-references to the components and vice versa; the cross-reference structure establishes links between data in different components in order to meet user needs (Bergenholtz, Tarp and Wiegand 1999: 1777–1778; Nielsen 1999: 94). For instance, the articles in *Encyclopedic Dictionary on Gene Technology English-Spanish* contain cross-references to a systematic introduction to gene technology divided into numbered sections, where users find supplementary information and can see the overall structure of the subject field. This component primarily has cognitive functions for experts and secondarily provides help when reading, producing and translating texts dealing with gene technology. Non-integrated components are not linked to the wordlist by explicit cross-references. It follows from this that dictionaries with integrated components provide easier access to their lexicographical data through a presentation that is supported by lexicographical structures, whereas dictionaries with non-integrated components leave it to users to find related data for themselves more or less on a trial and error basis.

If lexicographers place the data on syntactic structures, genre conventions and translation strategies inside articles, users will find them in close proximity to the lemmas. One disadvantage is that the data types have to be incorporated in all articles in addition to other data types (e.g. morphological data, explanatory data, equivalents, collocations, phrases, synonyms and cross-references) resulting in data overload. In addition, lexicographers will have to incorporate identical syntactic, genre-related and translation-strategy data in many articles to satisfy user needs; articles become long and the data take up valuable space in printed dictionaries. Spatial constraints are generally not a problem in electronic dictionaries, but if articles or other search results take up more space than can be shown on a screen, important data may be overlooked. Nielsen (2014) argues that example sentences in LSP dictionaries can illustrate how source-language conventions and style may be transposed to a foreign language, for instance by using hover boxes. The fact that syntactic structures, genre conventions and translation strategies are used across subject fields and their LSPs allows lexicographers to treat them in a

general way. All three elements of translation apply universally because they do not depend on individual terms and words but on LSP usage. Accordingly, they are not related to specific lemmas per se but are inherent in any production and translation situation.

These types of data may be presented outside articles. Nielsen and Sørensen (1998: 143–144) propose that data on syntactic structures should be presented together in separate dictionary components. These components should explain and show examples of those typical syntactic structures that are used in a particular LSP in the source language and which are relevant for translation between the two languages concerned together with explicit examples of how users can translate those structures into the appropriate LSP in the target language. By adopting this solution, lexicographers ensure that the syntactic data are available to users no matter which lemma they are looking for. Furthermore, properly written and coherent texts showing users how to solve problems with complex syntactic structures that cannot be directly transferred to the target language meet the needs of laypersons, semi-experts and experts alike.

Data helping users translate genre conventions can also be presented in separate dictionary components. Nielsen (2000: 162–165) discusses how lexicographers can help users by explaining the possible solutions to problems of translating verbal and non-verbal genre conventions in one single and coherent text containing appropriate examples. For instance, a dictionary component can give explicit examples of typical LSP conventions in the source-language and target-language cultures and show how genre conventions can be translated into a foreign language depending on whether users adopt a source-language or a target-language oriented translation strategy. In addition, lexicographers should consider including illustrative examples of documents from particular genres in the source language and at least two examples of translations of each document showing the use of both translation strategies.

This detailed treatment of data types may be available in electronic form. Nielsen (2010) describes how dictionary components containing data on syntactic structures, genre conventions and translation strategies can be embedded in online dictionaries and on CD-ROM. However, printed dictionaries may also be accompanied by CD-ROMs that contain supplementary material, and this is where the separate components may be placed, a trend that can be observed in some printed specialized dictionaries such as *Longman Business English Dictionary* and *Oxford Business English Dictionary*. Lexicographers and publishers should consider extending this practice, as data contained in CD-ROMs or websites do not take up valuable space in printed books. Furthermore, specialized translation dictionaries may have separate components explaining the pragmatic functions of syntactic structures, showing examples of their translation. Whether this is feasible, and if so to what extent, must be determined on a case-by-case basis, but the number of subject fields involved plays an important part (see 7.).

7 Typology of specialized dictionaries

Specialized dictionaries can be categorized in various ways. For instance, Wiegand (1988: 762–778) and Felber and Schaeder (1998: 1730–1731) base their typologies on the content of encyclopaedic and semantic data in dictionaries: *Sachwörterbücher* contain data on non-linguistic aspects, *Sprachwörterbücher* on linguistic aspects, and *Allwörterbücher* on both linguistic and non-linguistic aspects relating to one or more subject fields. Some base their typologies on formal and structural categories (Andersen and Fuertes-Olivera 2009: 214–216), whereas others use the number of languages as a criterion and divide dictionaries into monolingual, bilingual and polylingual dictionaries. These typologies are hardly informative, because they merely say that dictionaries deal with one, two or more languages and that they contain various types of data. The typologies do not say how dictionaries can help users, in what situations they can help, or for whom they provide assistance. LSP lexicography has developed other typologies that are directly relevant from a theoretical as well as a practical point of view, i.e. typologies that comply with the object and objective of LSP lexicography.

Two typologies are particularly relevant for specialized dictionaries. Nielsen (1990: 132–135) introduces a distinction based on the number of subject fields. *Multi-field dictionaries* cover two or more subject fields and a dictionary of science and technology and a business dictionary are typical examples. In contrast, *single-field dictionaries* cover only one subject field, such as a dictionary of accounting and a dictionary of physics. Single-field dictionaries can be either *general-field dictionaries*, each covering a whole subject field such as a dictionary of law, or *sub-field dictionaries*, each covering one sub-field within a general field, for instance a dictionary of contract law. This typology is relevant for both makers and users of dictionaries because the number of subject fields impacts directly on the data to be selected and the help dictionaries can provide.

Multi-field dictionaries have three major characteristics. First, they contain a relatively large number of lemmas as they cover the terms and other data units from a range of subject fields, but relatively few from each field; for example *Chambers Dictionary of Science and Technology* contains approximately 52,000 lemmas from 42 subject fields. Secondly, multi-field dictionaries can help users in different user situations in domain-specific contexts involving many different subject areas. Finally, multi-field dictionaries generally give a superficial treatment of each subject field with the result that they do not give optimal help to users irrespective of user situation. It is very difficult for lexicographers to make multi-field dictionaries that give full help with, *inter alia*, LSP translation, because such dictionaries would have to provide help in respect of, among other things, technical terms, semi-technical terms, general vocabulary, derivation, grammatical irregularity, definitions, translation equivalents, degrees of equivalence, translation of collocations, translation of phrases, textual conventions in subject-bound genres and sub-genres, and translation strategies concerning more than one subject field. This means that single-field and general-field dictionaries can better provide the help users need.

General-field dictionaries have the potential for containing more lemmas than sub-field dictionaries. Consequently, their scope of use is larger than that of sub-field dictionaries as they cover entire subject areas. Nevertheless, sub-field dictionaries potentially treat the sub-fields concerned in more detail, at least in printed dictionaries; a sub-field can be covered more extensively and detailed than a general field in the same number of pages. Finally, sub-field dictionaries are excellent vehicles for providing help in any or all communicative and cognitive user situations because, unlike multi-field and general-field dictionaries for translation, they can contain more data that provide help in respect of technical terms, semi-technical terms, general vocabulary, derivation, grammatical irregularity, definitions, translation equivalents, degrees of equivalence, translation of collocations, translation of phrases, textual conventions in subject-bound genres and sub-genres, and translation strategies within one limited part of a subject field.

The other typology has three tiers and has the type of help dictionaries can provide in various user situations as its overriding characteristic. Bergenholtz and Kaufmann (1997: 98–101) propose a typology of specialized dictionaries that, on its top tier, is based on lexicographical functions (see 4. and 5.). They distinguish between three overall types: *communicative dictionaries*, which provide help in communicative user situations; *cognitive dictionaries*, which provide help in cognitive user situations; and mixed *communicative and cognitive dictionaries*, which provide help in both communicative and cognitive user situations. This typology is user-oriented as it says how dictionaries can help users and in which types of situation. The middle tier applies the typology described above and divides each of the overall dictionary types into sub-types: multi-field, single-field and sub-field dictionaries. Finally, the bottom tier is devoted to user competences and differentiates between dictionaries intended for experts, semi-experts and laypersons. This may be illustrated as follows:

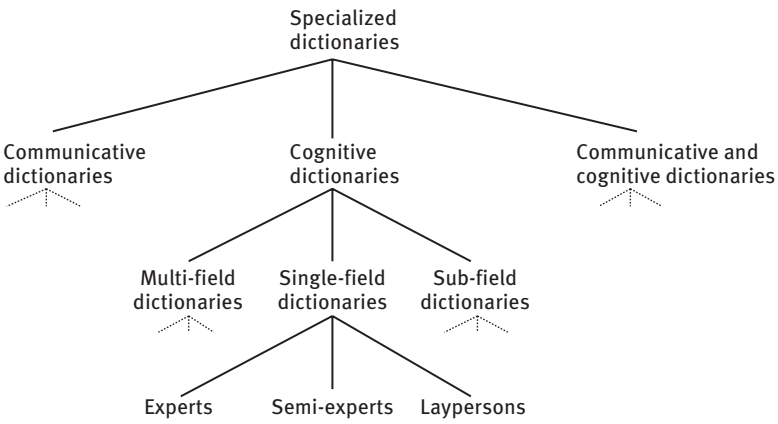


Figure 1: Typology of specialized dictionaries.

Finally, a typology that applies to general as well as specialized dictionaries is based on the number of lemmas and is particularly relevant for LSP lexicography. Nielsen (1990: 130–132) distinguishes between *maximising dictionaries*, which are designed to contain as much of the vocabulary from a subject field as possible, and *minimising dictionaries*, which are designed to contain a deliberately limited number of words etc. from a subject field. Nielsen (1990: 131) tentatively suggests that single-field dictionaries with more than 6,000 lemmas are maximising, though this is a rather crude threshold (see also Bergenholtz and Nielsen 2002: 9–10). Nonetheless, it is interesting to note that *Stedman's Medical Dictionary* contains approximately 100,000 lemmas from the field of medicine, whereas *Chambers Dictionary of Science and Technology* has, on average, 1,250 lemmas from each of its 42 subject fields. This indicates that multi-field dictionaries are in effect collections of minimising dictionaries, and that maximising specialized dictionaries can potentially give more help to users than minimising ones.

In conclusion, the object of LSP lexicography is the dictionary, more specifically a tool providing specific types of help concerning one or more subject fields and their related LSP to specific types of user in specific types of situation. The type of specialized dictionary that appears to provide the best help in most situations is the maximising sub-field dictionary, because it can contain the necessary lexicographical data, which are arranged and presented using appropriate lexicographical structures. Dictionary functions thus become the point of departure for any discussion of dictionaries and the data they contain must be specifically adapted to user needs and competences. User situations are extrinsic lexicographical phenomena in that they are not related to lexicography but arise in the extra-lexicographical environment, i.e. independent of dictionaries and lexicography; dictionary functions are intrinsic lexicographical phenomena as they are directly related to the help dictionaries are intended to give in various situations. This approach to LSP lexicography enables lexicographers to achieve its objective, i.e. to develop principles and guidelines that can help them design, evaluate, make and use "ideal" and specific types of objects in LSP lexicography.

References

Dictionaries

Collin, Peter. 2006. *Dictionary of Publishing and Printing*. 3rd edn. London: A & C Black.

Craig, Ronald L. 1999. *Stor norsk-engelsk juridisk ordbok/Norwegian-English Law Dictionary*. Oslo: Universitetsforlaget.

Garner, Bryan. 1995. *A Dictionary of Modern Legal Usage*. 2nd edn. New York/Oxford: Oxford University Press.

Kaufmann, Uwe and Henning Bergenholtz in cooperation with B. Stumman, S. Tarp, L. de la Rosa Marabet, N. la Serna Torres and G. la Serna Miranda. 1998. *Encyclopedic Dictionary on Gene*

Technology. English-Spanish. Diccionario Enciclopédico de Ingeniería-Gentética Español-Inglés. Toronto: Lugus.
Lackie, John (ed.). 2007. *Chambers Dictionary of Science and Technology*. Edinburgh: Chambers.
Mazoyer, Marcel assisté de Michel Aubineau, Alain Bermond, Jaques Bouger, Bertrand Ney and Jean Roger-Estrade. 2002. *Larousse Agricole. Le monde paysan au XXI^e siècle*. Paris: Larousse/VUEF.
Nielsen, Sandro, Lise Mourier and Henning Bergenholtz. 2007. *Regnskabsordbogen Engelsk-Dansk* [Accounting Dictionary. English-Danish]. Copenhagen: Thomson.
Parkinson, Dilys (ed.). 2008. *Oxford business English dictionary: for learners of English*. Oxford: Oxford University Press.
Pugh, Maureen Barlow (ed.). 2000. *Stedman's Medical Dictionary*. 27th edn. Philadelphia: Lippincott Williams and Wilkins.
Summers, Della (ed.). 2007. *Longman Business English Dictionary*. Harlow: Pearson and Longman.

Other literature

Andersen, Birger and Pedro A. Fuertes-Olivera. 2009. The Application of Functional Theory to the Classification of English Monolingual Business Dictionaries. *Lexicographica* 25. 213–239. https://doi.org/10.1515/lexi.2009.013 (accessed 16 April 2018).
Bergenholtz, Henning. 1996. Grundfragen der Fachlexikographie. In Martin Gellerstam, Jerker Järborg, Sven-Göran Malmgren, Kerstin Norén, Lena Rogström and Catarina Röjder Papmehl (eds.), *Proceedings I–II. Papers submitted to the 7th EURALEX International Congress on Lexicography in Göteborg*, 13–18 August, Sweden, 731–758. Göteborg: Göteborg University.
Bergenholtz, Henning and Uwe Kaufmann. 1997. Terminography and lexicography. A critical survey of dictionaries from a single specialized field. *Hermes* 18. 91–125.
Bergenholtz, Henning and Sandro Nielsen. 2002. Terms in the language of culture-dependent LSP dictionaries. *Lexicographica* 18. 5–18.
Bergenholtz, Henning and Sandro Nielsen. 2006. Subject-field components as integrated parts of LSP dictionaries. *Terminology* 12(2). 281–303. https://doi.org/10.1075/term.12.2.07ber (accessed 16 April 2018).
Bergenholtz, Henning and Sven Tarp (eds.). 1995. *Manual of Specialised Lexicography. The preparation of specialised dictionaries*. Amsterdam and Philadelphia: John Benjamins.
Bergenholtz, Henning, Sven Tarp and Herbert Ernst Wiegand. 1999. Datendistributionsstrukturen. Makro- und Mikrostrukturen in neueren Fachwörterbüchern. In Lothar Hoffmann, Hartwig Kalverkämper, Herbert Ernst Wiegand together with Christian Galinski and Werner Hüllen (eds.), *Fachsprachen. Ein internationales Handbuch zur Fachsprachenforschung und Terminologiewissenschaft/Languages for Special Purposes. An International Handbook of Special-Language and Terminology Research* (Vol. 2), 1762–1832. Berlin and New York: de Gruyter.
Biel, Łucja. 2008. Legal Terminology in Translation Practice: Dictionaries, Googling or Discussion Forums? *SKASE Journal of Translation and Interpretation* 3(1). 22–38. http://www.skase.sk/Volumes/JTI03/pdf_doc/BielLucja.pdf (accessed 16 April 2018).
Cabré, Maria Teresa. 1999. *Terminology: theory, methods and applications*. Amsterdam and Philadelphia: John Benjamins.
Felber, Helmut and Schaeder, Burkhard. 1998. Typologie der Fachwörterbücher. In Lothar Hoffmann, Hartwig Kalverkämper, Herbert Ernst Wiegand together with Christian Galinski and Werner Hüllen (eds.), *Fachsprachen: Ein internationales Handbuch zur Fachsprachenforschung und Terminologiewissenschaft/International Handbook of Special-Language and Terminology Research* (Vol. 2), 1725–1743. Berlin and New York: de Gruyter.

Fluck, Hans-Rüdiger. 1985. *Fachsprachen. Einführung und Bibliographie. Dritte, aktualisierte und erweiterte Auflage*. Tübingen: Francke.

Frawley, William. 1988. New Forms of Specialized Dictionaries. *International Journal of Lexicography* 1(3). 189–213. https://doi.org/10.1093/ijl/1.3.189 (accessed 16 April 2018).

Fuertes-Olivera, Pedro A. 2009. Systematic introductions in specialised dictionaries: Some proposals in relation to accounting dictionaries. In Sandro Nielsen and Sven Tarp (eds.), *Lexicography in the 21st Century. In honour of Henning Bergenholtz*, 161–178. Amsterdam and Philadelphia: John Benjamins. https://doi.org/10.1075/tlrp.12.13fue (accessed 16 April 2018).

Fuertes-Olivera, Pedro A. and Ascensión Arribas-Baño. 2008. *Pedagogical Specialised Lexicography*. Amsterdam and Philadelphia: John Benjamins. https://doi.org/10.1075/tlrp.11 (accessed 16 April 2018).

Fuertes-Olivera, Pedro A. and Sven Tarp. 2014. *Theory and Practice of Specialised Online Dictionaries: Lexicography versus Terminography* (Lexicographica. Series Maior 146). Berlin and Boston: de Gruyter.

Grix, Jonathan. 2010. *The Foundations of Research*. Basingstoke: Palgrave Macmillan.

Harris, Roy and Christopher Hutton. 2007. *Definition in Theory and Practice. Language, Lexicography and the Law*. London: Continuum.

Hoffmann, Lothar, Hartwig Kalverkämper and Herbert Ernst Wiegand together with Christian Galinski and Werner Hüllen (eds.). 1999. *Fachsprachen: Ein internationales Handbuch zur Fachsprachenforschung und Terminologiewissenschaft/International Handbook of Special-Language and Terminology Research* (Vol. 2). Berlin and New York: de Gruyter.

Kaalep, Heiki-Jaan and Jaan Mikk. 2008. Creating Specialised Dictionaries for Foreign Language Learners: A Case Study. *International Journal of Lexicography* 21(4). 369–394. https://doi.org/10.1093/ijl/ecn017 (accessed 16 April 2018).

Kageura, Kyo. 2015. Terminology and lexicography. In Hendrik J. Kockaert and Frieda Steuers (eds.), *Handbook of Terminology* (Vol. 1), 45–59. Amsterdam and Philadelphia: John Benjamins. https//doi.org/10.1075/hot.1.ter2 (accessed 16 April 2018).

Laurén, Christer. 1993. *Fackspråk. Form, innhåll, function* [Specialised Language. Form, content, function]. Lund: Studenterlitteratur.

Nielsen, Sandro. 1990. Contrastive Description of Dictionaries Covering LSP Communication. *Fachsprache/International Journal of LSP* (3–4). 129–136.

Nielsen, Sandro. 1994. *The Bilingual LSP Dictionary. Principles and Practice for Legal language* (Forum für Fachsprachen-Forschung 24). Tübingen: Gunter Narr.

Nielsen, Sandro. 1999. Mediostructures in Bilingual LSP Dictionaries. *Lexicographica* 15. 90–113.

Nielsen, Sandro. 2000. Translation Strategies for Culture-Specific Textual Conventions in Bilingual Dictionaries. *Lexicographica* 16. 152–168.

Nielsen, Sandro. 2008. The Effect of Lexicographical Information Costs on Dictionary Making and Use. *Lexikos* 18. 170–189. https://doi.org/10.1515/lexi.2009.013 (accessed 16 April 2018).

Nielsen, Sandro. 2010. Specialised Translation Dictionaries for Learners. In Pedro A. Fuertes-Olivera (ed.), *Specialised Dictionaries for Learners* 69–82 (Lexicographica. Series Maior 136). Berlin and New York: de Gruyter.

Nielsen, Sandro. 2014. Example Sentences in Bilingual Specialised Dictionaries Assisting Communication in a Foreign Language. *Lexikos* 24. 198–213. https://10.5788/24-1-1259 (accessed 16 April 2018).

Nielsen, Sandro. 2015a. Legal Terms in General Dictionaries of English: The Civil Procedure Mystery. *Lexikos* 25. 246–261. https://doi.org/10.5788/25-1-1298 (accessed 16 April 2018).

Nielsen, Sandro. 2015b. Bilingual Dictionaries for Communication in the Domain of Economics: Function-Based Translation Dictionaries. *Hermes – Journal of Language and Communication in Business* 54. 161–176. https://doi.org/10.7146/hjlcb.v27i54.22953 (accessed 16 April 2018).

Nielsen, Sandro and Lise Mourier. 2007. Design of a function-based internet accounting dictionary. In Henrik Gottlieb and Jens Erik Mogensen (eds.), *Dictionary Visions, Research and Practice*, 119–135. Amsterdam and Philadelphia: John Benjamins. https://doi.org/ 10.1075/tlrp.10.14nie (accessed 16 April 2018).

Nielsen, Sandro and Rita Sørensen. 1998. Juridiske oversættelsesordbøger [Legal Translation Dictionaries]. *LexicoNordica* 5. 129–148.

Sager, Juan C. 1990. *A Practical Course in Terminology Processing*. Amsterdam and Philadelphia: John Benjamins. https://doi.org/ 10.1075/z.44 (accessed 16 April 2018).

Schaeder, Burkhard and Henning Bergenholtz (eds.). 1994. *Fachlexikographie. Fachwissen und seine Repräsentation in Wörterbüchern* (Forum für Fachsprachen-Forschung 23). Tübingen: Gunter Narr.

Schneider, Franz. 1998. *Studien zur kontextuellen Fachlexikographie. Das deutsch-französische Wörterbuch der Rechnungslegung* (Lexicographica. Series Maior 83). Tübingen: Max Niemeyer.

Suonuuti, Heidi. 1997. *Guide to Terminology*. Helsinki: Tekniikan Sanastokeskus.

Tarp, Sven. 2000. Theoretical challenges to practical specialised lexicography. *Lexikos* 10. 189–208. https://doi.org/10.5788/10-0-894 (accessed 16 April 2018).

Tarp, Sven. 2001. The pedagogical dimension of the well-conceived specialized dictionary. *Ibérica* 10. 7–22.

Tarp, Sven. 2008. The third leg of two-legged lexicography. *Hermes* 40. 117–131.

Weber, Max. 1949. *The Methodology of the Social Sciences*. New York: Free Press.

Wiegand, Herbert Ernst. 1988. Was eigentlich ist Fachlexikographie? Mit Hinweisen zum Verhältnis von sprachlichem und enzyklopädischem Wissen. In Horst Haider Munske, Peter von Polenz, Oskar Reichmann, Rainer Hildebrandt (eds.), *Deutscher Wortschatz. Lexikologische Studien. Ludwig Erich Schmitt zum 80. Geburtstag von seinen Marburger Schülern*, 371–409. Berlin and New York: de Gruyter.

Wiegand, Herbert Ernst. 2000. Wissen, Wissensrepräsentation und Printwörterbücher. In Ulrich Heid, Stefan Evert, Egbert Lehmann and Christian Rohrer (eds.), *Proceedings of the Ninth Euralex International Congress, EURALEX 2000*, Stuttgart, Germany, 15–38. Institut für Maschinelle Sprachverarbeitung, Universität Stuttgart, 8–12 August 2000.

Merja Koskela and Suvi Isohella

5 Teaching LSP to technical communicators

Abstract: The purpose of this article is to provide a new perspective on how technical communication competencies can be supported by the basic ideas of LSP theories and LSP research in technical communication education. A multi-dimensional model of the linguistic variation of LSPs is developed and discussed. Based on the model, some examples for developing technical communication curricula are presented.

1 Introduction

The most important task for technical communicators is to "easily communicate highly technical content in an appropriate way to the intended audience" (Carliner 2012: 61). In this task, technical communication professionals need to have a thorough understanding of how specialized knowledge is typically delivered by verbal and visual language in different professional settings, of the linguistic variation that comes with different degrees of specialization as well as of the ways in which texts convey the norms, values and ideology of professional cultures (see Trosborg 2000: vii). In other words, technical communicators need to be aware of the basic theoretical ideas behind Language for Specific Purposes (LSP) and LSP research. In fact, it has been stated that the success of technical communication to a large extent depends on this kind of knowledge (Gnutzmann and Oldenburg 1991: 103).

Technical communication education strives at producing the knowledge and skills required by working life within the field, including language and communication skills. However, the task is challenging because technical communication – as a relatively young field – is and has always been rather heterogeneous. Technical communication is also in an increasing pace facing the challenges of globalized and networked economies (see, for example Coppola 2012: 4). Already in the 1990s, there was discussion of how the field of technical communication was characterized by shifting roles, evolution and change, diversity and integration (Staples and Ornatowski 1998: xii). However, these characterizations are still accurate. As Spilka (2010: 8–9) puts it, the work in technical communication "typically takes place in complex, multiple social environments" and "we now need to negotiate a complex, often global world of intersections and interrelationships, multiple goals and constraints, and new ways of creating, disseminating, storing, and retrieving information and of managing knowledge and content."

In order to meet the challenges put by the growing diversity and the evolving nature of working life, researchers, educators and practitioners of technical

Merja Koskela and Suvi Isohella, Vaasa (Finland)

https://doi.org/10.1515/9783110228014-005

communication have been defining and redefining the competencies required by technical communicators (see, for example, Rainey, Turner, and Dayton 2005; Whiteside 2003). By competencies they mean skills needed by technical communicators in their variable tasks. Discussing competencies is important for defining technical communication as a field in its own right, but it is also essential for the educators who need to plan and renew study programs that meet the needs of the field as it is today. For example, there seems to be a tendency in the United States that some study programs in technical communication that were previously called *technical communication* or *technical writing*, have changed their names to, for example, *information design* (Barnum and Redish 2011: 95–96). The latest contribution to the discussion of the skills needed by future technical communicators has been made by *tekom*, the European Association for Technical Communication which has developed a cross-industry Competence Framework for Technical Communication that "systematizes, defines and classifies qualifying competencies, knowledge and proficiencies for persons employed in technical communication through a classification schema ." The schema consists of seven areas of competence: 1) Context analysis, 2) Planning, 3) Concept development, 4) Content creation, 5) Media production, 6) Publication and distribution, and 7) Observation and information product. (tekom 2017).

In the ongoing discussions, the competencies are listed and categorized in various ways. For example, Isohella (2011) has grouped the most important skills for technical communicators into eight groups: personal characteristics, written and oral communication, user-oriented thinking and action, reflection and evaluation of oneself and others, group working and co-operation, technical understanding and skills, information gathering and problem solving (interviewing, combining different sources), and understanding of business environments. Comparably, the Society for Technical Communication (STC) has created a Foundation-level professional certification in technical communication that lists nine areas of professional certification in technical communication: project planning, project analysis, content development, organizational design, written communication, visual communication, reviewing and editing, content management, and production and delivery (Baehr 2016: 10; see also Carliner 2012: 61).

Comparing these examples reveals that the grounds for division are different as is the level of detail. However, according to our interpretation of earlier studies, irrespective of the type of categorization, language and communication competencies form the core, and they seem to prevail in the center of technical communicators' professional skills in spite of the growing heterogeneity of tasks. For example, Spilka (2010: 6) states that "most technical communicators work with information in an attempt to fulfill goals somehow related to writing, reading, and communication in general". Language and communication competencies as core competencies again seem to be supplemented with other types of knowledge, for example a general knowledge of other, often technical, domains. For some researchers, it is precisely the

combination of knowledge of communication and of one or more technical domains that differentiates technical communication profession from other professions (Hayhoe 2000: 151).

In spite of the wide agreement on the importance of language and communication competencies for technical communicators, these seem to be insufficiently addressed in the current descriptions of competencies (Carliner 2012: 61). Therefore, the aim of this article is to discuss how the competencies described above, and especially the ability to communicate specialized contents to different audiences, could be supported by introducing some of the basic ideas of LSP theories and LSP research to technical communication education. In the following sections, we will first reflect on how we understand the concept of 'teaching LSP' and then proceed to present a multi-dimensional model of the core components of the theories of LSP and the role of these components with respect to the work and competencies of technical communicators.

2 A narrow and a broad interpretation of teaching LSP

The title of our article refers to the concept of 'teaching LSP'. Before we discuss the contributions of the theories of LSP to technical communication, we need to define what we mean by teaching LSP. In line with earlier discussions (see Huckin 2003; Hyland 2002), we talk about a narrow and broad interpretation of the concept, but define them from our own perspective.

Huckin (2003: 5) uses the term *narrow angle LSP* by which he refers to the teaching of the linguistic features of one single field to a homogeneous group of students who represent the field in question. The narrow interpretation could also be called *teaching an LSP*, in which case the concept is both language-bound and limited to a specific subject field, e.g. teaching technical English for engineering students. The starting point is a natural language (often English) that the students master at least to some degree. For example, teaching technical English includes teaching the students what the central concept systems of technology look like, i.e. how technology sees the world; the central genres and discourses of technology, i.e. for what purposes and how experts communicate within the field of technology, and the typical sender-receiver constellations of communication of technology, i.e. who typically communicates with whom, why and how. This is the narrow interpretation focusing on one language and one field. This kind of instruction is often offered to future field specialists, according to Huckin (2003: 5), for example, to a group of future air-traffic controllers in Brazil.

In the case of the broad interpretation, our position differs markedly from that of Huckin (2003) and Hyland (2002). By what Huckin (2003: 6) calls *the wide angle LSP*, he refers to the teaching of general linguistic skills that underlie the more specific features of LSP. Nevertheless, when discussing the role of LSP research for the teaching

of LSP, Huckin (2003: 13) points out that LSP research benefits teaching most by providing general strategies to guide the teacher's and the student's work. In our broad interpretation of teaching LSP, we focus precisely on such general strategies produced by research. In our view, the broad interpretation of teaching LSP is not limited to any language or a specific subject field. According to this interpretation, the purpose of teaching LSP is to add to the understanding of the basic mechanisms functioning behind the differences between subject fields, how these come about and what they lead to with respect to language and communication. Thus, firstly, according to the broad interpretation, the students should learn what kind of variation there is in the conceptual structures of specialized fields and how these are related to thinking patterns and communication within the field in question. This understanding also requires acquiring tools for analyzing and mastering such differences (e.g. concept analysis). Secondly, the students should learn that there are conventions for communicating specific types of contents in field-specific ways, what kind of variation of language use this leads to, what guides it and how it is reflected in communication. Even this type of understanding needs its supporting tools (e.g. genre analysis). Third and finally, the students should learn that different types of audiences require different types of messages. The tools for this type of analysis include the very basic understanding of the communication situation: who is communicating to whom with what purpose, and what this leads to in professional contexts (e.g. rhetorical analysis). By choosing this approach we are not taking out the specific purposes of LSP and ending up with language only (cf. Kastberg 2010: 61). Rather, we are offering the students analytical tools to better cope with the specific purposes in different contexts. Additionally, as Huckin (2003: 17) points out, it often is the students who bring in the specificity by applying the analytical ideas to their own particular contexts and specialized fields.

In this article we will focus on the broad interpretation of teaching LSP because it is not language bound, and it can therefore be applied to education offered on any language or to multilingual education. In addition, the broad interpretation contributes best to the requirements of future technical communicators working in highly diverse and changing environments. Working in such environments requires a firm theoretical ground that assists technical communicators in mastering constant change. According to previous research, the work of technical communicators requires co-operating and communicating with experts from many different fields (Spilka 2010: 4–5). In other words, technical communicators can seldom concentrate on one subject field only. In addition, students of technical communication can end up in various types of work (Isohella 2011; Zimmerman and Long 1993). Irrespective of their future career and the languages they have studied, the students benefit from the type of general theoretical knowledge offered by theories of LSP. In the following section we will address the topic of teaching LSP to technical communicators by describing more closely the contributions of the theories of LSP to technical communication from a competence point of view.

3 Contributions of the theories of LSP to technical communication

Teaching LSP to technical communicators differs from teaching LSP to future experts of certain restricted fields, e.g. electrical engineers or accountants. The future technical communication professionals need to master the special features of more than one subject field: in their future work they may well be working with texts of health care or texts of mining or any other specialty that might not even exist today but be important in the society tomorrow.

Laurén (1991: 11) describes the theoretical ideas behind LSP research by means of a three-dimensional cube that he has modified on the basis of the functional and structural linguistic theory of the Prague School as presented by Havránek. The basic idea with the cube is that LSPs represent language variation, and that variation can be caused by different factors separately and simultaneously. Of the three dimensions, one describes the differentiation into specialist areas or fields, another stands for the purpose of use or the function and the third one indicates the social aspect of language use, the intended reader/listener. Based on Laurén´s discussion, we propose a multi-dimensional model of the core components of the theories of LSP and divide the factors behind linguistic variation of LSPs as follows: the ontological-epistemic variation depending on the field, the functional variation depending of the purpose of language use, and the social variation depending on who one is communicating with (Figure 1). In our opinion, the mechanisms steering all these types of variation form a core component when teaching LSP to technical communicators.

Figure 1 shows our interpretation of the variations of LSP and their manifestations in technical communication. In the present article we will approach each of

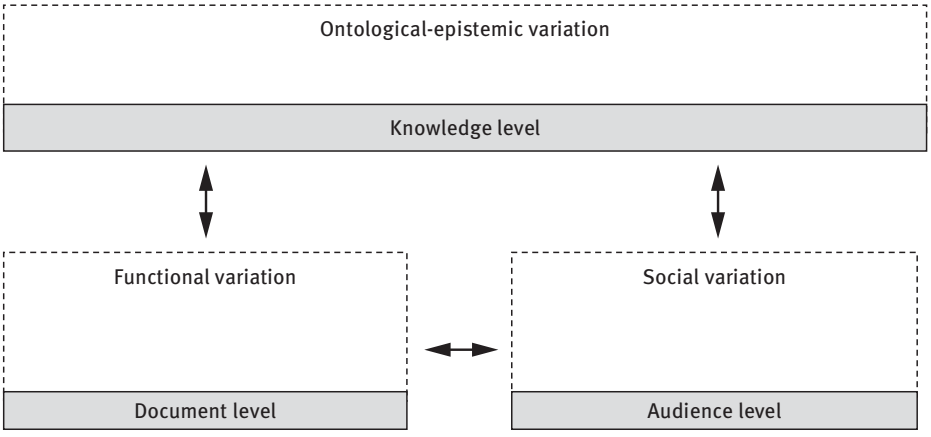


Figure 1: A multi-dimensional model of the variations of LSP and their manifestations in technical communication.

these variations as levels of their own from a technical communication point of view. We will refer to ontological-epistemic variation as knowledge level variation, to functional variation as a document level variation, and social variation as an audience level variation. In reality, the levels stand in complex relationships and in close interplay with each other, which is indicated by the two-way arrows in Figure 1, and they can only be separated for analytical purposes.

In the following sections we will approach 'teaching LSP to technical communicators' by relating chosen theoretical contributions of LSP research to relevant definitions of technical communication and to essential technical communication competencies. By doing so, we want to provide a new theoretically based framework for planning, developing and evaluating technical communication education.

3.1 The ontological-epistemic variation and its manifestations in technical communication at the knowledge level

The basic assumption behind the ontological-epistemic variation of LSPs is that the knowledge structures of different disciplines and areas of expertise are reflected in the language use within the field. Because technical communication typically concerns technical knowledge of different types, we have decided to refer to the ontological-epistemic variation as *knowledge level* variation.

The ontological-epistemic variation between fields of science has been theorized in various ways in LSP research. For example Picht (1995: 41–43) introduces a model based on Heisenberg's thoughts of the interconnection between fields of science. The model is a continuum running from hard sciences on the left to soft sciences on the right. The hard sciences stand for exact knowledge which gradually becomes more inexact as the continuum reaches social sciences and humanities. Picht (1995: 43) claims that this type of differentiation between fields, as well as the ontological and epistemic conditions of each field, affects the specialized communication and language use in a systematic way. For example, exact knowledge could be reflected in well-defined concept systems and a systematically used terminology.

Technical and professional communication can be defined as "communication about complex, highly detailed problems, issues, or subjects in the professional world, which helps audiences visualize and understand information so that they can make informed and ethical decisions or take appropriate and safe actions." (Dobrin, Keller, and Weisser 2010: 4.) *Complex and highly detailed* is in technical communication literature often referred as *technical* (see, for example Carliner 2010: 61), and therefore, the knowledge that needs to be communicated mostly concerns issues or subjects belonging to the hard sciences in Picht´s model. As illustrated by the model, this type of knowledge tends to be exact, and it is expected that the knowledge should also be represented accordingly so that the audiences based on it will be able to make their decisions and take action. However, the audiences of technical documents tend

to encompass every part of the continuum from hard sciences to soft sciences, which is why technical communicators need to understand what kind of knowledge it is they are communicating to which type of audience.

The importance of understanding the mechanisms behind the ontological-epistemic variation is highlighted by the symbolic-analytic character of the work of technical communicators. By symbolic-analytic work Dicks (2010: 54) means analyzing, synthesizing, combining, rearranging, developing, designing, and delivering information to specific audiences for specific purposes. Instead of providing support for physical, industrial products (Johnson-Eilola 1996: 246), technical communicators as symbolic-analytic workers often "deliver the same information that they or others will then modify for multiple audiences and for presentation in multiple media and formats" (about symbolic-analytic workers, see Dicks 2010: 54). In order to efficiently deliver and modify information – or to *create* and *manipulate* it, as Dicks (2010: 55) puts it –, technical communicators need knowledge based on which they can apply the technologies and methodologies required.

For a technical communicator, the understanding of the knowledge level variation is actualized in several competencies. Especially when it comes to collaboration skills, i.e. the ability to collaborate with subject-matter experts and with co-workers (Rainey, Turner, and Dayton 2005), this kind of understanding plays a central role for professional success. Technical communicators often work collaboratively in teams "with widely diverse knowledge and skill sets" (Dicks 2010: 55). They "often must work with scientists, doctors, product developers, graphic artists, human factors specialists, customer support personnel, subject-matter experts, information architects, product and system testers, editors, and those in many other disciplines. (Dicks 2010: 55.)" In these situations a technical communicator is required to use different language with different people and have different goals in communicating adequately with each party. Understanding the mechanisms behind perceived differences makes it easier for the technical communicators to develop their collaboration skills and adapt their knowledge to new environments. In other words, a thorough understanding of knowledge level variation can be an asset in multidisciplinary communication; especially when specialized knowledge from one subject field needs to be communicated to an audience representing another field or to an audience of non-experts or novices. (See also Koskela and Pilke 2016: 252.)

To sum up, understanding the ontological-epistemic variation of LSP helps technical communicators in recognizing the types of language variation caused by different specializations. Technical communicators need to be aware of different ways of thinking and they need to be able to cope with situations when different (world) views meet. Therefore, it would be useful to include the theoretical idea of the ontological-epistemic variation as knowledge level variation in technical communication curriculum. Many technical communication curriculums already do this by having practicing professionals as teachers, each teaching a course in his or her area of professional expertise. In this case, however, the students should not be left alone coping

with the perceived differences, but they should be offered opportunities for analyzing them and understanding them more deeply. Another way of introducing experiences of knowledge level variation to students is implementing practical training periods in different fields in the curriculum, which also requires analysis afterwards. The perhaps most comprehensive way of including the idea of knowledge level variation to the curriculum is by cross-disciplinary curriculum design. For example, the Technical Communication Master´s programme at the University of Vaasa, Finland, has since the year 1996 combined communication studies (i.e. applied linguistics and digital communication) with computer science. The benefit of such design is that it offers the students ongoing possibilities of reflecting on the similarities and differences of the fields that they come across during their studies.

3.2 The functional variation and its manifestations in technical communication at the document level

The functional variation of LSP emphasizes the purpose of language use: what is being communicated and how. From the technical communication perspective, functional variation is strongly reflected in technical communication products, for example in technical documents such as user instructions. Therefore, we refer to the functional variation as *document level* variation, although functional variation naturally has other dimensions as well. Restricting functional variation for analytical reasons to document level can be motivated by the fact that technical communicators' work is often defined from the product perspective (Isohella 2011: 30). For example, it is stated that technical communication takes place when technical communicators produce *documentation*, write *documents etc.* (see, for example Albers 2005). In this context, a document can be understood as any form of meaning-making, as a text, a picture, a video etc.

The functional variation of LSP is closely related to the social variation of LSP, which concentrates on why and with whom one is communicating (see 3.3).In technical communication it is also evident that the functional (what) and the social (who) are intertwined. As Markel (2012: 4) puts it, technical communication can be viewed in two ways: "as the process of making and sharing information and ideas – and as a set of applications – the documents" technical communicators create. In a similar vein, the functional variation and the social variation of language have often been combined in theories of LSP. For example, in his seminal model of cumulative text analysis, Hoffmann (1985) distinguishes between *a horizontal stratification* (=the ontological-epistemic variation) and *vertical stratification of special language* (=functional and social variation*)*. The vertical stratification is mainly based on the degree of abstraction, the theoretical level required, but also on setting, linguistic form and participants of communication (Hoffmann 1985: 84). Hoffmann (1985) distinguishes five degrees of abstraction from the highest to a very low level, each

assigned to an ideal setting, e.g. theoretical, experimental or material. (Hoffmann 1985). Fundamentally, Hoffmann's model is text-based, which was typical of text-linguistics in the 1980's, and the model is designed to capture all properties of LSP texts on all levels. That is why it encompasses both form and function.

Basically, the same is true for the most influential models of LSP genre analysis that have been presented by Swales (1990) and Bhatia (e.g. 2004). Even in these models the functional and social levels are intertwined. What is new in these models, however, is that they are less text-based than Hoffmann's model and strive to integrate both text-internal and text-external aspects of language use. Bhatia (2004) proposes a multidimensional framework that can be used in different contexts to analyze genres. Bhatia's framework encompasses four perspectives: a textual perspective, an ethnographic perspective, a socio-cognitive perspective and a socio-critical perspective (Bhatia 2004: 163). Of the four perspectives, the textual perspective is oriented to linguistic analysis. This perspective includes the analysis of the statistical significance of lexico-grammar, textual corpora, textualization of lexico-grammatical resources, discourse/rhetorical or cognitive structures, intertextuality and interdiscursivity, and generic conventions and practices (Bhatia 2004: 163–165).

There is no doubt that being able to carry out linguistic analysis of this kind benefits technical communicators, because their work to a high degree still consists of writing and editing (see, for example Meloncon 2009: 143). As the discussions of core competencies of technical communication have shown, written and oral communication are among the most important competencies required of technical communicators, and at the document level these culminate in the ability to produce high quality documents (Rainey, Turner, and Dayton 2005). The textual perspective proposed by Bhatia could benefit the document level because it focuses on existing documents: on what kinds of conventions exist for field-specific contents and what kind of variation of language use it leads to. A thorough analysis of documents helps technical communicators to edit, improve and modify them for specific purposes. In technical communication curriculum this could be done, for example, by exercises where students analyze various types of documents or it could be included in language courses on different languages.

Even though it is essential that technical communicators master the linguistic and textual features of selected types of texts, at the same time they must be able to do more than just that (Luzón 2005: 292). The work of technical communicators has more and more shifted from writing an original text or document from the beginning to the end to editing, improving, modifying and managing knowledge. As Burnett (2005: 9) states, genres are used and reproduced as part of technical professionals´ regular work. Consequently, analyzing genres is – or should be – one of the main competencies of technical communicators. The ability to analyze lexico-grammatical features helps the technical communicators meet the demands of their work at document level, and help them meet the variable discursive realities of their work environment. Therefore, the basic skills of linguistic analysis in different languages

should not be forgotten in technical communication curricula, even though the tendency in LSP genre analysis has for some time now been towards larger and more complex objects of study, represented by the three other perspectives than the textual in Bhatia's model. The role of genre analysis in technical communication has been discussed earlier in some detail in an article by Luzón (2005), which is recommended reading for those designing curricula for future technical communicators. We will return to Luzón's article in the next section that concerns the social variation and the audience level.

3.3 The social variation and its manifestations in technical communication at the audience level

The social variation of LSP concentrates on who is communicating to whom with what purpose. It provides a framework for understanding the situation and context where language is used and especially highlights the role of the audience. In LSP research there are many models that strive to account for the social variation of language. For example, in connection with translation, Göpferich (1995: 124) suggests a pragmatic text typology for science and technology based on parameters of the interactional setting. In addition, focusing on the relation between senders and receivers and their levels of expertise, Engberg (2006) differentiates between scientific discourse as expert-to-expert-communication, practically oriented discourse as expert-to-expert-communication and finally discourse of popular science and teaching as expert-novice-communication. As illustrated by the models mentioned above, the variant communicative needs of different situations have for a long time been a central concern of the theory of LSP.

Bhatia's multidimensional framework continues this work by refining the situational/contextual analysis. At audience level, Bhatia's framework includes defining the speaker or writer of the text, the audience, their relationship and their goals (Bhatia 2004: 164). This kind of analysis is important for technical communicators because they must be aware of their audiences and of the needs of the audiences (see, for example Dobrin, Keller, and Weisser 2010: 9). The audiences "determine many factors in the document, including the genre, style, level of formality, level of detail, format, design, and length" (Dobrin, Keller, and Weisser 2010: 10) and therefore, from the social variation point of view, in technical communication the audience level is essential. According to Markel (2012: 85), "audience and purpose determine everything" about how one communicates on the job.

At audience level, the most central competencies required of technical communicators consist of user-oriented thinking and action. These include the ability to analyze user´s needs and the ability to write clearly for specific audiences by clearly defined purposes (Rainey, Turner, and Dayton 2005). Audience analysis has a long tradition in technical communication and a lot of research has been conducted on

it. For example Blakeslee (2010: 200) studied how technical communicators research and think about audiences while working on digital projects. She found out that in digital environments, "writers are continuing to view audiences in very particular ways" and to "rely on a framework of problem solving and contextualization to analyze and address their digital audiences".

Understanding the social variation of LSP could help technical communicators in becoming more aware of "the historical, socio-cultural, philosophic and/or occupational placement of the community in which the discourse takes place" (Bhatia 2004: 164). This kind of analysis could, for example, supplement the audience analysis in the technical communication curriculum.

Beside audience analysis, rhetorical analysis is another tool often referred to in technical communication curricula (Bekins and Williams 2006). In his article on genre analysis in technical communication, Luzón (2005: 292) combines rhetorical analysis closely with genre theory when he states that technical communication students should practice using language in real rhetorical situations in order to learn rhetorical skills and genres of a chosen discipline. There is no doubt that such practice would be very useful for future technical communication professionals. However, rhetorical analysis is not only about practice, but also about theory (see Miller [1989] 2003). Therefore, the same applies for students practicing in real rhetorical situations as for expert teachers and work-practice mentioned above: in order for them to be effective tools in education, the students' experiences need to be analyzed carefully afterwards on a theoretical basis together with technical communication teachers. For such an analysis, the theories of LSP offer a firm ground.

4 Discussion and conclusions

In this article, we have proposed a new theoretically based framework for planning, developing and evaluating technical communication education by combining it with some of the basic aspects of the theories of LSP. In doing so, we have illustrated the value of theories of LSP for the education of future technical communication professionals. We have provided examples for the curriculum and related our ideas to definitions of technical communication and to discussions of competencies that working life requires of technical communicators. Our claim that the theoretical aspects of LSP would benefit technical communication education is based on a broad view of 'teaching LSP'. This interpretation calls for a more theory-based approach to curriculum design, an approach that is ready to cross the borders of one language, one genre and one field thus encompassing different fields in a multilingual environment.

In our discussion we have highlighted some of the essential competencies required of technical communicators and examined how they could be supported by

some of the basic ideas of LSP theories and research. By doing so, we have expanded the view of technical communication competencies and have moved further beyond narrowly defined skills. The framework proposed could serve as an extension of technical communication curriculum design because the basic mechanisms behind language variation tend to remain consistent in spite of changes in working life. This framework could also be applied to a context in which competencies required of graduates from higher education in general are considered.

So far, we have only highlighted the role of a few chosen aspects of the theory of LSP for technical communication. However, we are aware of that the theory of LSP and LSP research do not form a unified body of knowledge. There is a lot of research carried out concerning various fields and disciplines and different linguistic and communicative aspects of professional communication. Much of this research can be very useful from a technical communication point of view, but it can be difficult to follow up such a varied field of study. From a technical communication point of view, approaches integrating technical communication research with LSP research are called for (see Luzón 2005). From a curriculum design point of view, we hope that the ideas we have presented in this article could also be considered in other, related fields. For example, in the field of translation studies some interesting articles on curriculum design have been published (cf. Korkas and Pavlides 2004).

In this article we have given our contribution to "putting the S back" to LSP, as Hyland (2002: 391–395) suggests concerning ESP. By doing so we have paid somewhat less attention to the L, but we finally want to stress the importance of language skills for future technical communicators. The basis of all writing, designing and editing texts is formed by good language skills. In technical communication environments English is important, but a good command of other languages can also be an asset in today's global multilingual working environments.

References

Albers, Michael J. 2005. The Future of Technical Communication: Introduction to This Special Issue. *Technical Communication* 52. 267–272.

Baehr, Craig 2016. Certified Professional Technical Communicator: The Foundation Exam and Its Nine Areas of Competency. *Intercom* 63(1). 10–11.

Barnum, Carol and Janice Redish. 2011. Overlap, Influence, Intertwining: The Interplay of UX and Technical Communication. *Journal of Usability Studies* 6. 90–101.

Bekins, Linn K. and Sean D. Williams. 2006. Positioning Technical Communication for the Creative Economy. *Technical Communication* 53. 287–295.

Bhatia, Vijay K. 2004. *Worlds of Written Discourse.* London and New York: Continuum.

Blakeslee, Ann M. 2010. Addressing Audiences in a Digital Age. In Rachel Spilka (ed.), *Digital literacy for technical communication. 21st century theory and practice,* 199–229. New York and London: Routledge.

Burnett, Rebecca. 2005. *Technical Communication.* Australia, Canada and Mexico: Thomson Wadsworth.

Carliner, Saul. 2012. The Three Approaches to Professionalization in Technical Communication. *Technical Communication* 59. 49–65.

Coppola, Nancy. 2012.Professionalization of Technical Communication: Zeitgeist for Our Age. *Technical Communication* 59. 1–7.

Dicks, Stanley R. 2010. The Effects of Digital Literacy on the Nature of Technical Communication Work. In Rachel Spilka (ed.), *Digital literacy for technical communication. 21st century theory and practice,* 51–81. New York and London: Routledge.

Dobrin, Sidney I., Christopher J. Keller, and Christian R. Weisser. 2010. *Technical Communication in the Twenty-First Century.* Upper Saddle River: Prentice Hall.

Engberg, Jan. 2006. Languages for Specific Purposes. In Keith Brown (ed.), *Encyclopedia of Language and Linguistics*, 679–683. Oxford: Pergamon Press.

Gnutzmann, Claus and Hermann Oldenburg. 1991. Contrastive Text Linguistics in LSP-Research: Theoretical Considerations and some Preliminary Findings. In Hartmut Schröder (ed.), *Subject-oriented Texts. Languages for Special Purposes and Text Theory*, 103–136 (RTT 16). Berlin and New York: de Gruyter.

Göpferich, Susanne. 1995. *Textsorten in Naturwissenschaften und Technik. Pragmatische Typologie – Kontrastierung – Translation.* Tübingen: Gunter Narr Verlag.

Hayhoe, George F. 2000. What do Technical Communicators Need to Know? *Technical Communication* 47. 151–153.

Hoffmann, Lothar. 1985. *Kommunikationsmittel Fachsprache. Eine Einführung.*Tübingen: Gunter Narr Verlag.

Huckin, Thomas N. 2003. Specificity in LSP. *Ibérica* 5. 3–17.

Hyland, Ken. 2002. Specificity Revisited: How Far Should We Go Now? *English for Specific Purposes* 21 (4). 385–395.

Isohella, Suvi. 2011. Työelämän asettamat vaatimukset teknisen viestinnän koulutuksesta valmistuneille. [What Working Life Requires of Technical Communication Graduates]. Vaasa: Department of Communication Studies, University of Vaasa Licentiate Thesis.

Johnson-Eilola, Johndan . 1996. Relocating the Value of Work: Technical Communication in a Post-Industrial Age. *Technical Communication Quarterly* 5. 245–270.

Kastberg, Peter. 2010. Knowledge Communication. Formative Ideas and Research Impetus. *Programmatic Perspectives* 2. 59–71.

Korkas, Vassilis and Pantelis Pavlides. 2004. Teaching aspects of LSP (Language for Special Purposes) to non-specialists: A case for background courses in translation studies programmes. *The Journal of Specialised Translation* 2. 21–33.

Koskela, Merja and Nina Pilke. 2016. From Slow Repetition to Awkward Omission: Economic, Efficient, and Precise Language Use in Bilingual Formal Meetings. *Multilingua* 35(3). 251–275.

Laurén, Christer. 1991. *Svenskt fackspråk.* Lund: Studentlitteratur.

Luzón, Maria José. 2005. Genre Analysis in Technical Communication. *IEEE Transactions on Professional Communication* 48. 285–295.

Markel, Mike. 2012. *Technical Communication.* Boston and New York: Bedford and St. Martins.

Meloncon, Lisa. 2009. Master´s Programs in Technical Communication: A Current Overview. *Technical Communication* 56. 137–148.

Miller, Carolyn R. [1989] 2003. What's Practical about Technical Writing? In Bertie E. Fearing and W. Keats Sparrow (eds.), *Technical Writing: Theory and Practice*, 14–24. New York: Modern Language Association. Reprinted in Tim Peeples (ed.), *Professional Writing and Rhetoric: Readings from the Field*, 61–70. Addison Wesley: Longman.

Picht, Heribert. 1995. Fachkommunikation – Fachsprache. In Gerhard Budin (ed.), *Multilingualism in specialist communication, 27–45. Proceedings of the 10th European LSP Symposium*. University of Vienna: International Institute for Terminology Research, 29 August–1 September 1995.

Rainey, Kenneth T., Roy K. Turner and David Dayton. 2005. Do Curricula Correspond to Managerial Expectations? Core Competencies for Technical Communicators. *Technical Communication* 52(3). 323–352.

Spilka, Rachel. 2010. Introduction. In Rachel Spilka (ed.*), Digital literacy for technical communication.21st century theory and practice,* 1–17. New York and London: Routledge.

Staples, Katherine and Cezar M. Ornatowski. 1998. *Foundations for teaching technical communication: theory, practice, and program design*. Greenwitch: Ablex Publishing Corporation.

Swales, John. 1990. *Genre analysis: English in academic and research settings*. Cambridge: Cambridge University Press.

Tekom. 2017. Competence Framework for Technical Communication. http://competencies.technical-communication.org/home.html (accessed 2 July 2017).

Trosborg, Anna. 2000. Introduction. In Anna Trosborg (ed.), *Analysing Professional Discourse*, vii–xvi. Amsterdam and Philadelphia: John Benjamins.

Whiteside, Aimee L. 2003. The Skills that Technical Communicators Need: An Investigation of Technical Communications Graduates, Managers and Curricula. *Journal of Technical Writing and Communication* 33. 303–318.

Zimmerman, Donald E. and Marilee Long. 1993. Exploring the Technical Communicator´s Roles: Implications for Program Design. *Technical Communication Quarterly* 2. 301–317.

Part II: **LSPs in different domains and language communities**

Heikki Mattila

6 Legal language

Abstract: The present article begins with an examination of the notion of legal language, the volume and types of research on it and the importance of jurilinguistic knowledge for lawyers and linguists. The second section gives a general picture of legal language as a language for special purposes. To this end, the functions and characteristics of legal language are discussed first, owing to their variety and originality. As for legal terminology, in addition to the problems of polysemy and synonymy, the birth of legal terms is discussed, taking particularly into account the importance of Latin in this respect. In the third section of the article, the author presents several important legal lingua francas (German, Russian, French, Spanish and English), and takes a brief glance at the future of international legal communication, against the background of the rise of new great powers in the world today.

1 Introduction

1.1 The concept and categories of legal language

The language of law is a functional variant of natural language which has its own domain of usage. It is based on ordinary language but has certain particular characteristics, mainly due to its relationship with legal institutions (Busse 1999). Notably, there are a great number of legal terms. However, there also are sentence- and text-level differences which justify speaking of a specific legal style.

Legal language is sometimes characterized as a technolect: i.e., a language used by members of a particular profession. This is true only with certain qualifications. Firstly, some groups of people who regularly use legal language (lay judges, jury members, civil servants, etc.) are not lawyers in the strict sense of the word. Secondly, the language of law is not used only for internal communication within the legal profession. The messages transmitted via legal language often concern ordinary citizens, who are expected to understand them. This requirement of general comprehensibility (*Allgemeinverständlichkeit*) is in a clear contradiction with the normal characteristics of LSP languages (Busse 1999: 1382). However, there are other important differences too. Generally, comparative studies show that the greater the density of terms in a language for special purposes, the simpler is the sentence structure. This finding is not valid for legal language, despite the fact that it is rich in technical terms. Sentences in legal language are longer than those of other languages for special

Heikki Mattila, Rovaniemi (Finland)

https://doi.org/10.1515/9783110228014-006

purposes and they contain more subordinate clauses (Laurén 1993: 64, 74). Indeed, legal language has a special status as a language for special purposes: compared with other LSP languages, there are similarities but also evident disparities.

Often, the language of law used in a State or territory has lengthy traditions which explain many of its distinctive features. For historical reasons (notably colonialism), it is not uncommon that the language of law is based on a natural language other than the one used in societal life in general. This is the case, for example, in numerous African countries and on the Indian subcontinent (see generally on legal languages outside of Europe Pozzo 2014).

Legal language may be divided into categories that have – at least, in part – specific features according to legal sub-professions. One may thus speak of the language of judges, the language of advocates, the language of administrative civil servants, the language of academic legal scholars, etc. These categories are relative and defined by the legal traditions of the relevant countries (Kurzon 1997: 119–123, Arntz 2001: 282–291). For instance, in most Continental countries, one may speak of "notary language" since Continental notaries are, in fact, specialized advocates who have their own – long and distinctive – customs concerning the use of legal language. Traditionally, the language of judges has been particularly formal and archaic. However, formal and archaic language is used less often nowadays in courts of law. As for academic legal scholars, their style tends to be closer to that of ordinary language, but with one important exception: words of foreign origin, especially Latinisms, are frequently used in scholarly legal texts. Another way of categorizing legal language is to divide it according to the various branches of law (the language of private law, the language of penal law, etc.). The main criterion is then the particular terminology used within the branch of law in question (in addition to general legal terms used in all branches of law). In some branches, this terminology is mingled with terms used in other specialties: for example, the language of psychiatry is often used in penal law.

Stylistically, legal and administrative language forms a spectrum from the solemn language of constitutions to the less refined style of everyday administrative letters. At one end of this spectrum, one finds legal jargon and slang. Legal jargon is used in intra-professional communication, sometimes in communication between members of a specific legal sub-profession (like judges). Examples from the United States include *boilerplate* ['standard clauses in electronic form which are easy to add to contracts being drafted'], *shrinkwrap license* ['approval of the terms and conditions of use of software by the fact of opening the box'], and *punies* ['punitive damages'] (Tiersma 1999: 107 and 2006: 31). A very different kind of parlance – a sort of counter-language – is the language of criminals: for example, prison slang. This language may be seen as a sign of the mental resistance of the prisoners to what they feel to be "repression"; on the other hand, it also constitutes a secret language that is largely unknown to the guardians. In Finland, for instance, the word "rat" [*rotta*] refers to an informer (whereas the same word in the slang of the prison officers refers to a prisoner). A special form of the language of criminals is tattooed initials on the body

of the criminal, which send a hidden but often threatening message to the authorities while, at the same time, strengthening the solidarity of the members of the criminal underworld. Examples in Russia are СП = смерть погонам [*smert' pogonam,* 'death to epaulettes' (i.e., police and prison officers)] and НКВД = нет крепче воровской дружбы [*net krepche vorovskoi druzhby,* 'nothing stronger than friendship among thieves'] (Matiushov 2006: 131).

1.2 Research on legal language

Since legal language is (in oral form) as old as the law itself, there has been an interest in it since Antiquity. The practical interest in legal translation goes back to ancient treaties between States written in two or more languages (Šarčević 1997: 23–28). Legal rhetoric, too, is an old subject of interest, and in this case one can speak of a science: methodical treatises focusing on the use of rhetoric in courts of law were written in Ancient Greece. In Ancient Rome, where the science of law in the proper sense of the word was born, legal concepts were also studied. This led to the compilation of the first legal dictionaries in Latin (Fiorelli 1947: 293). Later, in Byzantium, bilingual legal dictionaries (Latin – Greek) were compiled, and in Medieval Times this tradition continued in the form of legal dictionaries between Latin and local vernaculars.

Modern linguistics was born at the beginning of the twentieth century, gradually stimulating more and more research on the language of law. At the same time, there was, during this century, enormous progress in the natural sciences and technology. This gave rise, in the framework of LSP research, to systematic comparisons between various languages for special purposes, including the language of law. Research on legal language is known by various names. In many linguistic zones, the phrase "law and language" (expressed in the relevant language) is used. In French-speaking countries, the term *linguistique juridique* ["legal linguistics"] has been common since the first decades of the twentieth century. Recently, this term and its shorter form "*jurilinguistique*" ["jurilinguistics"] (e.g. Gémar and Kasirer 2005) have been spreading (in the form of direct translations or adaptations) in various countries such as Poland, Russia and the countries of Latin America. In 2009, a synthetic work written by Marcus Galdia, based on a particularly extensive fund of sources originating from many countries, was furnished with the title *Legal Linguistics* (Galdia 2009, 2017). Research in the field of legal language is promoted by many associations, and there are specialized journals dealing with the subject (Mattila 2012: 15–17, 2013: 10–11).

Legal language can be studied from various angles (e.g. from the point of view of democracy, see Kjær and Adamo 2011). Generally, the research may concern the evolution, characteristics, and use of legal language, and focus on its vocabulary (notably terminology) as well as on questions of syntax and semantics. Studies of legal langue are often lexicological in nature since the language of law differs substantially from ordinary language in its terminology. From the syntactical and sentence-level point

of view, studies on legal language may examine sentence length, the frequency of subordinate clauses, etc. Studies of morphology, phonology and phonetics are more rare but not uncommon. Morphological studies may examine, for example, the construction of compound words to create new legal terms. Research on legal language is closely linked to research in legal semiotics, since language as a sign system is often completed with other types of signs in legal contexts. Notably, the authority of law is often strengthened both linguistically (e.g., ritual sentences) and visually (e.g., the impressive clothing of judges), as will be discussed later in this paper.

In research concerning legal language, historical and sociological approaches are often useful, even indispensable. Historical studies may examine, for example, the evolution of legal vocabulary and that of ordinary language used in legal contexts in order to clarify the origin of legal loan words (notably Latin ones). A particularly interesting research theme is the transition from Latin to modern languages in the legal circles of various countries and the importance of Latin expressions in legal communication today. Sociological studies, on the other hand, may focus on how legal language is used in various legal sub-cultures (the language of judges, academic legal authors, etc.).

Research on legal language is often synchronic, focusing on the language of today. In many cases – often in bi- and multilingual countries and within the European Union – the research is contrastive, exploring differences between two or more languages: for example, in Canada between English and French or – in case of cross-border studies – between German and Danish or Finnish (e.g. Engberg 1997 and Lindroos 2015). In such contrastive research, the study of legal language is often connected with translation studies. Research on legal language is conducted by both linguists and lawyers, and increasingly by research groups in which both professions are represented, sometimes by specialists with a dual background in linguistics and law. This makes the research many-sided. Specialists who have a linguistic background often use quantitative methods (e.g., the frequency of legal terms in certain document types), whereas specialists with a legal background often study legal language as a means of professional communication or strive to clarify the characteristics of this language on the basis of history and the requirements of legal systems.

1.3 The importance and use of jurilinguistic knowledge

Knowledge concerning legal language is important for lawyers and language specialists for several reasons. Language is the basic working tool of every lawyer, and, in order to use it properly, he or she needs to be familiar with its characteristics, especially the negative ones, such as the fact that it often contains very complicated sentences. In this way, it is possible to compile documents which are comprehensible to lay people. At the same time, due to globalization nowadays, lawyers need more and more knowledge of major legal languages, especially legal English. From a

specific point of view, this is also a matter of concern for common-law lawyers: more and more often, English is being used to describe Continental (civil) law by non-native authors, and therefore it is also important for native speakers of English to be familiar with the properties of continental-influenced legal English.

Legal translation and lexicography are domains in which knowledge of legal languages is particularly important. This fact is manifested, *inter alia*, by the publication of recent handbooks in the field (Mac Aodha 2014 and Cheng, Sin and Wagner 2014) and numerous monographs (such as – in English – Šarčević 1997 and Matulewska 2013). At the European Court, the translators are all qualified in law but this is not the case in the other EU institutions, not to mention the translation of legal texts in general. Translators who are not themselves lawyers often work with documents that are, at least in part, juridical in nature. This presupposes that these translators have sufficient knowledge of the fundamental characteristics and terminology of the legal languages involved. The same is even truer in the case of legal lexicography.

2 Functions of legal language

The language of law fulfills several functions, some of them primary, some secondary. In the following section, one classification of these functions (based on Mattila 2012: 57–115, 2013: 41–85) is presented. It must be underlined that all categories are relative in this context, and other classifications could equally well be presented. For instance, the exercise of power, which is omnipresent in legal language and is discussed here in several different subsections, could be classified as a separate function.

2.1 The realization of legal acts

The language of law, like the language of religion, is not used only to transfer messages. Legal acts may also be realized by means of legal language. This observation is based on the theory of speech acts by Austin and Searle (Kurzon 1986: 5 *et seq*. and more generally Busse 1999). Law is a metaphysical phenomenon: it "resides" in language only. This means that legal relationships (rights and duties) can be transformed solely by means of language. As examples the ratification of a law by the head of State using a ritual formula and the pronouncement of a judgment at the end of a lawsuit may be mentioned. Hence, legal acts are completed by means of language.

Important legal acts (e.g., the declaration of a sentence of imprisonment, the acceptance of the terms of a real estate deal) are realized by means of legal language. Hence, the question of proving the existence of the acts is primordial. In consequence, these acts often require a specific form, such as the signatures of witnesses or that of a notary. Even if the use of particular words is rarely required to produce a valid

act, linguistic rituals are often followed in practice, for instance, by adding the words "I hereby promise" or "by these presents" in the relevant document.

In archaic societies, a speech act was often complemented by a semiotic act, for example, grasping the object of a contract of sale. Indeed, semiotic acts were often a necessary condition to seal an agreement. In ancient Rome, for instance, *mancipatio* (an important type of transfer) required, to be valid, the acquirer to put his or her hand on the object of the transfer (slave, animal, goods) in presence of five witnesses and, after reciting certain ritual words, to place a coin on the plate of the scales to symbolize the selling price. However, semiotic acts often appear in modern society too, like the pounding of the gavel to confirm the decision of an assembly. Even more, speech acts are often replaced by semiotic acts in routine contracts: at a check-out counter, many a client merely presents the article he or she wants to buy along with his or her credit card (semiotic act) without saying anything. In Italy, this phenomenon has been strikingly described as "silent (mute) law" [*diritto muto*] (Benedetti 1999: 138–139). Finally, semiotic acts, like a nod of the head, may be necessary in place of speaking or writing in the case of disabled people.

2.2 Legal communication

Evidently, the transmission of legal messages is a basic function of legal language. By means of this language, it is possible to know the contents of a law or judgment. This communicative function is hindered by obstacles of various types. Some of these obstacles involve language. A legal message or part of it may disappear on the way to the recipients (e.g., testimony given in a court of law is later written down in incomplete form), the message may be unintelligible (e.g., it is formulated in a complicated way, difficult terminology is used), the message may be ambiguous (e.g., the terms used have several meanings or the sentence structures are unclear), the contents of the message may be altered before the recipients receive it (e.g., the document is erroneously translated), the message may get lost in a mass of irrelevant information (e.g., in the case of contracts that are too long and detailed), or the recipient may refuse to receive the message (e.g., due to lack of interest or to formulations that are felt to be insulting). It is important to overcome these obstacles by drafting plainly worded documents, accurate translations, etc.

In international legal communication, erroneous translations constitute a serious danger. On one hand, the importance of legal translations is growing all the time. In 2015, for example, the General Directorate of Translation of the Court of Justice of the European Union – only one of the EU institutions – translated about 1,115,000 pages (pleadings, opinions of advocates-general, judgments, etc.) (Curia 2016: 15 and 46). On the other hand, due to the complexity of legal language, legal translation requires particular skills, both legal and linguistic knowledge, which are difficult to acquire (see in more detail the article on legal translation in the present work).

2.3 Guaranteeing respect for the law

Traditionally, legal language is used to strengthen the authority of the law. This is important because the legal order should be respected by every citizen, due to its use as a means of social guidance. For instance, a penal judgment should put the delinquent in question to the right road. From this point of view, it is important that the style of legal language and its terminology are adequate in the context concerned. Notably, dignified language should be used in court proceedings. This means, for instance, that religious formulas are still used in many countries in the opening and closing of court sessions and in the affirmations given by witnesses. Earlier this was often true of private legal documents as well. In Poland, up until the beginning of the twentieth century, testaments did not include any title. Instead, there was – in accordance with a pan-European tradition from the Middle Ages – a religious declaration at the beginning of the documents: *W Imię Ojca, Syna i Ducha Świętego amen* ['In the name of the Father, the Son and the Holy Spirit, amen']. In this way, the testament acquired a certain flavor of sacralization which, evidently, gave it more authority and a better guarantee that it would be duly executed (Żmigrodzka 1997: 8–9 and 73–75).

On the other hand, authority has also been imposed by obliging the citizens to use humble formulations when addressing judges and high officials of the State. In Spain, for instance, submissive formulations such as "The undersigned hopes to find favor with Your Excellency; may God grant Your Excellency long life" [*Es gracia que espera alcanzar de V.I., cuya vida guarde Dios muchos años*] were common before courts of law and in letters addressed to authorities. Owing to the progress of democratic ideas, such humble formulations are much rarer today (Martínez Bargueño 1992: 20–21, Duarte et al. 1998: 29, Martín et al. 1996: 55–56, Cazorla Prieto 2013: 41). Evidently, Spain is not the only example: in England, judges have also been humbly addressed as "My Lord", "Your Lordship", "Your Honour", "Your Worship".

Furthermore, in civil-law countries, the passive voice is used by judges and administrators. They do not use the first person singular or plural but speak in the name of the institution in question: "On these grounds, the Court of Appeals considers right and proper to condemn the accused person to [...]". This is supposed to make a court or office more prestigious and, as has been stated, to lighten the mental burden of the judges: possible erroneous judgments are not given by individuals but by institutions.

This authority-creating function of legal language is strengthened by the semiotics of judicial and (often) administrative proceedings and various legal documents (Resnik and Curtis 2011 and 2014: 515–545). The symbols of Justice (scales, sword, lictor's fasces, axe, blindfold, etc.) are old, well established and imposing: the sword, fasces and axe represent power and were originally intended to intimidate potential wrongdoers. The symbol of the sword of Justice, together with other symbols, may be found on the walls of court houses and at the top of judicial documents. In the same way, the form, interior design and decorations of court houses also reflect authority, as well as the special clothing of the judges and advocates. Special sounds may also

be used: fanfares, ritual shouts of clerks, etc. (Garapon 1997: 23–49). These symbols and traditions have their origins in the Mediterranean cultural area (Ancient Egypt, Ancient Greece and Ancient Rome) and have later been developed in Western and Central Europe. With the colonization and general Westernization of the other continents they have become universal. However, certain non-Western symbols of Justice are still alive in Asia, partly in rivalry with Western symbols. For instance, in modern China, the mythical unicorn, *Xiezhi,* traditionally symbolizing Justice, appears in the decoration of court houses, often along with Western symbols (Grimheden 2007: 183–184 and 191). Similarly, in Indonesia, the old symbol of Justice is *waringin*, a banyan tree, under which Justice was earlier administrated in this country (Massier 2008: 229–231).

2.4 Strengthening group ties within the legal profession

All professional languages strengthen the group coherence of the profession in question. Esoteric language excludes outsiders (to whom it is unintelligible) and brings the insiders closer to one another. This applies to legal language as well. In this respect, lawyers – like physicians – have an excellent means: Latin (and adapted Latinisms), which still survive in legal circles in the form of specific terms and maxims. Lawyers also use jargon based on their own language, often in the form of abbreviations or acronyms that are hermetic to outsiders. A very special jargon, based on shortening, can be found in Germany. In this country, lawyers publish massive commentaries (*Kommentare*) where the articles of important statutes are explained in detail. To save space, many – perhaps even most – of the words (not only the names of organizations or statutes) are shortened: for example, *Fassung* ['wording'; 'version'; 'text'] appears as "*Fassg*", and *zuständig* ['competent'] as "*zust*" (Galdia 2009: 345). However, in addition to saving space, this method also makes reading texts difficult, and even impossible, for non-lawyers.

2.5 Promoting linguistic policy

At a more general level, legal language has been used, and is still used, as a means of promoting linguistic policy. This may serve two contradictory aims: the linguistic unification of a country or the protection of linguistic minorities. Historically, the first alternative has been dominant because the use of one language makes the administration of the State easier. One may mention France at the end of the Middle Ages and in the beginning of modern times. By means of a systematic language policy, French – the language of Île-de-France – was spread to all parts of the enlarging kingdom and regional languages were largely eliminated. In this process, legal and administrative language was one of the key instruments. Since the judicial and administrative

machinery worked only in French, people were forced to learn this language. France is only one example: the same method has been widely used by enlarging States.

The opposite of a policy based on the exercise of power is a policy protecting linguistic minorities – or oppressed majorities. Here, again, legal and administrative language is one key element. One of the basic demands of subjugated linguistic groups is the right to use their languages before courts of law and administrative authorities. A recent example is the Language Act of Paraguay (2010), which gives Guaraní-speakers this right. Approximately 80 per cent of the inhabitants of Paraguay have Guaraní as their mother-tongue, and – exceptionally in Latin America – according to the Constitution, this language has, along with Spanish, official status in the country. However, the pressure of Spanish is powerful: in practice it is the only language used for official purposes. To protect Guaraní against a slow disappearance, a new law was adopted in 2010 by the Parliament and promulgated at the end of that year (*Ley de lenguas* nº 4251/10). According to the law, inter alia, the legislation of the country must (in certain conditions) be translated into Guaraní, and the courts of law and administrative authorities must also use this language in the future: notably, every citizen has the right to use Guaraní before judges and authorities and require that his or her declaration is registered in the judicial minutes in this language.

2.6 The cultural function of legal language

Finally, the language of law has an important cultural function. Legal language may be developed in a way which has a positive impact on the national language in general. On the other hand, legal language is normally conservative. From the point of view of understandability, this is a negative feature. However, it also has a positive side: legal language is a bearer of history, of the national linguistic heritage. As has been said, legal language is often a kind of linguistic museum which makes possible the archeology of the languages involved since changes of official language have been a frequent phenomenon in many countries. Latin was abandoned in Europe during the first centuries of modern times in favor of various vernacular languages. Later, one language may have been replaced by another, or bilingualism may have become the norm: for example, Swedish has mostly been replaced by Finnish in the legal circles of Finland, Dutch has been given equal status with French in Belgium, Indonesian (*Bahasa Indonesia*) has replaced Dutch in Indonesia, etc. Due to the conservatism of the legal profession, elements of earlier languages used by lawyers may still be seen in the legal language of today. Sometimes, there has been, or still is, a struggle between two variants of the same language in legal dealings, as in Greece and Norway (Mattila 2012: 101–115, 2013: 75–85). One of the variants represents historical continuity, whereas the other is seen (by its supporters) as being closer to the language of the people.

3 The characteristics of legal language

Legal language has several features which distinguish it from ordinary language (Mattila 2012: 117–172, 2013: 87–136). These features can largely be explained by the functions described above. For instance, legal formalism can be explained by the importance of speech acts in legal matters, which require solemnity and verifiability.

3.1 Frequency of definitions and tautology

Firstly, it can be stated that one of the basic features of legal language is its aim to be as precise and exact as possible. In a rule-of-law State, legal security – which is linked to legal protection – requires unambiguously formulated rules. This, in turn, presupposes that legal terms have a clear meaning and that they are used consequently. Therefore, legal documents like statutes, court decisions and contracts often contain definitions. In some legal cultures these are more frequent than in others. In common-law countries, detailed definitions are used particularly often: the definitions at the beginning of an English or American statute may cover several pages. A phenomenon comparable to definitions in the strict sense of the word is the use of enumerations. For example, a contract article may enumerate the property items which form the object of a sale.

Detailed definitions and enumerations constitute a necessary feature of legal language, but both may cause problems. Even if a definition aims at making a concept entirely clear, the result may be just the opposite: the more detailed a definition is, the more complex it becomes, especially the sentence structures involved. This fact creates syntactic polysemy, as complex sentence structures may be interpreted in several ways. Similarly, with enumerations the question whether they are exhaustive or simply clarifying is often raised.

On the other hand, the aim of precision means that tautology is not considered a negative feature of style in legal texts – contrary to the style code of general language usage. In a contract, it is important to always use the same term for a concept because any change of terms may easily be interpreted as a change of substance. If first one term is used in a document and then another in a comparable context, it may be thought that the drafter's intention was to express two concepts with slightly different legal contents. However, in practice, the use of terms in legal texts is not always strictly logical, especially in statutes. This results, inter alia, from the fact that the legal order forms a complex whole which is constantly being reformed – but never in its totality. Neologisms and other new terms are used in new statutes, but in older ones traditional terms meaning more or less the same thing can still be found. Even within a single act or regulation, there may be illogical changes of terminology due to the fact that some articles are in still in force in their original form, whereas others have been reformed, sometimes at a much later date.

3.2 Information density

In many types of legal documents, there is a great deal of information in each sentence. Often, every word of a sentence is important and cannot be erased without changing the content. Hence, there is high information density in some texts, such as contracts and statutes. In the case of statutes, this density can be explained, at least in part, by the goal of avoiding an increase in the amount of legislation, which is already enormous: such growth would lead to increased expenses and cause the essential information to disappear in massive texts.

3.3 Abstraction, hypothetical nature, neutrality

Legal language is often abstract and impersonal. Statutes (and contracts as well) frequently use abstract terms because they must cover complex phenomena which, in addition, sometimes are purely mental creations (rights and duties, etc.). Simultaneously, statutes regulate hypothetical cases. This means that the language used in them cannot be seen from the perspective of chronology. Therefore, one may speak of the "timelessness of laws" (Gémar 1990: 724). A sign of this timelessness is the frequent use of the conjunction "if". In Norway, it has been calculated that this conjunction (in Norwegian, *hvis*) is the 27th most common word in legislative language, while it is in 123rd place in ordinary language (Bing 1980: 48–49). Another example of the impersonal nature of legal language is the use of the passive voice, which is particularly common in civil-law countries. Besides its effectiveness in giving a sense of authority (see above), this usage can be explained by the aim of focusing on the object of the activity and not on the actors. In this way, then, a certain objectivity is given to the statements of the text in question. The impersonality of legal language can also be seen in the fact that the names of legal roles (chairman, plaintiff, defendant, etc.) are frequently used in place of the real names of people.

It is said that legal language is rarely colorful. In many cases, this may be attributed to the fact that a legal text (legislative project, draft contract, etc.) often passes via several desks before it takes on its final form: it is not the product of a single individual. Consequently, one characteristic of many legal texts is that they are stylistically neutral, which has been described in Russia by the expression "style zero". Despite this neutrality, metaphors can be found in legal documents. In some cases, they have become established legal vocabulary, so that no-one thinks that they were originally figures of speech. This is, for example, the case of "burden of proof" (*onus probandi*), which dates back to Antiquity. In the case of more recent metaphors, it is easier to immediately recognize the metaphorical nature of expressions such as "long-arm statute" or "safe harbor laws", which are widely used in common-law texts (Houbert 2009: 30–31). The reason for the use of metaphors in legal language is simple: new phenomena requiring legal examination or regulation appear constantly

in modern society, and it is difficult to find legal terms to express them. A metaphor, based on the analogy-making ability of the human mind, is a quick and efficient way to create a name for a new legal phenomenon.

In most cases, legal language is also supposed to be neutral, so that no emotions are expressed. As has been said, the style of legal language is normally "cold": even phenomena which provoke a state of great agitation (like murder) are discussed in neutral terms in legal contexts. However, there are exceptions. For instance, the language of advocates or prosecutors expresses – and is intended to express – emotions. Furthermore, the ideal of neutrality is not always achieved in contexts where it is supposed to prevail. Judges, notably common-law judges, sometimes write their decisions in a very emotional manner. The most famous example is the case concerning Henry Miller's book "The Tropic of Cancer"; one dissenting opinion stated, inter alia: "'Cancer' is not a book. It is a cesspool, an open sewer, a pit of putrification, a slimy gathering of all that is rotten in the debris of human depravity" (Commonwealth v. Robin, 218 A.2d 546, 556, 561 Pa. [1966]; Tiersma 1999: 140–141). Many other examples could be given, including even insults directed at fellow judges, as in a case concerning the immorality of a movie: "Judges who seek to find technical excuses to permit such pictures to be shown [...] are reminiscent of a dog that returns to his vomit in search of some morsel in the filth which may have some redeeming value of his own taste" (Salt Lake City v. Piepenburg [571 P.2d. 1299] 1977; George 2007: 449).

3.4 Frequency of references

The legal order is characterized by its systemic nature: every element is a component of a larger whole (an article is a part of a law and a law is a part of the totality of the legislation; precedents and legal writing complete legislation). An important external consequence of this systemic character is references between the various elements of the legal order. Hence, there is much intertextuality in legal documents and texts. An article of a decree refers to laws and other decrees; an article of a law makes reference to other articles in the same law or in other laws; in judgments there are references to statutory provisions and other judgments; academic legal writers refer to various kinds of sources: laws, decrees, *travaux préparatoires*, precedents, and other legal scholars. In different legal cultures, important differences in the use of references can be seen: for example, in German legal culture the grounds of a judgment often refer extensively to academic legal writing; traditionally this is very rare in common-law countries (Mattila 2011: 97–99, 101–104).

References in legal texts eliminate contradictions within the legal order: by using references, one can be sure that rules which are meant to signify the same are really identical. References also have an informative function: a reference shows that there are other legal rules that regulate the matter in question. Furthermore, references make the text shorter and lighter. On the other hand, references may have a negative

function as well: they may make the text ambiguous, for example, in cases where the text referred to is later changed. A great number of references also give the text the character of a hypertext, which makes it difficult to read because the reader must constantly shift between the main text and other texts (Molfessis 1999: 55–72).

3.5 Organized text structure and formalism

Characteristically legal texts are carefully structured. In each country, there are established principles for the organization of statutory texts: the text progresses from abstract rules to more concrete rules, from substantive rules to procedural rules, etc. In countries which have voluminous codes including thousands of articles, this kind of logical arrangement is particularly important. For instance, in the Civil Code of Brazil (*Código civil*), the contents of the Code are structured according to eight, or even nine, hierarchical titles: *parte, livro, título, capítulo, seção, artigo, parágrafo, inciso* and/or *alínea* (Xavier 2001: 139). Similarly, there are established traditions which dictate how the text of a court decision should be arranged (e.g., where to place the operative part of the judgment). In an international comparison, these traditions are highly different, reflecting divergences in the judges' way of reasoning in various legal cultures (Laurén 2002: 18–19) as well as divergences in the conceptions of how closely the structure of judicial documents should follow this reasoning.

In addition to the logical arrangement of legal texts, there is often a great deal of formalism in these texts, covering even small details. This concerns court decisions and administrative decisions especially, but also private documents (deeds, etc.): the same standard passages, sentences or expressions are repeated again and again in legal texts. This repetition makes the texts monotonous and boring; however, the formalism presents important advantages which explain why the phenomenon exists. Firstly, standardized phrases and sentences have an established interpretation. So, formalism guarantees legal certainty. In private documents like wills, legal forms also help the writer of the document fulfill all necessary formal requirements established by the law. At the same time, a ready-made form is a kind of checklist as far as the content of the documents is concerned, guaranteeing that the document will contain all essential elements (like contract clauses). Having a form to follow also saves time, especially today, when model texts can be saved and accessed by computer.

The degree of formalism in various legal documents depends on the nature of the document. It is understandable that more formality is found in routine decisions than in decisions where individual deliberation is necessary. However, the traditions of each legal culture play an important role in this respect. Both court decisions and private documents have strong culture-specific features. In France, for instance, court decisions are particularly form-bound: the text is structured in a traditional way using the same keywords (*attendu que, considérant que, par ces motifs*, etc.) which divide

the document into smaller units. In many countries, the beginning of the operative part of the judgment (i.e., the decision itself) is made clearly discernable by the use of ritual words. For example, in Danish court decisions, the operative part is separated from the other parts of the judgment by four words in archaic Danish: *thi kendes for ret* ['it is therefore considered just'] (Kjær 1997: 157–175). In Italy, the corresponding signal consists of a cryptic abbreviation, P.Q.M., which means: *Per questi motivi* ['For these reasons']. In common-law countries there is little formalism in the decisions of higher courts. The written opinions and grounds given by individual judges in decisions for cases vary widely in terms of style.

3.6 Frequency of abbreviations

Abbreviations in legal texts were frequently used by the Ancient Romans. The basic techniques in this field, still in use today, were already well developed at that time. Roman lawyers cut off words (suspension) and shortened them in the middle (contraction). They also used initialisms – i.e., abbreviations consisting of the first letters of words – notably when writing the ritual words of a form of action or a transaction. Many punctuation marks which are used to separate abbreviations from other words date back to Rome as well. These include, *inter alia*, the full-stop or period, which is still commonly used in modern abbreviations, notably in the names of bodies and revues (such as C.M.L.R. = 'Common Market Law Review'), and various strokes (called *tituli*) under, above or in the middle of letters (appearing today, for instance, in currency abbreviations, such as £, $, € and ¥). To express plural forms, duplication (and even triplication) of initials or other letters was used. This technique also appears, although rarely, today: LL.D. = *legum doctor* = doctor of laws, where the duplication of the letter "L" shows that the relevant word is plural: *legum* ['of laws'] and not *legis* ['of law'].

Later, in the Middle Ages, abbreviations became even more frequent, due to an increase in the number of documents and the continuously high price of writing materials. The symbol §, which is extremely common in many countries (notably in the German linguistic zone and the Nordic countries, where it means "section / article of a law"), derives from this period. It is formed by a fusion of two letters "s", written at different levels (s^s), the initials of the words *signum sectionis* ['sign of division'] (Xavier 2001: 140).

It is not surprising that legal texts still contain a large number of abbreviations. Even today, the use of abbreviations provides important advantages. As stated above, legal texts are characterized by many references to authoritative sources (statutes, court decisions, etc.). At the same time, the official title of a law or the name of an authority, for example, may be long and complicated. Hence, abbreviations make the texts shorter, lighter and easier to compile. On the other hand, they may make them difficult to understand if the reader is not familiar with the abbreviations used.

As a result of the historical development described above, modern legal documents include abbreviations formed by various techniques: words may be cut off at the end or shortened in the middle, and acronyms (pronounceable words based on initials and other letters) are created. As earlier, a particularly common way of abbreviating is to form initialisms, taking the first letter of each word of a phrase (or of each basic word of a compound word). In all legal cultures, this kind of initialism can be used for the names of various bodies (authorities, companies, societies, etc). They are also very frequent in the European Union: to begin with, the abbreviation of the Union itself, the EU. In some legal cultures (such as the German-speaking countries and Nordic countries) statutes are regularly shortened in this way as well. In the case of the most important statutes, this kind of abbreviation may also be found elsewhere: for example, in the United States and France (see generally Mattila 2008: 347–361, 2012: 146–153, 2013: 114–121).

3.7 Sentence complexity and terminological abstrusity

A feature that is often noted by language specialists is the complexity of the sentences in legal texts. This can be explained by the age and traditions of legal language, which may well be the oldest language for special purposes in existence. The style of this language was formed at a time when written texts were intended only for an elite audience, not for everyone. This tradition – an essential feature of Medieval Latin – was adopted as such in modern legal languages. Despite the first plain-language efforts in the times of the Enlightenment, it has prevailed to the present day.

In addition to the length and complexity of sentences, legal terminology should also be mentioned. A large part of this terminology is formed by words of ordinary language, which may lead to misunderstanding since the legal meaning of these words may be completely different from the ordinary meaning. Simultaneously, there are many words, often archaic in nature (Latinisms, etc.), that are unfamiliar to ordinary citizens. This archaic nature may even involve grammar: the word order of phrases, the dropping of articles before nouns, etc. Finally, legal texts often include terms borrowed from other special languages. This is the case of most documents produced by the European Union. An EU directive concerning agriculture may contain, for example, terms from the field of agronomy, legal terms, and commercial or technological terms. A full understanding of these texts requires knowledge of all these disciplines.

3.8 Improving legal language

Many of the features described above make legal language difficult to understand for ordinary citizens, and even sometimes for lawyers. Therefore, it is not surprising

that the first attempts to simplify the language of law date far back in history, to the time of late Antiquity. Later measures were taken during the Age of Enlightenment. In particular, important simplifications of legislative language were made in German-speaking States (Hattenhauer 1987: 50). At the turn of the nineteenth and twentieth centuries, the Swiss Civil Code was ahead of its time. It was largely written according to principles which are recommended by language specialists today: short articles, paragraphs and sentences; the avoidance of foreign and difficult words; and a limited number of references between articles or to other legislative texts.

Today, measures of this kind have been initiated in various countries (Wagner and Cacciaguidi-Fahy 2008), without forgetting the European Union (the Clear Writing Campaign, etc.). The situation has been particularly challenging in common-law countries, where the gap between legal and ordinary language has been exceptionally broad. In these countries, the Plain Language Movement has made an important contribution to the awareness of the problem among lawyers and administrative officials, and important results have been achieved (Asprey 2010: 65–81, Adler 2012, Adler and Perry 2017: 51–54, Nuolijärvi and Stickel 2016). In many countries, the language of court decisions has grown closer to ordinary language and the grounds given in these decisions have become easier to understand. However, there is still a great deal to be done: progress has been slow and partial. Even if judicial language today is closer to ordinary language, the length of judgments often makes them difficult to read. In common-law countries, judicial texts have traditionally been quite long. However, they do not represent the extreme: the printed text of the judgment of the European Court of Justice in a cartel case (joint cases T-25/95, Cimenteries v. Commission) covers, in any language of the Union, approximately one thousand pages! Even if it is important to present the facts of the case, the claims of the parties and the grounds of the judgment in a detailed manner, one might ask how meaningful such a text is in legal communication.

Indeed, it is not easy to make legal language generally understandable and legal texts easy to approach for everyone. There are several factors which militate against this (Polenz 1999: 485 *et seq*.). One important factor is the power of tradition. As mentioned above, legal language is the oldest language for special purposes, and the traditions concerning the use of this language are therefore deep-seated. As also mentioned above, rulers have always felt it important to strengthen the authority of the law through linguistic rituals. At the same time, legal protection and legal security require fixed procedural forms, precise citations of authoritative texts, and clear definitions of rights and duties. The contents of a contract also need to be detailed: potential gaps cannot be filled later. Finally, society and technology are becoming more and more complex and new domains of life need to be legally regulated. This increases the bulk of legislation and makes the invention of new legal terms necessary. Consequently, the goal of making legal language totally understandable to every citizen will always remain a utopian ideal – but we should strive to approach this ideal as much as possible.

4 Legal terminology

4.1 Differences between legal concepts

Legal language describes a metaphysical phenomenon: law, basically, exists only in the human mind. Since law is created by humans and does not exist in the physical world, it is not the same everywhere: the traditions and values of each society define its law. Legal concepts are the crystallizations of legal rules, and, consequently, these concepts differ in various societies. The importance of conceptual differences depends on the interaction between the societies concerned. Where there has been much interaction, or the societies even share the same traditions, the legal concepts are closer to each other. Where there has been little interaction, the legal concepts are substantially divergent.

In order to give lawyers (and translators) background knowledge about similarities and differences between legal concepts throughout the world, comparative lawyers have divided the legal systems of the world into "families". This kind of background knowledge is essential to prevent misunderstanding: legal terms may sometimes be identical but the concepts behind these terms may be entirely different.

In the world of today, there are two major legal families: Continental law, which is often called "civil law" in English, and sometimes "Romano-Germanic law", and which is firmly based on Roman law, and common law, which is based on English legal traditions (see 4.2 below). Within each of these families, the basic legal concepts are, generally speaking, the same, but there are many differences in detail-level concepts. All developing countries have been influenced by either civil law or common law, some more, some less. In these countries, the concepts of traditional law (notably family law and the law of succession) may reflect concepts that are unknown in Europe, but modern law is normally governed by concepts of European origin.

In Europe, one must also take into account the law of the European Union. Largely, the concepts used in this law are of Continental origin. The influence of French law has been particularly strong, due to the political power of France when the European Communities were founded and the traditional position of French as a lingua franca on the Continent. For instance, the methods of guaranteeing legal protection by judicial means in the Union are of French origin, and the institution of the advocate general originates in French law as well. Later, certain concepts of German law were adopted in Community law. Recently, the common law of England has also had a certain influence in the European Union, but – generally speaking – genuine common-law concepts have not been adopted in EU law. As for the specific concepts of EU law, important terminology work is going on in the Union to create novel terms for these concepts (see the article on legal terminology work in the present publication). – See generally Šarčević 2015.

4.2 Legal terms vs. legal concepts

A legal term is the linguistic expression of a legal concept. The relationship between terms and concepts is complex. Notably, one has to take into account the phenomena of polysemy and synonymy. Polysemy means that one and the same term may express different concepts: i.e., it has more than one meaning. These concepts may be very different, but normally they are more or less close, and are often hierarchical. Take, for example, the term "common law". This term has three meanings in modern law (CCH Macquarie Dictionary of Law 1996: 33): (1) the whole tradition of English law in English-speaking countries (England, the United States, etc.) or its distinctive features (the importance of precedential law, etc.), juxtaposed with the Continental legal tradition; (2) the law created by the courts of law – i.e., case-law – in English-speaking countries; (3) one of the two areas of traditional case-law in England, juxtaposed with the second area, the law of equity. Similarly, the term "civil law" has, in legal English, two meanings as well: in addition to the sense of "private law" (roughly speaking), "civil law" may also refer generally to Continental law (see 4.1 above). This is due to the complex history of the original Latin term *jus civile*, of which "civil law" is a direct translation.

4.3 Polysemy and synonymy

Polysemy is a frequent phenomenon in legal language. It suffices to look at comprehensive legal dictionaries, which often distinguish several basic meanings of one and the same term, dividing these into a great number of nuanced meanings. For instance, the French legal dictionary *Vocabulaire juridique* distinguishes seven basic meanings of the term *commission*, and gives more than twenty detailed meanings for this term when used with specifying words or phrases (*commission rogatoire*, *commission d'avancement*, *Commission européenne*, etc.); the article on *commission* covers almost two and a half pages in this comprehensive dictionary (Cornu 2004, entry on "commission").

The other side of the coin is synonymy: the same concept may be expressed by more than one term. This is also a frequent phenomenon. Very often, in European legal languages, a concept may by expressed by a term of genuine national original as well as by a Latinism (a Latin word as such or a Latin word adapted to the language in question).

These phenomena may cause serious misunderstandings because in modern law no lawyer – not to mention layperson – is able to master the various meanings of all the terms used in law. The fact that synonymy is often partial (that is, the terms are quasi-synonyms) is particularly dangerous. In certain cases, terms may be used as synonyms, but not in other cases. In legal English, for instance, one finds the terms *will* and *testament*. In the law of inheritance they are synonymous, but the word *will*

also has a more general meaning (e.g., *the will to possess*, *freedom of will*). On the other hand, partial synonymy is often useful, for example, in contract drafting. By enumerating several quasi-synonyms, the drafter is able to cover without lacunae a semantic field the borderlines of which are not clear. This method is used particularly often in drafting contracts in common-law countries.

4.4 The birth of legal terms

Legal terms are created in various ways (Mattila 2016: 33–36). Traditionally, words of ordinary language may acquire a specific legal meaning due to a more or less coincidental semantic evolution or a conscious policy (e.g., a word is legally defined in a parliamentary act). On the other hand, legal neologisms, or new words, are also created. Today, this often takes place in the framework of systematic terminology work. In Western Europe, terminology work within the European Union is of particular importance (see the article on legal terminology work in the present publication). Terminology work seldom leads to new basic words, but rather to closed compound words (especially in languages like German and Finnish) or open compound words (in all languages).

Historically, the most important phenomenon in the creation of terms is imitation: terms are borrowed from older legal languages. Terms from other languages may be borrowed as such, in an adapted form, or by means of translation. In this context, the expression "loanword" or "calque" is used. It is also possible for existing words to acquire borrowed legal meanings. As a modern example of borrowed meaning, the use of the word *directive* in EU French (in the sense of one of the two basic types of binding legal acts of the European Union) may be mentioned. This use in legal French has given the same meaning to variants of this word in a number of European languages.

Many languages have served as source languages in this respect. One may mention French in England in the Middle Ages and on the Continent in modern times (for example, legal Italian and legal Spanish have adopted many legal terms of French origin, notably in the nineteenth century). German, in turn, has strongly influenced the legal languages of the Eastern parts of Central Europe and those of Northern Europe. Today, the growing influence of legal English is clearly perceptible. However, the most influential source language of all time, as far as the borrowing of legal terms is concerned, has been Latin.

4.5 Latin terms in modern law

Latin expressions are often used in legal languages (Mattila 2005: 71–89, 2012: 224–257, 2013: 173–199). This is due to the historical importance of Latin in European legal circles.

In the Middle Ages, Latin was the language of important courts of law (often local courts as well) and administrative offices everywhere in Europe, excluding the far Eastern parts. This tradition continued through the first centuries of modern times. During the first half of the nineteenth century, some court decisions were still given in Latin in Hungary and Poland. In academic legal writing, the Latin tradition was even stronger: in some countries, it was obligatory to publish all doctoral theses in law in Latin up till the middle of the nineteenth century.

This Latin tradition in legal circles provoked the phenomenon of language mixing. In the seventeenth and eighteenth centuries, the language of higher courts of law and superior administrative authorities might be a mixture of a modern language and Latin, to the extent that half of the words, or more, were genuine or adapted Latin. This was the case even in the periphery of Europe, as a Swedish example shows. In the Sweden of the seventeenth century, the official language of the courts of law was Swedish. However, sentences in the speeches of the judges of appellate courts might look like this: "*Secundum jus gentium har skepparen tacitam hypothecam uti godset*" ['According to international law, the shipmaster has a hidden lien over the goods']. The sentence contains five words in Latin and four in Swedish! However, this is not an extreme case: sometimes almost the whole sentence could be in Latin (Jägerskiöld 1963: 66, 87, 92 and 96).

Since those days, the use of Latin has been declining, but very slowly. This means that even today one can find Latin words in legal texts. The quantity of Latin words varies according to the traditions of the various legal cultures and the nature of the legal texts. Generally speaking, Latin expressions and maxims are used in academic legal writing everywhere, even in Asiatic legal languages (such as Indonesian) which have been under European influence. In statutes, court decisions, administrative documents and private documents (wills, contracts etc.) the differences between legal cultures are important. In some cultures – for example, the common-law countries, Italy and Poland – Latin expressions are often found in documents of practical lawyering. However, in other cultures, such as that of the Nordic countries, Latin words are not found.

Since Latin expresses, at the level of the language of law, the common heritage of the European legal cultures, it is not astonishing that Latin terms and maxims are more frequent in branches of law that are international in nature, notably international public and private law, where they facilitate international communication between lawyers. In the field of international private law, there are dozens of established Latin terms (and maxims) which are used to express key concepts of the field. These Latin terms and maxims are known by lawyers in all countries. According to the results of a statistical study by the research team of the present author (Mattila 2005: 83–88), the expression *lex fori* ['the law of the forum', i.e., of the seized court of law] was found almost a thousand times in five treatises in international private law published in major international languages. Many other Latin expressions appeared more than a hundred times (even several hundred times) in these treatises. This is the case of *lex loci* ['the law of the place'], *lex rei sitae* ['the law of the place where the

property is situated'], *lex loci delicti* ['the law of the place where the tort was committed'], *exequatur* ['enforcement order', lit. 'let him enforce, 'he may perform'], and *lex causae* ['the law of the case', i.e. 'the applicable law']. In international public law, Latin terms expressing concepts of the field can also be frequently found.

In the documents of the European Union, Latin expressions are also used (Masson and Duparc-Portier 2007: 609–633). Most of these are traditional Latin expressions which appear in texts written by lawyers (e.g., advocates general) from countries such as Italy where Latin is commonly used in legal contexts. Genuine concepts of EU law are seldom expressed by Latin terms, but there are some, such as *societas Europaea*.

As mentioned above, Latin is an effective means of communication in certain international branches of law: Latin expressions are widely known and have the same clearly defined meaning everywhere. In other branches, the situation is much more complex. Many Latin expressions in these branches are national in nature: the expressions are found in only one or two countries, and if they are used in different legal cultures, their meaning may vary more or less from country to country. Hence, in these branches of law, Latin is not an effective instrument of communication between lawyers – contrary to what they sometimes imagine (Mattila 2012: 246–256 and 2013: 191–198).

4.6 Adapted Latinisms, Latin calques and borrowed meanings

Besides direct Latin expressions, one can find adapted Latinisms in all European (and many non-European) languages. A good illustration is *codex*. This term appears, in a nationally modified form, throughout Europe: *code* (English, French), *codice* (Italian), *código* (Spanish, Portuguese), *kodeks* (Polish), *kod/kodeks/kodex* (Scandinavian languages), *koodeksi/koodi* (Finnish), etc. In fact, such adapted Latinisms are much more common today than pure Latin words and expressions. Naturally, the vocabulary of the Romance languages and English, including legal words, is based on Latin as the result of the natural evolution of language. However, even in these languages one may speak of adapted Latinisms: a large number of Latin-origin legal terms were forged in modern times on the basis of artificial Latin terms created by medieval (and later) jurists. Adapted Latinisms are particularly common in academic legal writing, but they are also used – if less commonly – in statutes and case law. An illustration of the importance of adapted Latinisms may be found, for example, in a German dictionary where they are sampled (Meyer 1993).

Latin has influenced legal terminology in a less obvious way as well. In fact, this way – the translation of Latin terms into modern languages, often in connection with borrowed meanings – has been particularly important. A large part of the vocabulary of any European legal language consists of translation loans (calques, see above). This is the case, for instance, of *onus probandi* ['burden of proof'] and *fons juris* ['source of law'], which appear as direct translations in all modern languages of law.

5 Major legal languages

5.1 Rivalry between lingua francas

Language dominance gives several advantages. At a general level, it helps the countries of the dominant language gain political, economic and cultural hegemony, macro-regionally or globally, and to strengthen this hegemony. One aspect of this dominance which is closely tied to legal language is contract negotiations between States, companies and other bodies: native speakers of a language always have the advantage of being more eloquent and impressive in critical negotiation situations, while second-language users often have to search for words; their accent may sound strange, even comical, and they therefore give the impression of being clumsy. Today, translation costs are also an important factor. It has been recently estimated that the United Kingdom saves some 17 billion Euros every year thanks to the widespread use of English in the European Union (Lopez 2010: 17, note 8).

Hence, it is not surprising that great powers have always tried to achieve international linguistic dominance. Historically, in the Western world Rome has been by far the most successful: international Latin dominance in legal dealings continued in Europe for almost two thousand years. Latin was the instrument of administration and law in the Roman Empire. Later, both the Catholic Church and medieval kingdoms used it for their administrative and legal purposes. During the first centuries of modern times, Latin helped ensure the continuance of the tradition of Roman-law based academic law (*jus commune*) throughout Europe and Latin America.

Since the Latin period, modern languages have been in rivalry. Spanish and Portuguese spread to Latin America, but French was the first modern language which, starting in the seventeenth century, was able to establish itself as a lingua franca throughout Europe, due to the political and cultural importance of France. Later, German-speaking empires, Austria and the *Reich*, achieved a great deal of power, especially in the late nineteenth century, leading to the spread of German within their boundaries and in neighboring areas. However, this language never became an international language in the proper sense of the word. The same applies to Russian.

French has gradually been replaced more and more by English in international arenas, including legal dealings. This evolution began already in the nineteenth century, and became more evident towards the end of the twentieth century. The Permanent Hague Conference of Private International Law, which prepares conventions in this branch of law, is a good example. Initially, the only official language was French, but today the organization is bilingual, and, in practice, English dominates.

The increasing dominance of English is even more apparent in the European Union. In the EU, there are 24 official languages which are, in principle, equal. In practice, in the beginning of the 1990s, French was still clearly the dominant language of the European Communities; it was used in internal administration, the preparation

of statutes, etc. Today, English has gained a very clear dominance. In 2015, 81 % of the original documents translated by the Directorate-General for Translation of the European Commission were written in English and only 3.6 % in French (the rest were written in other languages) (*Délégation générale à la langue française et aux langues de France* 2016: 132). However, French is still an important language at the Court of the European Union. The internal language of the Court (used, *inter alia*, when the court members deliberate) is French, which means that this language is still the dominant language in EU judicial matters (this can be seen, for example, in the volume of translations between various languages). At the global level, the resistance of French is also noticeable: for example, in the 65th session of the General Assembly of the United Nations, French was used by 22 States and by the Holy See (i.e., the Vatican).

Despite the ever-growing dominance of English, knowledge of other major languages used in legal contexts is still needed. Notably, as shown above, legal French still serves as a lingua franca, and it is an official language (the only one or one of two or several languages) in 29 States (some of them mini-States, it is true). It is used for legal purposes in many important countries (France, Canada, Belgium, Switzerland, etc.), which means that masses of legal documents in French constantly need to be translated for enforcement in other countries. Furthermore, legal German and legal Russian are also used as lingua francas in macro-regional cross-border communication. Spanish, on the other hand, is one of the biggest languages in the world (even if it is less commonly used as a lingua franca). Hence, in the following sections, a concise presentation of the position and characteristics of legal German, legal Russian, legal French, legal Spanish and, naturally, legal English is given. This presentation is based on a more detailed description of these languages in Mattila 2012 and 2013, where more numerous sources are given. There are undoubtedly other important legal languages, but there is not enough space to deal with them here.

5.2 Legal German

German is not a global lingua franca but is still an important language at the European level both generally and for legal purposes. The total number of German (first- and second-language) speakers is estimated (in various sources) to be 100–120 million people, and some 75–100 million people master it as a foreign language. In Europe it has long traditions as the legal lingua franca of Northern Europe and the Eastern parts of Central Europe. This was already true in the period of the Hanseatic League (Low German was then used on the coasts of the Baltic Sea, including the Northern parts; see Kantola 1987) and even more at the apogee of the German and Austrian Empires in the late nineteenth century and the beginning of the twentieth century (Polenz 1999: 191–193). At that time, the legal scholarship of Germany, Austria and Switzerland attained a high level, substantially strengthening the position of legal

German and German in general: foreign legal researchers pursued language studies in order to be able to read Central European legal writing in the original language.

Today, German is not only one of the official languages of the European Union but also has the status of a working language in many EU bodies – even if its real importance as an EU working language is quite limited (normally English and French are used in practice). However, it is one of the great languages of legal proceedings at the Court of Justice of the European Union: it is used more often as the procedural language of the Court of Justice (the main jurisdiction) than any other tongue. German is also the biggest language in the territory of the European Union (without forgetting Switzerland). This means that legal documents which were originally drafted in German circulate, as translations, everywhere in Europe (e.g., German, Austrian and Swiss court decisions which must be enforced in other European countries).

Knowledge of the characteristics of legal German is important even in many cases where a lawyer has no command of the German language: the basic characteristics of the original language are often reflected in translations. From this point of view, it is useful to know that legal German was strongly influenced by the reception of Roman law in the (Germanic) Holy Roman Empire at the end of the Middle Ages and in the beginning of modern times. Roman law was received in German lands in the form taught by the universities, i.e., as an abstract system of legal rules, expressed in Latin, in which refined categories and concepts occupied an important position. This explains (Schmidt-Wiegand 1990) why the legal German of today still has an abstract character in which elaborate concepts, expressed by calques of Latin origin, play an important role (see below).

Latin was widely used in legal dealings in Germany until the eighteenth century, but the period of the Enlightenment signified a change: the new ideas (the rights of citizen, etc.) gave rise to more and more frequent demands to abandon the use of Latin in legal dealings and to purify legal German of words of foreign origin (especially Latin, but also French), called *Eindeutschung* ['Germanization'] (Behrends 1991). These demands were largely successful: the great German-language codifications of the end of the eighteenth century and the beginning of the nineteenth century contain far fewer foreign words than the earlier ones. During the nineteenth century, nationalism intensified demands to purify the German language, including legal German, of foreign influence. Consequently, legal German is today characterized by its use of only Germanic-looking words. Normally, a person who does not know German cannot get the faintest idea about the subject of a German legal text: he or she cannot recognize any foreign words which would give a hint about the content.

However, the influence of Roman law and Latin still remains in legal German – but it is, so to say, beneath the surface (Hattenhauer 1987: 67, Wacke 1990: 886). Legal German teems with calques of Latin origin which, in the form of Germanic words, express abstract concepts created on the basis of Roman law. These concepts were mostly created several centuries ago or during the golden age of German legal science at the end of the nineteenth century, when important legal schools worked their

theories. The abstract character of legal German is clearly apparent in the German Civil Code [*Bürgerliches Gesetzbuch*] from 1900 (Hattenhauer 1987: 79–80), which, with some amendments, is still in force. At the same time, legal German is very rich in terms. This can be explained partly by the verbosity of the old German dialects and partly by the scientific tradition just mentioned: since the German scholars of Roman law developed a refined machinery of legal concepts, they had to forge a special term for each concept. Nevertheless, this characteristic, richness in terms, should not be exaggerated (Lundmark 2012: 57–64).

Legal German is used not only in Germany but also in Austria and Switzerland, as well as in some areas of northern Italy and eastern Belgium. There are some minor differences in legal German in these countries and regions compared with legal German in Germany, mostly in the form of specific terms. These have been studied both in the case of Austria (Lohaus 2000 and Markhardt 2005) and in the case of Switzerland (Nussbaumer 2013). In South Tyrol / Alto Adige, terminological work to develop terms to express the concepts of Italian legislation is particularly important (Zanon 2008 and Chiocchetti *et al*. 2013). Special dictionaries and glossaries including this terminology have recently been published.

5.3 Legal Russian

Russian was not only the majority language of the Soviet Union but also an important macro-regional lingua franca used both inside the Soviet Union (especially in communication between speakers of Russian and speakers of other languages, such as those of the republics of Central Asia) and outside it, in Eastern Europe and the Eastern part of Central Europe (the people's republics). Following the collapse of Socialism, the disintegration of the Soviet Union, and the liberation processes in the former people's republics, Russian has lost a great deal of its position as a lingua franca. At the same time, the position of the Russian language has seriously weakened in the school systems of the afore-mentioned countries as well as in those of Western Europe.

This means that the number of people speaking Russian will gradually diminish in the decades to come. Today, there are some 260 million people who master Russian (including native- and second-language speakers) but – according to the estimates (2012) of the Russian Ministry of Education and Science – the number will decrease to 215 million by 2025 and to 130 million by 2050. This weakening of the position of Russian can be seen in diplomacy and international legal communication as well. In the General Assembly of the United Nations of 1997, seven States used Russian; in the General Assembly of 2010 it was used by only four States (in which Russian is an official language). The representatives of all the other countries which earlier were part of the Soviet Union and those of the former people's republics expressed themselves in English (Mattila 2012: 42–43, 2013: 30).

However, Russian will undoubtedly remain a major language – both generally and in legal dealings – in the future. Knowledge of Russian is therefore important from a practical point of view for Western lawyers and translators who have contacts with Russia – but not only for this reason. The history of legal Russian reflects the colorful history of Russia and provides an excellent illustration of various linguistic phenomena, notably the force of ideological factors in the adoption of terms of foreign origin.

During the first modernization of legal Russian, in the time of Peter the Great, new words of Latin origin (and sometimes of other origin, too) were introduced in legal Russian to describe institutions which were heretofore unknown. The reforms of Russian society included the legal order of the country, which was modernized according to Western examples. Since Roman law occupied an important position in Western Europe and Latin was still widely used at that time, a great number of new terms of Latin origin, then in use in Western languages, were adopted in Russian (even if terms of Latin origin were not unknown in Russian even earlier, in the seventeenth century, when foreign-born translators in Russian chancelleries used Latinisms in their translations of legal documents). After Peter the Great, Latin terms as such and terms of Latin origin continued to be used in Russian, especially in academic legal writing. For instance, the types of action were classified using words of Latin origin: *isk negatornyi* [иск негаторный, lat. *actio negatoria*], *isk vindikatsionnyi* [иск виндкационный, lat. *actio vindicativa*], and *isk preiuditsial'nyi* [иск преюдициальный, lat. *actio praeiudicialis*] (Salogubova 1997: 23–36).

After the October Revolution, Russian legal terminology was entirely reformed to reflect the new social order. Words which were no longer necessary (such as *aktsionernaia kompaniia*, акционерная компания, 'stock company') or which were considered to reflect the old society – often words of Latin origin – were eliminated from legal language and neologisms were created, sometimes on a purely ideological basis. For instance, "punishment" (*nakazanie*, наказание) was replaced by the expression "measure of social defence" (*mera sotsial'noi zashchity*, мера социальной защиты). However, this radical terminological period did not last very long: the most radical terminological inventions were rejected by the end of the 1930s (Pigolkin 1990: 49– 51).

In the 1990s, following the re-institution of the market economy, terminological change was again necessary. Numerous old terms from the pre-Socialist period were re-introduced in legal Russian (such as *Gosudarstvennaia Duma*, Государственная Дума, 'Lower House of Parliament', *deputat*, депутат, 'deputy', and *tovarishchestvo na vere*, товарищество на вере, 'limited partnership company'). At the same time, terms of Latin and modern Western origin were adopted as such or in a slightly modified form (such as *benefitsiar*, бенефициар, 'beneficiary'). This caused a counter-reaction: there was severe criticism of this adoption, which was felt to be uncritical and excessive (Vlasenko 1997: 93). In consequence, foreign terms were Russified: for instance, the Anglicism *trast* [траст, 'trust'], initially in usage after the

political change, was dropped in favor of *doveritel'noe upravlenie* (доверительное управление) (Casertano 2008: 216, note 10).

5.4 Legal French

During the first centuries of modern times, French became the dominant European language, including in the field of law and especially in international branches of law. Behind this fact there was, in addition to the economic, political and military power of France, a conscious policy to consolidate the position of French, both within the Kingdom and on the international scene. To achieve this aim, it was important to impose French in administrative and legal matters as well as in diplomacy. In the sixteenth century, France began to introduce French in diplomacy, pushing Latin aside. This was strongly opposed by many other States, but the powerful position of France forced them gradually to give way. Consequently, French became the language of diplomacy and, in connection with this, of international public law. In the eighteenth century, the position of French was so strong that even in diplomacy between two German-speaking States French was sometimes used (Brunot 1917: 387–430).

On the other hand, colonialism contributed greatly to the strengthening of the position of French. It became the administrative and judicial language of the French colonies, first in North America (where it has mostly disappeared in Louisiana but has survived in Canada despite the ceding of the American colonies to the British, see Gémar 1995: 7–13, 42–45), and later in the French territories of North and Sub-Saharan Africa (and in Congo, which was colonized by Belgium). Today, French is the second official language in Canada (the Canadian Supreme Court, for example, works in both French and English) and the only official language of several African States, where the higher administration and judiciary work only in French. In North Africa (the Maghreb), French is no longer an official language but is still an important tongue (Sanaker *et al.* 2006: 114, 145 and 152), including in legal circles. For example, in 2010 the legal library of the University of Tunis had 20,000 books in Arabic and 70,000 books in French (books in other European languages are much less common); in 2015, this library bought ca. 370 new monographs in Arab and ca. 330 monographs in French (calculated by the author on the basis of book lists on the faculty homepage).

Since the era of Napoleon, the position of French has gradually weakened. However, it is still one of the major languages. Estimates concerning the number of French speakers (native- and second-language speakers) in the world vary. A recent report (2014) of the Francophonia organization gives the number 274 million (*La langue française dans le monde,* Foreword) but there are both higher and lower estimates. Today, French occupies the position of an official language in numerous international organizations, and is also used in practice in these: as mentioned earlier, more than 20 delegations use French in the United Nations. As also mentioned above, French is the dominant language of the

European Court of Justice. The same is true for important organizations of international public and private law. A great deal of legal scholarship, notably in the afore-mentioned branches of law, is published in French.

It is natural that legal French has many similarities to the legal languages of the other Romance countries. This can be explained by the common linguistic and legal history of these countries. Similar terms are often used, and the meaning of these terms is the same. From the juridical point of view, one must remember that all Latin countries were key areas of the *jus commune* (supranational academic law developed by European universities in the Middle Ages and the beginning of modern times). Later, French law strongly influenced the laws of the other Romance countries (Italy, Romania, Spain and Portugal) and, due to the similarity of the languages, terms of French origin were used to describe new French-influenced legal concepts, especially in Italy (Fiorelli 1994: 582–583 and 589) and Romania (Stângu 2000: 73, 80–81 and Veleanu 2010).

On the contrary, the relationship between legal French and legal English is more complex. French was used in Medieval England as one of the languages of superior courts. Consequently, a great number of terms of French origin were established in legal English. Furthermore, ordinary English is also full of words derived from French. Therefore the vocabularies of legal English and legal French are similar to a large extent. However, this resemblance is often deceptive. Due to the original development of English law, *common law*, the meanings of words that look similar may be entirely different. The word *equity* is one of the most famous examples (Beveridge 2002: 71).

The Cartesian tradition is clearly evident in legal French. For instance, judgments are written in a condensed way which aims to follow logical reasoning in order to decide cases. Similarly, the legislation of France is codified – i.e., collected in big normative bodies called "codes" – within which the legal rules are arranged logically in smaller units (called "books"). France is not the only country where this is done, but it is one of the key countries of this tradition.

Today, as everywhere, continuous efforts to raise the level of legal language are being made in France. In connection with these efforts, there is one special feature: the fight against Anglicisms. This is not only the case of French Canada, where the pressure of English is considerable: important measures have also been taken in France itself. There is even a law (*la loi Toubon*) which aims at guaranteeing the use and purity of French. Accordingly, many legal words have been created to replace Anglicisms (like *crédit-bail* instead of *leasing*) (Troisfontaines 1981: 181).

The French used in France, Belgium and Switzerland varies to some extent as far as legal terms are concerned, but, due to the leading position of France, it is relatively uniform in Europe. In the case of Canada, the differences are more important. The legal system of Quebec is mixed law featuring a combination of the English common-law and French civil-law traditions. This means that Canadian legal French has to express typical common-law concepts. Because of this, traditional French legal terms in Canada may have different meanings than in France. The Franco-Canadians

try to eliminate the confusion by creating neologisms. Various methods are used, and sometimes the results are particularly interesting. As mentioned earlier, one of the original languages of English common law during its formative stage in the Middle Ages was French (the so-called Law French). Thanks to this fact, the French equivalent of an English term may sometimes be found by looking at the old common-law sources in Law French. In this way, the word *chatel*, which is found in medieval sources, has been taken into usage in Canadian legal French; it is the original form of the English common-law term *chattel* (Snow 1999: 191). On the other hand, the Franco-Canadian lawyers often use terms which (or the Canadian sense of which) cannot be justified by the structural differences between common law and civil law but which only reflect the (bad) influence of English on Canadian French (numerous examples are given by Gémar and Vo 2016).

5.5 Legal Spanish

The use of Spanish as a lingua franca (i.e., in situations where at least one of the interlocutors has a mother tongue other than Spanish) is much rarer than in the case of French and English. This is noticeable in legal circles, too. It is symptomatic that Spanish is not used as a working language in the bodies of the European Union or in specific organs that prepare laws, such as the Hague Conference of International Private Law or Unidroit. However, as far as the number of native speakers is concerned, Spanish is one of the biggest languages in the world. According to the estimate of the Cervantes Institute, it was spoken in 2016 by approximately 567 million people (native speakers 437 million people), and there are 20 Spanish-speaking countries. It is also widely spoken in the Southern parts of United States. In the case of South America, one must remember that speakers of Brazilian Portuguese and American Spanish can understand each other relatively easily, which makes the *de facto* language area even larger.

It is true that in both Spain and Latin America regional languages have strengthened their position during the last few decades. In Spain, the position of regional languages is established in the Spanish constitution and in regional legislation, and notably legal Catalan has been strongly developed for legal usage (Brumme 2004: 951, Arzoz Santisteban 2008: 79–91). Consequently, it is today widely utilized for legal purposes. Similarly, in Latin America the position of indigenous languages has improved in some countries. This is especially true of Paraguay (an example that has been mentioned earlier). However, the consequences of these developments extend only to the national or regional level, thus posing no danger to the position of Spanish as a major language of the world.

The history of legal Spanish closely reflects the various periods of the evolution of Spanish culture in general. The great cultural blooming of the time of King Alphonse the Wise, who was a great legislator, definitely established the new local language,

Spanish, in administrative and legal usage. Later, periods of stagnation followed, and legal language became rigid and archaic, largely due to the important position of scribes [*escribanos*] in judicial proceedings (Gandasegui 1998: 173–174). Because of the authoritarian nature of the Spanish State, one specific feature became prominent in administrative language: long, humble phrases expressing the submissiveness of citizens before the authorities and the submissiveness of lower civil servants before higher civil servants (Martínez Bargueño 1992: 13–21).

The archaic nature of legal Spanish was partly diminished in the nineteenth century, when modern French influence became stronger in Spanish administration and the judicial machinery. However, not until the second half of the twentieth century did a thorough reform of administrative and legal Spanish take place. Essentially, this has happened after the collapse of the dictatorial régime of General Franco. Numerous religious formulas have been abandoned in legal language (Martínez Bargueño 1992: 20), and today both Spanish and the regional legal languages, notably Catalan, reflect the ideas of democracy and equality. For instance, legal terminology has been modernized, complicated sentence structures have been abandoned, and excessively humble forms of addressing authorities have been eliminated – even if much still needs to be done (Alcaraz Varó and Hughes 2009: 103–125). Due to the Romance origin of Spanish, legal documents contain many Latin expressions and maxims. As everywhere, language specialists are critical of this phenomenon, but their success has been limited. It is telling that two of the biggest dictionaries of legal Latin (in an international comparison) were published in the Hispanic linguistic zone.

One special feature of legal Spanish is its international homogeneity. This is easily explicable by the legal history of Hispanophone America. Even if a number of special ordinances were applied in the administration of the American colonies of Spain, they were issued by the *Consejo de Indias*, sitting in Spain, and in certain important branches of law – such as private law, criminal law and procedural law – Spanish law was exclusively applied. Following the independence of the Hispanophone countries, they developed their laws on their own, but basically building on the Spanish legal heritage; and these countries have been subject to the same influences as Spain (the influence of French law in the nineteenth century and North American law today). Within one and the same linguistic zone, similar laws tend to guarantee the similarity of legal language. At the same time, the unity of Spanish legal language is also apparent at the ideological level. Specialists of legal Spanish take the uniform nature of Spanish in legal contexts for granted and only seldom bring to light any differences in style or terminology between the various Hispanophone countries (Prieto de Pedro, 1991: 141–142, is an exception: he stresses the existence of "unnecessary" lexical divergences in the field of law within this linguistic zone). A special case in this respect is Puerto Rico (*Estado Libre Asociado de Puerto Rico*), due to its dependant position as a territory of the United States. The style of Spanish-language judgments in Puerto Rico has typical common-law features, including standard expressions of common-law Latin (*certiorari*, *per curiam*, etc.).

5.6 Legal English

English is the absolutely dominant lingua franca in the word today. It is estimated that 1.1 – 1.5 billion people master it to a greater or lesser extent. Legal circles are conservative, but legal English is increasingly becoming the lingua franca of legal circles in non-English-speaking countries as well. The preparation of laws in European and global organizations is a good example of this. The growth of legal English is also evident in academic circles. In Finland, for instance, a quarter of doctoral theses in law were published in English in the beginning of the third millennium, and Finnish research groups that include legal scholars from various countries use it in their internal communication and in publication.

Originally, legal English was strongly bound to the traditional law of England, common law. Compared with the legal systems of the European Continent (and, due to the colonial period, e.g., of Latin America), the English common law has certain peculiar features which are reflected in legal English. Firstly, English law has had a great continuity: there have been no revolutions imposing radically new legal thinking. This means that the language layers from various periods, even from medieval times, have been conserved in modern legal language (Mellinkoff 1963: 13–15 and 94–135, Tiersma 1999: 25–34). As mentioned above, Latin was used in higher courts of law everywhere in Europe during the Middle Ages. This was also the case in England with Law Latin. Due to the conservatism of lawyers, Latin expressions are frequently found in legal English even today (despite the activities of the Plain Language Movement). Furthermore, simplified old French – Law French – was also used in English jurisdictions due to the Norman Conquest and later ties with France. A great number of the key terms of modern legal English have their origins in medieval French. Many of these words are commonly used in ordinary English, but there are distinctive expressions of Law French which cannot be found outside of legal circles.

The continuity of English legal language can also be seen in the English legal style: ritual expressions and repetitions are often used in legal English. Rituals that date back to olden times are still followed at courts of law and in private documents. Even at the Supreme Court of the United States, the chant of the Marshal of the Court includes the expression "Oyez! Oyez! Oyez!" (Tiersma 1999: 100–101). Up until recently, a written common-law document often contained two cryptic letters "ss"; today no-one knows the meaning of this abbreviation, which is used only due to the force of tradition (Mellinkoff 1963: 319–321). In the same way, the medieval tradition of repeating expressions, originating in the belief in the magical properties of words, is still clearly perceptible in common-law texts. Numerable examples could be given: "null and void and of no effect"; "X is hereby authorized, empowered and entitled to [...]", etc. These could be simplified without any change of legal content. For instance, the sentence "I give, devise and bequeath the rest, residue and remainder of my estate to Samantha" could be simply expressed as: "I give the rest of my estate to Samantha".

Historically, common law was essentially developed by courts of law. For this reason its categories and concepts have been largely dictated by distinctions made in (medieval) legal proceedings, according to the judicial remedies available in various types of situations. Since cases before law courts always differ to some extent, subtle distinctions have been made. This is reflected, on one hand, in the verbosity of higher court decisions and, on the other hand, in detailed legal terminology where these distinctions are taken into account. By reason of these subtle distinctions, legal terms and other words have been – and still largely are – interpreted by common-law lawyers in a literal manner. Therefore, the drafters of statutes and contracts often enumerate several quasi-synonymic terms related to the concept in question, so that they can be sure that no lacunae appear when the text is later interpreted in a literal manner (Beveridge 2002: 65–69, Hill and King 2005: 199–204). This fact strengthens the medieval tradition of ritual expressions and repetition mentioned above.

At the same time, due to the centuries-old dominance of judge-made law, traditional English legislation only complements the rules of case-law, and there have been many legislative gaps. Notably, in the law of contract almost no legislation of a general nature has been enacted to establish the rules of this branch of law. Therefore, contract drafters in common-law countries have always put everything in the contract itself: later interpreters of the contract cannot find assistance in any all-embracing legislation. In consequence, English contracts continue to be extremely verbose. They may cover dozens, sometimes even hundreds, of pages (Beveridge 2002: 65–69, Hill and King 2005: 176–179).

During the past few decades, these negative characteristics of legal English – its archaic terminology, verbosity, ritual language and repetitions – have been the target of reforms proposed by the Plain English Movement and many language specialists (Hiltunen 1990: 103–110, Solan 1993: 133–138, Asprey 2010: 64–89, Adler 2007: 35–38, 2012: 67–83, Adler and Perry 2017: 51–54). Many lawyers have been involved in this struggle as well, for example, through Clarity, an international association promoting plain legal language. Important results have been achieved (such as plain language statutes). Simultaneously, there is another important factor which is gradually changing legal English (Mattila 2012: 454–459, 2013: 347–351). This is the spread of English as a legal lingua franca. In the future, English will be used more and more often to describe Continental law, especially in Europe (Šarčević 2010) but also in Latin America and on other continents. In Europe, genuine common-law lawyers will be only a small minority, particularly in EU legal affairs. In mixed groups, as in the EU, the legal style of the majority of language users will necessarily influence the style of the minority – gradually at home, too. Consequently, the general style norms of English used for legal purposes will become looser: second-language speakers normally write "bad English" from the point of view of genuine English-speakers. However, the huge number of second-language users of English in the future will undoubtedly mean that only a small percentage of legal documents and articles written by non-native lawyers and legal scholars can be language-checked by native

English speakers. When the number of texts written in a "bad" style is large enough, that style will no longer be considered to be bad.

5.7 Legal lingua francas of the future

The rise of new powers, especially in Asia, will create new lingua francas in the future. The spectacular growth of the economy of China makes it very probable that the Chinese will be able to spread their language into international usage, including legal dealings (Żyśko and Rusinek 2012). As mentioned earlier, no great power has missed this opportunity in history, due to the prestige value and the practical advantages: the dominance of mother-tongue speakers in negotiations, the savings in translation costs, etc. In this context, an interesting question has been raised: will it be ideologically and practically possible to simplify the writing system of Chinese to make this language easier for foreigners to adopt and help it spread more quickly? (Chew 2009: 228).

At the same time, the rise of new powers will also support the position of English. This is especially the case of the Indian sub-continent. According to the Constitution of the Republic of India, Hindi is the National Official Language but English is the Associate National Official Language. In fact, due to ethnic controversies, English has a stronger position in India than the word "associate" might lead one to believe. It is the dominant language of the central administration and the superior jurisdictions in India. This is manifested, *inter alia*, by the fact that important textbooks on legal English are regularly published in India (recent examples: Bhatia 2016 and Prasad and Singh 2016). The situation is similar in Pakistan. Even if the relative weight of genuine English-speaking countries in the world gradually diminishes (due to the rise of new powers), that of the countries of the Indian sub-continent will certainly rise. Since it is highly probable that the latter countries (like numerous African countries) will continue to use English for all legal purposes, this will reinforce the position of English as the dominant lingua franca in legal circles and dealings in the twenty-first century.

Acknowledgement: The language of the present review has been checked by Mr. *Michael Hurd* of the University of Lapland, to whom the author expresses his warmest thanks.

References

Adler, Mark. 2007. *Clarity for Lawyers*. London: The Law Society.

Adler, Mark. 2012. The Plain Language Movement. In P. Tiersma and L. M. Solan (eds.), *The Oxford Handbook of Language and Law,* 67–83. Oxford: Oxford University Press.

Adler, Mark and Perry, Daphne. 2017. *Clarity for Lawyers: Effective Legal Language.* London: The Law Society.

Alcaraz Varó, Enrique and Brian Hughes. 2009. *El español jurídico,* 2nd edn. (Actualización a cargo de A. Gómez). Barcelona: Editorial Ariel.

Arntz, Reiner. 2001. *Fachbezogene Mehrsprachigkeit in Recht und Technik* (Studien zu Sprache und Technik 8). Hildesheim, Zürich and New York: Georg Olms Verlag.

Arzoz Santisteban, Xavier. 2008. Kataloniens Selbstverwaltung. In A. Gamper and C. Pan (eds.), *Volksgruppen und regionale Selbstverwaltung in Europa,* 79–91. Baden-Baden: Nomos Verlagsgesellschaft.

Asprey, Michèle. 2010. *Plain Language for Lawyers*, 4th edn. Sydney: The Federation Press.

Behrends, Okko. 1991. Die Eindeutschung der römisch-rechtlichen Fachsprache. In J. Eckert (ed.), *Sprache – Recht – Geschichte*. Heidelberg: C. F. Müller Juristischer Verlag.

Benedetti, Giuseppe. 1999. Diritto e linguaggio. Variazioni sul "diritto muto". *Europa e diritto privato* 1. 137–152.

Beveridge, Barbara. 2002. Legal English – How it developed and why it is not appropriate for international commercial contracts. In H. Mattila (ed.), *The Development of Legal Language*, 55–79. Helsinki: Talentum Media.

Bhatia, K. L. 2016. *Textbook on Legal Language and Legal Writing*, 3rd edn. Haryana, India: Universal Law Publishing/LexisNexis.

Bing, Jon. 1980. Lovspråk og popularisering [Legal language and popularization]. In J. Bing, T. Fjeldvig, O. B. Flataker and T. Harvold (eds.), *Lovspråk og juristspråk*, 39–49. Oslo: Institutt for privatrett.

Brumme, Jenny. 2004. Las regulaciones legales de la lengua (del español y las otras lenguas de España y América). In R. Cano (ed.), *Historia de la lengua española*, 945–972. Barcelona: Ariel.

Brunot, Ferdinand. 1917. *Histoire de la langue française des origines à 1900* (Tome V, Le français en France et hors de France au XVIIe siècle). Paris: Armand Colin.

Busse, Dietrich. 1999. Die juristische Fachsprache als Institutionensprache am Beispiel von Gesetzen und ihrer Auslegung. In Lothar Hoffmann, Hartwig Kalverkämper, Herbert Ernst Wiegand (eds.), *Fachsprachen – Ein internationales Handbuch zur Fachsprachenforschung und Terminologiewissenschaft* (Handbücher zur Sprach- und Kommunikationswissenschaft 14.2), 1382–1391. Berlin and New York: de Gruyter.

Casertano, Letizia. 2008. Il linguaggio giuridico russo. In B. Pozzo and M. Timoteo (eds.), *Europa e linguaggi giuridici*, 209–258. Milan: Giuffrè Editore.

Cazorla Prieto, Luis María. 2013. *El lenguaje jurídico actua*, 2nd edn. Cizur Menor, Navarra: Thomson and Aranzadi.

CCH Macquarie Dictionary of Law, The. 1996. North Ryde, New South Wales: CCH Australia Limited.

Cheng, Le, King Kui Sin, and Anne Wagner (eds.). 2014. *The Ashgate Handbook of Legal Translation.* Farnham: Ashgate.

Chew, Phyllis G.-L. 2009. *Emergent Lingua Francas and World Orders. The Politics and Place of English as a World Language*. New York and London: Routledge, Taylor and Francis.

Chiocchetti, Elena, Natascia Ralli and Isabella Stanizzi. 2013. When Language Becomes Law. The Methodology and Criteria Adopted by the South Tyrolean Terminology Commission for the Standardisation of German and Italian Translation Equivalents. *Linguistica* LIII/2 *(Zwischen) Sprache und Recht – (Entre) la langue et le droit.* 9–23. Ljubljana: Faculté des Lettres.

Cornu, Gérard (ed.). 2004. *Vocabulaire juridique*, 6th edn. Paris: Presses Universitaires de France.

Cornu, Gérard. 2005. *Linguistique juridique*, 3rd edn. Paris: Montchrestien.

Curia. 2016. *Rapport annuel* 2015. *Panorama de l'année*. Luxembourg: European Union.

Délégation générale à la langue française et aux langues de France. 2016. *Rapport au Parlement sur l'emploi de la langue française*. Paris: Ministère de la culture et de la communication.

Duarte i Montserrat, Carles *Àlex* Alsina i Keith and Segimon Sibina i Cuní. 1998. *Manual de llenguatge administratiu* [Handbook of Administrative Language], 4th edn. Barcelona: Generalitat de Catalunya.
Engberg, Jan. 1997. *Konventionen von Fachtextsorten. Kontrastive Analysen zu deutschen und dänischen Gerichtsurteilen*. Tübingen: Gunter Narr Verlag.
Fiorelli, Piero. 1994. La lingua del diritto e dell'amministrazione. In L. Serianni and P. Trifone (eds.), *Storia della lingua italiana*, 553–597. Turin: Giulio Einaudi Editore.
Galdia, Marcus. 2009. *Legal Linguistics*. Frankfurt am Main, Berlin, Bern, Wien: Peter Lang.
Galdia, Marcus. 2017. *Lectures on Legal Linguistics*. Frankfurt am Main, Berlin, Bern, Wien: Peter Lang.
Gandásegui, María J. 1998. Historia del lenguaje judicial. In J. Bayo Delgado (ed.), *Lenguaje judicial*, 143–248. Madrid: Consejo General del Poder Judicial.
Garapon, Antoine. 1997. *Bien juger. Essai sur le rituel judiciaire*. Paris: Éditions Odile Jacob.
Gémar, Jean-Claude. 1990. Les fondements du langage du droit comme langue de spécialité. Du sens et de la forme du texte juridique. *Revue générale de droit*. 717–738.
Gémar, Jean-Claude. 1995. *Traduire ou l'art d'interpréter. Langue, droit et société. Eléments de jurilinguistique*. Tome 2: *Application*. Sainte-Foy: Presses de l'Université du Québec.
Gémar, Jean-Claude and Nicolas Kasirer (eds.). 2005. *Jurilinguistique: entre langues et droits – Jurilinguistics: Between Law and Language*. Brussels and Montreal: Bruylant and Les Éditions Thémis.
Gémar, Jean-Claude and Ho-Thuy Vo. 2016. *Nouvelles difficultés du langage du droit au Canada. Dits et maux de Thémis*. Montréal: Les Éditions Thémis.
George, Jouce J. 2007. *Judicial Opinion Writing Handbook*, 5th edn. Buffalo: Hein and Co.
Grimheden, Jonas. 2007. Inveterate China: law and symbolism. *Culture. Law and Order. Chinese and Western Traditions* (Macau Ricci Institute Studies 4). 173–198.
Hattenhauer, Hans.1987. *Zur Geschichte der deutschen Rechts- und Gesetzessprache*. Hamburg: Joachim Jungius-Gesellschaft der Wissenschaften.
Hill, Claire and Christopher King. 2005. How do German contracts do as much with fewer words? In B. Pozzo (ed.), *Ordinary Language and Legal Language*, 169–218, Milan: Giuffrè Editore.
Hiltunen, Risto. 1990. *Chapters on Legal English. Aspects Past and Present of the Language of the Law*. Helsinki: Suomalaisen tiedeakatemian toimituksia B 251.
Houbert, Frédéric. 2010. Caught in the Web of the Law. Le traducteur juridique face à la métaphore. *Comparative Legilinguistics* 2. 26–39.
Jägerskiöld, Stig. 1963. *Studier rörande receptionen av främmande rätt i Sverige under den yngre landslagens tid* [Studies Concerning the Reception of Foreign Law during the Period of the Newer General Law Code for the Kingdom of Sweden], 29–35. Stockholm et al.: Almqvist and Wiksell.
Kantola, Markku. 1987. Zur Sprache mittelniederdeutscher Urkunden aus Finnland. In K. E. Schöndorf and K.-E. Westergaard (eds.), *Niederdeutsch in Skandinavien*. *Beihefte zur Zeitschrift für deutsche Philologie* 4. 67–74.
Kjær, Anne Lise. 1997. Thi kendes for ret – om lemmata og eksemplar i juridisk fagleksikografi [It is therefore considered just – on lemmata and models in professional lexicography in the field of law]. *Hermes* 18. 157–175.
Kjær, Anne Lise and Silvia Adamo (eds.). 2011. *Linguistic Diversity and European Democracy*. Farnham: Ashgate.
Kurzon, Dennis. 1986. *It is Hereby Performed … Explorations in Legal Speech Acts*. Amsterdam and Philadelphia: John Benjamins.
Kurzon, Dennis. 1997. Legal language: varieties, genres, registers, discourses. *International Journal of Applied Linguistics* 7. 119–139.
La langue française dans le monde 2014. Paris: Organisation internationale de la Francophonie.
Laurén, Christer. 1993. *Fackspråk: form, innehåll, funktion* [Language for Special Purposes: Form, Content, Function]. Lund: Studentlitteratur.

Laurén, Christer. 2002. Iconism and special language. In H. Mattila (ed.), *The Development of Legal Language*, 11–20. Helsinki: Talentum Media.

Lindroos, Emilia. 2015. *Im Namen des Gesetzes. Eine vergleichende rechtslinguistische Untersuchung zur Formelhaftigkeit in deutschen und finnischen Strafurteilen.* Rovaniemi: Universität Lappland. Acta Universitatis Lapponiensis 297.

Lohaus, Marianne. 2000. *Recht und Sprache in Österreich und Deutschland. Gemeinsamkeiten und Verschiedenheiten als Folge geschichtlicher Entwicklungen. Untersuchung zur juristischen Fachterminologie in Österreich und Deutschland.* Gießen: Köhler.

Lopez, Stéphane. 2010. État et enjeux du multilinguisme dans les institutions européennes. In D. Hanf, K. Malacek and E. Muir (eds.), *Langues et construction européenne*, 11–19. Brussels, et al.: P.I.E. Peter Lang.

Lundmark, Thonas. 2012. *Charting the Divide between Common and Civil Law.* Oxford: Oxford University Press.

Mac Aodha, Máirtín (ed.). 2014. *Legal Lexicography: A Comparative Perspective.* Farnham: Ashgate.

Markhardt, Heidemarie. 2005. *Das Österreichische Deutsch im Rahmen der EU.* Frankfurt a. M. et al.: Peter Lang.

Martín, Jacinto, Reyes Ruiz, Juan Santaella and José Escánez. 1996. *Los lenguajes especiales. Lenguaje jurídico-administrativo. Lenguaje científico-técnico. Lenguaje humanístico. Lenguaje periodístico y publicitario. Lenguaje literario*. Granada: Editorial Comares.

Martínes Bargueño, Manuel. 1992. Pasado y presente del lenguaje administrativo castellano. *Revista de llengua i dret*. 7–23.

Massier, Ab. 2008. *The Voice of the Law in Transition. Indonesian Jurists and Their Languages 1915–2000.* Leyden: KITLV Press.

Masson, Antoine and Pascale Duparc-Portier. 2007. Usages et réflectivité du latin à la Cour de justice des Communautés européennes. *Revue trimestrielle de droit européen* 43. 609–633.

Matiushov, S. Матюшов, С. 2006. Субкультура уголовного права – роль жаргона и татуировок в преступной среде [The subculture of penal law – the role of slang and tattoos in criminal circles]. In Актуальные проблемы правоохранительной деятельности (Федеральная служба исполнения наказаний, 127–132. Владимирский юридический институт ФСИН, Ред. кол.: В. В. Богатырев и др. Владимир: ВЮИ ФСИН.

Mattila, Heikki E. S. 2005. Jurilinguistique et latin juridique. In J.-C. Gémar and N. Kasirer (eds.), *Jurilinguistique: entre langues et droits – Jurilinguistics: Between Law and Language*, 71–89. Brussels and Montreal: Bruylant and Les Éditions Thémis.

Mattila, Heikki E. S. 2008. Les abréviations juridiques. Méthode de recherche jurilinguistique. *International Journal for the Semiotics of Law – Journal international de sémiotique juridique* 21(4). 347–361.

Mattila, Heikki E. S. 2009. Los cambios del lenguaje administrativo en el mundo de hoy. Un balance comparativo de los últimos 25 años. *Revista de llengua i dret* 51. 17–37.

Mattila, Heikki E. S. 2011. Cross-references in court decisions. A study in comparative legal linguistics, *Lapland Law Review* 1(2011). 96–121. http://www.ulapland.fi/?deptid=22824 (accessed 10 July 2017).

Mattila, Heikki E. S. 2012. *Jurilinguistique comparée: Langage du droit, latin et langues modernes*. Cowansville, Québec: Yvon Blais.

Mattila, Heikki E. S. 2013. *Comparative Legal Linguistics: Language of Law, Latin, Modern Lingua Francas*, 2nd edn. Aldershot: Ashgate.

Mattila, Heikki E. S. 2016. Legal vocabulary. In L. Solan and P. Tiersma (eds.), *Oxford Handbook on Language and Law* (originally published in 2012, re-published in 2016 as a paperback with a few updating corrections).

Matulewska, A. 2013. *Legilinguistic Translatology.* Bern et al.: Peter Lang.

Mellinkoff, David. 1963. *The Language of the Law*. Boston and Toronto: Little, Brown and Co.

Meyer, Dieter. 1993. *Juristische Fremdwörter, Fachausdrücke und Abkürzungen*, 10th edn. Neuwied et al.: Luchterhand.
Molfessis, Nicolas. 1999. Le renvoi d'un texte à un autre. In N. Molfessis (ed.), *Les mots de la loi*. 55–72. Paris: Economica.
Nuolijärvi, Pirkko and Gerhard Stickel (eds.). 2016. *Language Use in Public Administration. Theory and Practice in the European States. Contributions to the EFNIL Conference 2015 in Helsinki. European Federation of National Institutions for Language*. Budapest: Research Institute for Linguistics. Hungarian Academy of Sciences http://www.efnil.org/conferences/13th-annual-conference-helsinki/proceedings/EFNIL-Helsinki-Book-Final.pdf (accessed 10.07.2017).
Nussbaumer, Markus. 2013. Die deutsche Gesetzessprache in der Schweiz. In M. Brambilla, J. Gerdes and C. Messina (eds.), *Diatopische Variation in der deutschen Rechtssprache*, 117–152. Berlin: Frank and Timme.
Pigolkin, A. S. (Пиголкин, А. С.) (ed.). 1990. Язык закона [Statutory Language]. Moscow/Москва: Юрид. лит.
Polenz, Peter von. 1999. *Deutsche Sprachgeschichte vom Spätmittelalter bis zur Gegenwart* III. Berlin and New York: de Gruyter.
Pozzo, Barbara (ed.). 2014. *Lingua e diritto: oltre l'Europa*. Milan: Giuffrè editore.
Prasad, Anirudh and Chandra Sen Pratap Singh. 2016. *Outlines of Legal Language in India*, 8th edn. Allahabad: Central Law Publications.
Prieto de Pedro, Jesús. 1991. *Lenguas, lenguaje y derecho*. Madrid: Editorial Civitas.
Resnik, Judith and Dennis Curtis. 2011. *Representing Justice: Invention, Controversy, and Rights in City-States and Democratic Courtrooms* (Yale Law Library series in legal history and reference). New Haven, Conn.: Yale University Press.
Resnik, Judith and Dennis Curtis. 2014. Constructing Courts: Architecture, the Ideology of Judging, and the Public Sphere. In A. Wagner and R. K. Sherwin (eds.), *Law, Culture and Visual Studies*, 515–545. Dordrecht: Springer Publishing Company.
Salogubova, E. V. (Салогубова, Е. В.). 1997. Влияние римского права на российское гражданское процессуальное законодательство [The influence of Roman Law on Russian legislation concerning civil procedure]. *Вестник Московского университета*, 11 право 2. 29–37.
Sanaker, John K., Karin Holter and Ingse Skattum. 2006. *La Francophonie. Une introduction critique*. Oslo: Academic Press.
Schmidt-Wiegand, Ruth 1990 Rechtssprache. In: A. Erler and E. Kaufmann (eds.), *Handwörterbuch zur deutschen Rechtsgeschichte* 4, 344–360. Berlin: Erich Schmidt Verlag.
Snow, Gérard 1999 Techniques de transfert du droit dans un contexte multilingue. In: R. Sacco and L. Castellani (eds.), *Les multiples langues du droit européen uniforme*, 187–192. Turin: Editrice L'Harmattan Italia.
Solan, Lawrence M. 1993. *The Language of Judges*. Chicago and London: The University of Chicago Press.
Stângu, Lucian. 2000. Quelques réflexions sur le Code civil français, en tant que source d'inspiration pour le langage du Code civil roumain. In I. Lamberterie and D. Breillat (eds.), *Le français langue du droit*, 73–82. Paris: Presses Universitaires de France.
Šarčević, Susan. 1997. *New Approach to Legal Translation*. The Hague, et al.: Kluwer Law International.
Šarčević, Susan. 2010. Creating a Pan-European Legal Language. In M. Gotti and C. Williams (eds.), *Legal Discourse across Languages and Cultures*, 23–50. Bern et al.: Peter Lang.
Šarčević, Susan (ed.). 2015. *Language and Culture in EU Law: Multidisciplinary Perspectives*. Farnham: Ashgate.
Tiersma, Peter. 1999. *Legal Language*. Chicago and London: The University of Chicago Press.
Tiersma, Peter. 2006. Some myths about legal language. *Law, Culture and the Humanities* 2. 29–50.
Troisfontaines, Paul. 1981. Le langage judiciaire. *Annales de la Faculté de droit, d'économie et de sciences sociales de Liège*. 153–169.

Veleanu, Corina. 2010. *La Romania entre Orient et Occident. Deux siècles d'influence de la langue et de la culture juridiques françaises en Europe: Roumanie, Portugal, Union Européenne.* Sarrebruck: Éditions universitaires européennes.

Vlasenko, N. A. (Власенко, Н. А.). 1997. Язык права [The Language of Law]. Irkutsk/Иркутск: Восточно-Сибирское книжное изд-во.

Wacke, Andreas. 1990. Lateinisch und Deutsch als Rechtssprachen in Mitteleuropa. *Neue Juristische Wochenschrift*. 877–886.

Wagner, Anne and Sophie Cacciaguidi-Fahy (eds.). 2008. *Obscurity and Clarity in the Law*. Aldershot: Ashgate.

Xavier, Ronaldo Caldeira. 2001. *Português no direito (Linguagem forense)* [Portuguese in Law – Judicial Language], 15th edn. Rio de Janeiro: Editora Forense.

Zanon, Heinz. 2008. Zur Problematik der Entwicklung einer deutschen Rechtssprache für Südtirol. In E. Chiocchetti and L. Voltmer (eds.), *Normazione, armonizzazione e pianificazione linguistica*, 49–59. Bolzano: LexAlp.

Żmigrodzka, Bożena. 1997. *Testament jako gatunek tekstu* [The Testament as a Text Genre]. Katowice: Wydawnictwo Uniwersytetu Śląskiego. Prace naukowe Uniwersytetu Śląskiego w Katowicach nr 1698.

Żyśko, Konrad and Angelina Rusinek. 2012. Is Chinese Mandarin becoming a Global Lingua Franca? *Lublin Studies in Modern Languages and Literature* 36/2012. 61–76.

Ingrid Simonnæs and Marita Kristiansen

7 Economic language

Abstract: This chapter deals with communication which belongs to what can be labelled *economic language*, including the language of business, finance and economics. Initially, economic language as such is delineated, its interdisciplinary nature is discussed, and it is contrasted with e.g. that of legal language with which it is closely related.

A set of case studies are presented in order to illustrate the scope of research in LSP on economic language and to highlight some of central aspects which characterise economic language with particular emphasis on terminology research, including that of interdisciplinarity, dichotomisation, the use of metaphors and evocative language. Next, the challenge of specialised collocations and phraseology is addressed, in particular in relation to non-native speakers. The dynamic nature of economic language is also addressed including that of term formation, anglification as well as domain loss. In relation to this, the translation of economic texts is also discussed before we conclude by presenting studies which look at economic discourse as evident in LSP texts.

1 Introduction

In this chapter we will take a look at economic language, which for our purpose will comprise the language of business, finance and economics. It is, however, not a straightforward task to clearly delineate the notion of economic language (cf. Alexander 1999), and the first section of this chapter will therefore address the issue of how it can be defined and what kind of texts are typically economic texts. Hundt (1998) rightly deplores that 'economic language' often has been investigated only as the language used in stock indices and economic newspapers. He concludes therefore that the languages of specific purposes (LSP) in the economic domains from a linguistic point of view still represent to a large extent a "*terra incognita*" (Hundt 1998: 1301; for similar argumentation on the preferred use of journalistic texts only for the purpose of investigating economic language, see Alejo 2009).

Our contribution will hopefully bring new insights into this domain as we use a more fine graded overview of economic texts taking economic disciplines and subdisciplines as a starting point for our discussion on what characterises 'economic language' as such. Our discussion will, however, by no means be exhaustive since our knowledge of relevant studies is limited to what we have been able to comprehend

Ingrid Simonnæs and Marita Kristiansen, Bergen (Norway)

https://doi.org/10.1515/9783110228014-007

language-wise, thus excluding e.g. Spanish, and delineated by the horizon of our knowledge and experience based on for instance publications disseminated through channels such as international LSP conferences and available scientific journals.

Initially, we will in section 2 discuss how the notion of economic language may be delineated. A central characteristic of social sciences in general and the economic-administrative domains in particular, is that they are highly interdisciplinary and share concepts and terminology across domain borders (Kristiansen 2004, 2007). In addition, since economic language is used in every-day situations, for instance in trade and industry, or in public administration, it is also closely related to legal language (cf. chapter 6). We will therefore address more specifically the interrelatedness of economic domains, and in particular the interrelatedness between economic and legal language.

Next, we will present a survey of the scope of research, including a discussion of some illustrative cases on economic language in section 3. In this section we will focus on terminology research, including the use of dichotomisation and metaphors in economic language. Furthermore, the use of specialised collocations will be addressed as well as changes in both domains and terminology in several economic domains and the influence of English. Then we take a look at translation studies which focus on economic language, and finally text linguistic studies, respectively.

2 Delineating 'economic language'

Before delineating what constitutes economic language, we need to be more accurate when talking about 'language'. Thus we may differentiate between 'language' as a system (Saussure's *langue*) and as 'parole' as the actual use when speaking a particular language. There exists no economic language (system) *per se*; however, the linguistic characteristics will be differently distributed when compared to what might be called 'general language'. Nowadays it is generally acknowledged that the two areas, 'general language' (LGP) and 'special language(s)' (LSP) are overlapping as shown in Figure 1.

The movement from LSP area into the LGP area, for instance in case of determinologisation, and vice versa, as in the case of terminologisation, is symbolised by the arrows. Consequently, LSP and LGP are not only overlapping, but the degree to which we have an instance of either will vary.

As already mentioned, it may be difficult to clearly delineate what constitutes 'economic' language. One reason for this is the fact that in LSP research, the term 'economic' is frequently used with reference to a number of domains or subdomains. A quick search in e.g. the "Bibliography of Recent Publications on Specialized Communication" in *Fachsprache* indicates that since 2010 a separate category has existed on what is called "Business" including studies on 'Business reports', 'Letters

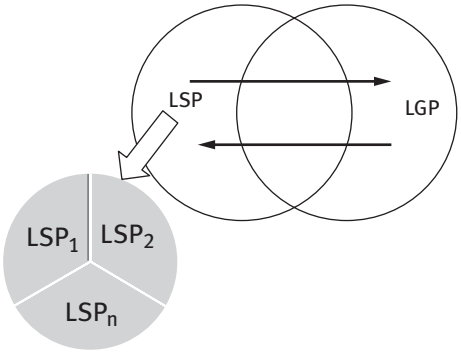


Figure 1: Continuum between LSP and LGP.

to shareholders', 'Annual Reports', as well as on business communication, corporate communication, and various studies dealing with advertising and marketing. We will return to some of these in further detail below.

A narrow understanding of 'economic language' may be the language belonging to the discipline of *economics* as such, which can be described as a social science concerned chiefly with description and analysis of the production, distribution, and consumption of goods and services (Merriam-Webster.com). When looking at the two main branches of economics, i.e. *microeconomics* and *macroeconomics*, the scope within economics is relatively wide, including among others individuals, businesses, markets, monetary issues and global political issues:

> *microeconomics: branch of economics which studies the allocation of scarce resources, focusing on the behavior of individual economic units – consumers, firms, workers, and investors – as well as the markets that these units comprise (Pindyck and Rubinfeld, 2005: 4)*
>
> *macroeconomcis: [branch of economics] examining how total investment and consumption are determined, how central banks manage money and interest rates, what causes international financial crisis and why some nations grow rapidly while others stagnate (Samuelson and Nordhausen 2010: 5)*

Economic analysis may be applied throughout society, such as in business, finance, health care, and government. Thus economic language will be evident in these applied areas as well, but as we will argue below, we have chosen to concentrate on the most central ones.

A too narrow delineation of economic language as being the language used in economics only, will, however, exclude closely related domains such as business management and finance, which are also central domains to authorities, enterprises and society at large. For the purpose of our discussion, economic language is therefore seen as including all these three domains and their subdomains, thus including the application of economics theory in real-life situations. This will include for instance the language of financial reports (Nissilä 2007, 2008), analyses of financial terminology in news articles (cf. Andersen 2008; Kristiansen 2012a, 2014b), international harmonisation of concepts within financial accounting (Fuertes-Olivera and Nielsen

2011, 2014; Kristiansen and Monsen 2010; Kristiansen 2014b), or the use of metaphors in finance (Salway and Ahmad 1997) or in economics (Alejo 2009), to name but a few.

In addition, economic domains are closely related to those of administrative domains, such as management, strategy and organisational studies. Bondi (2006) for instance distinguishes between economics and business studies, where the notion of business studies includes domains such as marketing, corporate management, human relations etc. (Bondi 2006: 51). Such a division includes the administrative disciplines as part of what can be grouped as economic-administrative domains, typically offered in business studies (cf. Figure 2). Accountancy is also included in Bondi's overview; however, for the purpose of our discussion we will argue that this belongs to the group of economic domains.

Sociological indications of what constitutes economic language may be for instance the existence of scientific journals like the *European Journal of Economics, Finance and Administrative Sciences*, which groups the economic-administrative domains into three, i.e., the fields of *economics*, *finance* and *administrative sciences*. Another example may be the *Journal of Economic and Administrative Sciences* (JEAS), which promotes research in the areas of business administration, accounting, economics, quantitative methods and related subjects. The same holds for German and French journals such as *Betriebswirtschaftliche Forschung und Praxis* (BFuP) or Schmalenbachs *Zeitschrift für betriebswirtschaftliche Forschung* (ZfbF) or *Economie appliquée* or *Revue économique*, although the latter one has a slightly broader scope. Thus, accounting, economics and finance are frequently singled out as economic domains. This corresponds well with the delineation made by for instance the Norwegian Association of Higher Education Institutions, which has established a national plan for a 3-year bachelor of business administration (UHR.no) with focus on the economic-administrative domains (cf. Figure 2).

As shown in Figure 2, the economic-administrative domains include four main categories: economics, business management, finance as well as strategy and management. Of these categories, the latter belongs to the administrative sciences and will therefore go beyond our discussion of economic language as such in this chapter. There is, however, interdisciplinarity between the administrative domains and the economic ones (Kristiansen 2004). An example of this interdisciplinarity may be a major Norwegian terminographical project dating back to Grundt et al. (1989) on labour market related terminology, a multilingual project with French, English, German as well as Norwegian terms, including topics such as contracts of employment, pay systems, working environment regulations and collective trade agreements.

Examples of LSP research focusing on economics in particular range from terminological analyses of microeconomics (Toft and Roth 1990; Kristiansen 2010), the implantation success of planned economics terminology in Turkey (Karabacak 2009), research on specialised collocations and phraseology (L'Homme 2011), studies of specialised collocations in free trade agreements (Patiño 2011, 2014, 2017), to discourse analyses, including Koskela's analysis of tax authorities (Koskela 2010), Musacchio

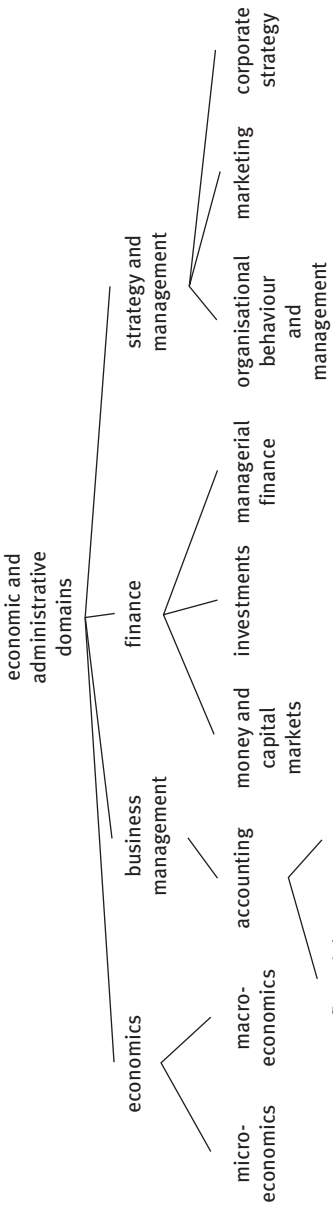


Figure 2: A general overview of economic-administrative domains.

and Palumbo's study of the use of connectives in Italian economics articles (2010), Musacchio and Ahmad's analysis of the metadiscourse in Nobel Prize lectures in economics (2009), or Fløttum *et al* (2006) on cultural identity in academic texts about among others, economics, just to mention a few. We will return to these studies together with a number of others in our discussion below.

2.1 The interdisciplinary nature of economic domains

As mentioned above, the economic and administrative domains are closely related. In addition, the economic domains themselves are also interrelated, something which obviously complicates the delineation of what constitutes economic language. Furthermore, they also share terminology and seemingly identical concepts.

To illustrate this, we may compare the domains of economics and financial accounting. Financial accounting may be defined as the process of "reporting of the financial position and performance of a firm through financial statements issued to external users on a periodic basis" (Investopedia.com). The domain therefore focuses on financial matters within an enterprise or entity in the private or public sector. The interrelatedness among the two domains is discussed in Kristiansen (2011: 38–39), in which the concept of COST is used as an example of concepts which share the same term in both microeconomics and financial accounting. The term 'cost' is frequently used to denote the cost concepts in both microeconomics and financial accounting. The term is, however, clipped, and the full and thus more precise term is for financial accounting (FA), 'accounting cost', and for microeconomics (ME), 'economic cost', as illustrated in examples 1 and 2. A third cost concept must be included to fully describe the concept of ECONOMIC COST, i.e., the concept of OPPORTUNITY COST (example 3, we use capitals for the designation of the concept and inverted commas [' '] for the linguistic expression, and when necessary italics for the translation of the linguistic expression).

(1) **accounting cost (FA)**
actual expenses plus depreciation charges for capital equipment
(Pindyck and Rubinfeld, 2005: 214).

(2) **economic cost (ME)**
cost to a firm of utilizing economic resources in production, including opportunity cost
(Pindyck and Rubinfeld, 2005: 214).

(3) **opportunity cost (ME)**
costs or compensation for not exploited alternative opportunities
(http://www.themanager.org/models/profit.htm).

Examples of other concepts which also share the same term in both domains may be those of PROFIT and INCOME.

We will return to a description of characteristics which are typical for economic language in our discussion below on terminology as a hallmark, and in our

comparison of terminology vs. translation and text linguistic issues related to economic language in sections 3.6 and 3.7, respectively. First, however, we will make a distinction between economic and legal language, which is also often overlapping due to the close relation between economic and legal matters for individuals, enterprises and society at large.

2.2 Where does economic language end and legal language begin?

Business, finance and economics are in many cases intertwined with law. Delineating economic language from legal language can therefore be difficult. For instance, a text may be perceived as both economic *and* legal. An example may be the international financial reporting standards (IFRS) adopted by the EU in 2002, which clearly deal with both financial accounting issues and rules for how to value assets and record these in the financial statements of public limited companies. These texts are legal in that they state the rules for such valuation and recording, something which thus has legal implications for national accounting legislation. However, the texts also discuss many issues which relate to economic language, such as the terminology of financial accounting, or concepts relating to mergers and acquisitions (cf. *IFRS 3: Business combinations*). Another example of texts which are characterised by both economic and legal language may be *Basel III*, i.e., the international regulatory framework for banks (http://www.bis.org/publ/bcbs209.htm).

The intertwinement between economics and law is also evident in specialised dictionaries, which often include both domains. Examples here might be Dietl, Moss and Lorenz (1979–1983) "Dictionary of **Legal, Commercial** and Political Terms" [emphasis added], or Doucet and Fleck "Wörterbuch der **Rechts**- und **Wirtschaftssprache**" [emphasis added]. Another example is "Norsk-tysk juridisk ordbok" [Norwegian-German legal dictionary] (Simonnæs 1994) which, although as indicated by its title, is a legal dictionary, also includes economic terminology. An example from this latter dictionary may be the concepts of AGIO or ANNUAL REPORT (in Norwegian 'årsberetning') which belongs to the domain of financial accounting, in connection with the particular entries as illustrated in examples 4–5.

(4) **agio, overkurs** [PRNÆR]
i.e. forskjellen mellom kursen på et verdipapir og dets pålydende.
Aufgeld *n*
i.e. der Betrag, um den der Preis eines Wertpapiers über dem Nennwert liegt (Simonnæs 1994: 12)

(5) **årsberetning** [PRNÆR]
i.e. den publikasjon som bedriften presenterer årlig som ekstern økonomisk informasjon.
Geschäftsbericht *m*
Der Geschäftsbericht der Deutschen Bank für 1992 enthält neben dem Jahresabschluß u.a. auch jeweils einen Bericht des Aufsichtsrats und einen des Vorstands. (Simonnæs 1994: 253)

For the purpose of our discussion, a first distinction is therefore made between (1) authoritative legal texts on economic issues and (2) other economic texts. Examples of the former are company laws and private legal documents such as contracts between two (or more) parties, e.g. employment contracts or debt acknowledgements. Examples of the latter are business agreements, letters of intent, memoranda of understanding etc.

When it comes to LSP studies of authoritative legal texts on economic issues, our focus will, however, not be on research on the typical legal language as such as evident in the texts, including linguistic characteristics such as technical terminology, archaic, formal, and unusual or difficult vocabulary, impersonal constructions, nominalisations, passive constructions, multiple negation, long and complex sentences and wordiness and redundancy (Tiersma 1999). For the scope of this chapter such texts are relevant only to the extent they are used for analyses of economic language use including terminographic studies of for instance accounting terminology (Soffriti 2002), business entities (Simonnæs 2001; Lind 2006) or studies of specialised collocations in free trade agreements (Patiño 2011, 2017). Typical for such texts is their "doppelte Fachsprachlichkeit" (Soffriti 2002) in that they are legal texts which focus on economic topics. Soffriti's German examples on *Einnahmen* in the domain of accounting and *Einkünfte* from tax law can easily be transferred into other languages. The same applies to business entities in Norwegian legislation, in which the term 'aksjeselskap' denotes both the superordinate concept of AKSJESELSKAP1 ('limited company') and the subordinate concept of AKSJESELSKAP2 ('private limited company'). In German the specific superordinate concept is KAPITALGESELLSCHAFT with its subordinate concepts GMBH and AG (see Figure 3). Such incongruity is a challenge in conveying the Norwegian terminology to other language communities (Morck 2007; German Desk Newsletter 2012).

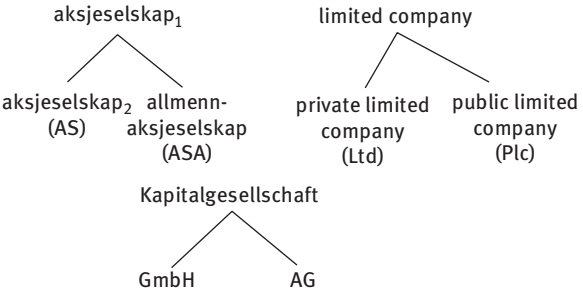


Figure 3: Comparison of terminology on business entities.

In addition, the use of language may presumably differ slightly for those texts which we consider as "other economic texts". Most commercial contracts are nowadays made in writing. However, when drawing important contracts the parties often seek legal counsel to avoid interpretation problems later on. Thus there will still be some

linguistic features common with authoritative legal texts because of important legal rules involved, e.g. the legitimacy of the person representing a given company in a sales deal or the catering for possible breach of contract such as in a severability clause:

> *If any provision or provisions of this Agreement shall be held to be invalid, illegal, unenforceable or in conflict with the law of any jurisdiction, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby. (http://liblicense.crl.edu/resources/licensing-terms-descriptions/general-clauses/severability/)*

> *Sollten einzelne Bestimmungen dieses Vertrages unwirksam oder undurchführbar sein oder nach Vertragsschluss unwirksam oder undurchführbar werden, bleibt davon die Wirksamkeit des Vertrages im Übrigen unberührt. An die Stelle der unwirksamen oder undurchführbaren Bestimmung soll diejenige wirksame und durchführbare Regelung treten, deren Wirkungen der wirtschaftlichen Zielsetzung am nächsten kommen, die die Vertragsparteien mit der unwirksamen bzw. undurchführbaren Bestimmung verfolgt haben. Die vorstehenden Bestimmungen gelten entsprechend für den Fall, dass sich der Vertrag als lückenhaft erweist. (http://www.rechtslexikon-online.de/Salvatorische_Klausel.html)*

The two examples above show characteristics which are typical for authoritative legal texts such as the use of 'shall' (Williams 2005, 2006; Seoane and Williams 2006; McClintock 2015, quoting Driedger (1968)) and the verbosity in both languages to encompass every possible legal effect. In UK legislation, the use of 'shall' has practically been replaced by 'must' or by semi-modal 'is'/'are', according to a recent study (cf. Biel 2014, pointing to a recent study by Garzone 2013). Both texts also follow a common structure from condition to consequence "If X, then P". However, in contrast to the English clause giving all the consequences in one sentence, the German clause is divided into three separate sentences, where the consequences are outlined in more detail, perhaps to be more intelligible to the non-/semiprofessional addressee and to spell out every possible consequence (see also chapter 6 on legal language).

2.3 "Other economic texts"

To the bulk of "other economic texts" and their relevance for the type of discourse we typically include those from economic/financial newspapers, in print or online, e.g. *The Economist*, *Financial Times*, *Financial Times Deutschland*, *Handelsblatt*, or *Alternatives Economiques and Capital*, which deal with different types of economic, financial or business-related issues. In addition, textbooks on finance, business and economics as well as research articles on the same topics are included. This presents a wider range of economic texts than earlier investigated (cf. Hundt 1998).

Typical for "other economic texts" is the relationship between the sender/producer as an expert, although often mediated by a journalist or a lecturer/researcher, respectively, and the reader/addressees as non-expert (Picht 1999; Spang-Hanssen 1983) with special interest in economic issues. This is what Fløttum and Dahl (2011) in their

study on climate change discourse describe as *knowledge asymmetry,* i.e., a situation in which one party has more knowledge than the other on the topic in question. From this it follows that we have to take into account that there are differences between on the one hand general language discourse, on the other hand LSP discourse *per se* and some kind of intermediate discourse. In other words, there is, as claimed by others, e.g. Roald (2010), not a clear cut dichotomy, but rather a continuum of types of discourse.

This calls for a continuum of different text genres as well which may be used in the analyses of economic language, as illustrated in Figure 4, which is based on Kristiansen and Andersen (2012).

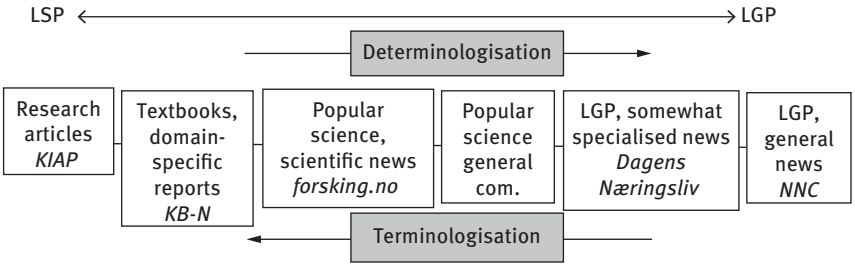


Figure 4: Popularisation of science along the cline from scientific texts to news articles.

Figure 4 should be seen in relation to the above discussion about the overlap between LSP and LGP (Figure 1), but now also including examples of different text genres along the cline from scientific texts to news articles in daily newspapers. For the purpose of our approach we support the definition of genre in Koskela (2010: 433) which is based on Orlikowski and Yates (1994) as a type of communicative action with a social recognized communicative purpose and which shares aspects of form. The examples are only used for illustration and do not claim to be exhaustive.

Research articles represent a prototype of genre belonging to scientific texts on a variety of topics according to the particular domain investigated. The recognized communicative purpose is to disseminate new knowledge and findings about a particular topic. The form of a research article may vary depending on the discipline investigated, but, nevertheless, it can be claimed that research articles share at least some aspects of form, such as the macrostructure IMRAD (Introduction, Method, Results and Discussion) which is today almost omnipresent in research articles and other scientific papers and not only in the "hard" sciences. In Figure 4, the *KIAP* corpus (Kulturell Identitet i Akademisk Prosa [Cultural Identity in Academic Prose] cf. section 3.7) is used as an example. In such a text genre we encounter an expert-to-expert communication situation where the addressee is expected to be familiar with the particular terminology.

The next group mentioned in Figure 4 is represented by e.g. textbooks and/or domain specific reports. These are still full of domain specific terminology, but they also give relevant definitions/explanations (e.g. the *KB-N corpus texts*) to the

addressed novice on the particular topic. The use of illustrations is also a typical discursive feature of textbooks. In another disseminating setting we find the genre of popular science and scientific news, in Figure 4 represented by *forskning.no*, which is a website devoted to the mediation of Norwegian and international research. Moving towards the right-hand side of Figure 4 we find popular science in which the specific terminology through the process of determinologisation is becoming part of every speaker's linguistic competence of that language community. To illustrate the penultimate category of text genres in Figure 4, *Dagens Næringsliv* is used, which is a daily Norwegian financial newspaper. In this newspaper the reader finds mainly specialised news on various economic, financial or business-related topics. Finally, the most general text genre is in Figure 4 represented by e.g. the Norwegian Newspaper Corpus (henceforth the NNC).

There are many examples of *terminologisation* in economic language, i.e., the fact that terms move from general language to becoming a part of a specific domain and its vocabulary, such as for example the term 'to hedge' which in general language means to protect yourself from something unpleasant, but which in finance refers to making an investment in order to reduce risk. Another example may be the use of evocatives (cf. section 3.3 below), something which is frequent in for instance terminology related to mergers and acquisitions, such as 'white knight' or 'poison pill' which both are related to possible defence strategies for companies to protect themselves against hostile takeovers.

An example of determinologisation of an economic term may be that of 'bottom line' which refers to a company's net income or earnings per share (EPS). In general language the expression is frequently used in the sense of the most important factor to consider when e.g. making a decision. Another example, in which the semantics have been retained, is that of 'subprime' which after the US subprime mortgage crisis which struck in 2007 has undergone a determinologisation and is now used in general language in most European languages.

Another way of describing the fact that there is no clear cut distinction between LGP and LSP is to describe it in line with Roald (2010). He proposes a three-layer model in which newspaper texts are placed in the third layer ("*strate tertiaire*"):

> *Cette strate est le lieu des productions de textes qui se situent à une distance maximale de la spécialité [...] si bien qu'on entre dans la sphère commune et donc* ***dans la langue générale****. (Roald 2010: 112,* [emphasis added]

This fits very well with our research object. When investigating economic newspaper texts, an example of Roald's third layer, we can see that these texts are dominated by LGP, although being interspersed with terminology from the domain being discussed. The sender-addressee relation is between a semi-expert (journalist) and the average reader of such texts (lay-person/non-expert). In contrast to the inner layer ("*strate primaire*"), the terminology in these texts is used only as a kind of citation words. On the other hand, in the inner layer, i.e., in an expert-to-expert communication

situation, the sender and addressee will know the concept system behind the terms and as such have an in-depth understanding of the text.

In addition, the textbooks in economics fit very well with the second layer ("strate secondaire") of Roald's model where the relationship consists of a sender/producer as an expert and the reader/addressee as a non-expert with a special interest in economic issues. The student has to grasp the full meaning of a new concept which (s)he is not yet familiar with and which the sender therefore often describes in both natural language and mathematical-logical language (Kristiansen 2010). The latter is often the most precise way of conveying the intention of the concept at hand. An example may be the concept of EQUILIBRIUM PRICE, which can be rendered either by means of natural language (cf. example 6) or as a graph which is typically used in the domain (cf. Figure 5).

(6) **equilibrium price**
price prevailing in a competitive market (Pindyck and Rubinfeld 2005: 8)

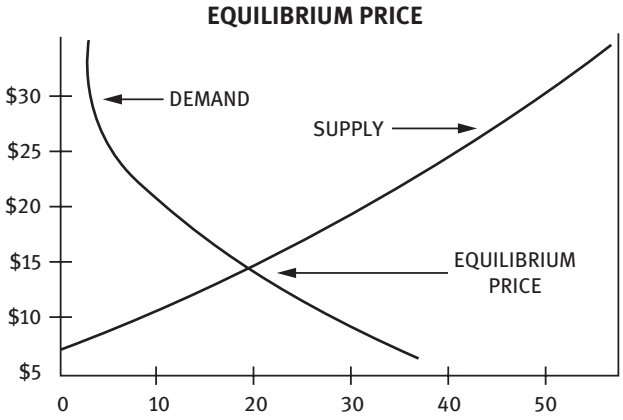


Figure 5: The concept of EQUILIBRIUM PRICE (URL: http://www.allbusiness.com/asset/image/glossaries/4966891.gif).

3 Scope of research on economic language

As evident from the literature referred to throughout this chapter, economic language has been subject to much LSP research. Furthermore, its characteristics have been investigated from many perspectives ranging from terminological studies, including traditional terminography, the emergence of new terms (neologisms), in particular the influence of English on other languages (anglicisms), the degree of term variation or the use of metaphors, to text analyses and discourse studies of for instance macroeconomic lectures or scientific papers.

The introduction of computers and the access to the worldwide web have, obviously, had a tremendous effect on linguistic research in general and spurred the discipline of corpus linguistics especially since the 1980s. Consequently, corpus linguistic approaches are also now frequently applied in the research of LSP in general and in particular in economic language.

In the following, we will focus on some issues of LSP research on economic language, including terminography, translation and text linguistic studies, as well as some corpus-based studies.

3.1 Terminology as the hallmark

It is generally accepted that terminology is an important hallmark of any LSP. In the following we will focus on economic terminology taking into account the more recent literature in the field.

An early motivation for focusing on economic terminology was the need for specialised dictionaries in connection with foreign language teaching and foreign language acquisition, the teaching of language for business purposes and in connection with translation studies, including, with respect to Norway especially, courses given to the candidates for the national translator accreditation exam.

In the Nordic countries such resources were scarce only a few decades ago. Consequently, much attention has been given to the making of dictionaries in this field with focus on their particular vocabulary and terminology. Research on economic terminology has therefore resulted in publications for didactic purposes that have been reprinted and appearing in new and enhanced editions over the years to the benefit of students and translators. The making of dictionaries in economic languages has been carried out with focus on different subdomains (e.g. Parsenow [1975] 1985, Toft and Roth 1990, Frønsdal 1996, Hansen 1992, Simonnæs 1994, Lyng Svensson 2008), and other updated and revised editions (e.g. Lind and Hansen 2010).

In the last decade or so English has to an increasingly extent become the *lingua franca* in business (Anderman and Rogers 2005) and the influence and use of English textbooks in higher education has become prominent in the Nordic countries (Saarinen 2011). New initiatives have therefore been taken e.g. in Norway to establish termbases covering the economic domains. An example may be the language-technology project *KB-N* (Knowledge Bank of Norway), funded by the Norwegian Research Council (NFR) which includes English and Norwegian terminology in the economic-administrative domains (e.g. Kristiansen 2005, Brekke 2008), including both a parallel corpus and a termbase (Brekke et al. 2006). A follow-up project is the *NHH Termbase* for Norwegian and English terminology of economic-administrative domains (Kristiansen 2010), which is aimed at students of economic-administrative domains at university level.

Economic terminology is a relative wide concept since it for the purpose of this chapter includes not only economics, but also finance and business-related topics.

This means that the various subdomains will vary to the extent that there are inherent disciplinary differences between them, epistemologically speaking. In order to give a wider perspective of what typically characterises economic terminology, we will in the following present some illustrative cases. These will be thematically grouped based on certain perspectives, including dichotomisation, the use of metaphors and evocative use of language, specialised collocations, and domain loss and term dynamics.

3.2 Dichotomisation

In order to do LSP research, it is important to understand the epistemological characteristics of a domain. *The Stanford Encyclopedia of Philosophy* defines *epistemology* as "the study of knowledge and justified belief". For our purpose we will understand "knowledge" as some sort of insight into or understanding of basic concepts in a given domain and the relationships to similar concepts stored in our memory. This knowledge should be shared by sender and addressee to enable at least to a certain degree communication without which comprehension of the topic in question would not be possible.

One epistemological characteristic which is noticeable in the language of financial accounting and economics is that of *dichotomisation*, i.e., the existence of concept pairs (Nissilä 2006; 2007; 2008). In her study on concept systems of Swedish balance sheets issued by Swedish-based and Finnish-based companies, respectively, Nissilä demonstrates that balance sheet concepts are typically arranged on the basis of dichotomisation, e.g. DISTRIBUTABLE EQUITY versus NON-DISTRIBUTABLE EQUITY (Nissilä 2006: 290). The balance sheet, or statement of financial position, is a financial statement which summarises a company's assets, liabilities and shareholder's equity at a specific point in time (investopedia.com), which belongs to the domain of financial accounting (see Figure 2). The concept pair of ASSET and LIABILITY is another example of the dichotomisation of concepts in the balance sheet.

Terminology research has shown that strict dichotomisation of concepts often has to be abandoned due to the existence of vagueness and complexity in a specific domain (Myking 2007). Nonetheless, many of the concepts in financial accounting, as demonstrated by Nissilä, have dichotomisation as an inherent characteristic which is in fact due to man-made regulations (Nissilä 2007).

This characteristic of dichotomisation is also evident in economics, in which concepts are constructed along two-dimensionally perspectives or even three-dimensional conceptual clusters of *trichotomies* (Kristiansen 2010: 7–9). An example may be the concept of COMPETITIVE MARKET in the subdomain of microeconomics, which can be defined as a market with many buyers and sellers where no single buyer or seller has a significant impact on price (Pindyck and Rubinfeld, 2005: 8). This concept can thus be described through the perspective of actors of two kinds, i.e., buyers and sellers, which again are reflected in the concepts of DEMAND and SUPPLY, respectively, where the buyer obviously will have a certain demand for something which

the seller may supply. These two concepts are typical examples of dichotomisation in economics. In addition, these concepts are frequently related to other concepts such as ELASTICITY, in which the perspectives may be elastic or inelastic supply (or demand), or with focus on time, involving concepts such as SHORT-RUN SUPPLY (or DEMAND) or LONG-TERM SUPPLY (or DEMAND), just to mention a few examples. 'Short-run' and 'long-run' is another frequent dichotomisation in economics.

Furthermore, it is also a common characteristic that these concept dichotomies are related to other three-dimensional conceptual clusters. An example is the fact that many concepts are calculated as marginal, average or total measurements, such as the concept of COST.

(7) **marginal cost**
cost of one additional unit of a good (Pindyck and Rubinfeld 2005: 85)

(8) **average cost**
total production costs divided by the quantity produced (based on Synnestvedt 2007: 148)

(9) **total cost**
total economic cost of production, consisting of fixed and variable costs (Pindyck and Rubinfeld, 2005: 216)

By adding the time dimension to the concepts, this results in concepts such as SHORT-RUN MARGINAL COST, SHORT-RUN AVERAGE COST and SHORT-RUN TOTAL COST, respectively, as illustrated in Figure 6.

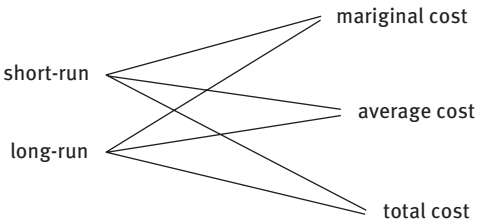


Figure 6: Trichotomisation in microeconomics.

3.3 The use of metaphors and evocative use of language

Another typical characteristic of economic language is the use of metaphors and evocative language. This is perhaps not surprising since economic LSP shares many characteristics of LGP of which metaphors and evocative use of language are typical characteristics. White (2003: 133) rightly argues that in an abstract discipline like economics we should expect to find the use of metaphors "ubiquitous" based on several assumptions including Lakoff's view of metaphorisation being the main mechanism through which abstract concepts are comprehended and abstract reasoning is performed. Already in the 1990s McCloskey (1995) used as a title "Metaphors economics live by" thus connecting his study to Lakoff and Johnson's seminal work "Metaphors we live by" (1980). Other well-known studies on metaphors in economic discourse

are Weinrich ([1958] 1976), Jäkel (1993), Boers (1999) and Stefanowitsch and Gries (2006), among others. See also Bracker and Herbrechter (2005), Musacchio (2011) and Langerfeld (2015) on studies on metaphors in economics.

Since the literature on metaphors does not seem to provide a common delineation of the concept of metaphor, we have to expect different interpretations when metaphors in economic language are discussed. The concept of metaphor as seen by Aristotle as a "novel or poetic linguistic expression [...] used outside of its normal conventional meaning to express a *similar* concept" (Lakoff 1993: 202) has developed in modern cognitive metaphor theory (theories) to "cross-domain mapping" (1992: 203), i.e., conceptualisation of one mental domain in terms of another.

Three examples which may illustrate the use of metaphors in daily economic news language are 'white knight', 'golden parachute' and 'poison pill'. The first metaphor of 'white knight' is often used to name a friendly acquirer in a takeover setting; 'golden parachute' is another well-known metaphor designating lucrative benefits given to executives when their employments are terminated; finally 'poison pill' is a metaphor used to designate the strategy used by corporations to make their stock less attractive to defend themselves from hostile takeovers.

An example of LSP research on metaphors may be the study by Salway and Ahmad (1997) on the role of metaphors used by financial analysts, who are domain experts and journalists (non- or semi-experts), in financial texts which according to the authors' definition include news articles, official reports and in-depth financial analyses. Their delineation of the concept of metaphor is based on Eco (1984) equating metaphor with "the invocation of some [...] analogy and similarity between concepts" (Salway and Ahmad 1997: 2). Their study investigates whether quantitative methods can be used to detect metaphor candidates in the corpus they use for demonstration. Within such a framework they are able to explicate the distribution and usage of metaphors in financial monolingual texts and provide evidence for "the wide extent of usage of metaphors in the production and understanding of financial texts" (Salway and Ahmad 1997: 10). See also Langerfeld (2015) on a comparison of the use of metaphors in economic journals and research articles from a contrastive German and Norwegian point of view.

Alejo (2009) is another study on metaphors of relevance to our topic. He concentrates on the container metaphor only and stresses the fact that most texts investigated until now have been chosen from the genre of journalistic texts which he argues can hardly be said to be representative of discourse of economics. In contrast, Alejo therefore chooses to concentrate on textbooks aimed at learners in economics. He argues that the use of the container metaphor makes it easier for economic discourse to disregard human agency by presenting agents "not as those who carry out the actions taking place in the economy but as the 'places' where those actions start from or reach." (Alejo 2009: 1149). This conclusion fits well with the general insight into the use of LSP with linguistic features like nominalisation and deagentivisation.

Finally, Devitt and Ahmad (2010) focus on "language of emotion", in which they describe sentiment analysis as a subject that requires not only a knowledge of the

terms of a domain but also a cognitive understanding of the metaphors and emotions realised in specialist communication (p. 40). They investigate for that purpose the language of finance and present how indicators of sentiment may be inferred ('extrapolated') from news texts. Their case study gives evidence of how formalised transactions (corporate takeovers in their example) in the language community of finance indeed "are infused with highly affective language" (Devitt and Ahmad: 48) and as such supports the above mentioned relevance to economic language. For instance they discuss SUBPRIME MORTGAGE which is referred to by using words such as 'global crisis', 'meltdown' or 'earthquake', and argue that "[t]his metaphorical use of sentiment words in the context of domain-specific technical terms is vital in the expression of sentiment" (Devitt and Ahmad*:* 41).

3.4 The use of specialised collocations in economic language

The phenomenon of collocation (phraseological word combinations) should also be mentioned when describing the various linguistic and discursive features in economic language. "Collocation" itself needs more precision as the phenomenon is differently delineated in various languages and by different scholars (Burger et al. 2007: 15). Collocations and similar phenomena such as idioms are seen as "fixed expressions" (Burger et al. 2007: 3) of a language, being subclasses of the wide area of phraseology, which in turn is explained as the general use to refer to recurrent lexico-grammatical patterning (Moon 2007: 1045). Kjær (2007) stresses that the focus is now more on the relative stability of word combinations caused by re-occurrence and reproduction in particular extra-linguistic and textual contexts (Kjær 2007: 508). This is due to the corpus linguistic approach facilitating the extraction process.

In the sense of lexico-grammatical patterning, the pattern under scrutiny may be *noun + noun* or *noun + adjective*, as can easily be found in dictionaries of general language, but also more specifically *noun + verb* combinations. The last decade this patterning has received an increasing interest in LSP research. Orliac (2006) uses an approach to semi-automatically extracting specialised collocations from a parsed corpus of computer texts and focuses on *noun + verb* combinations in computer language. Based on her findings, she argues that combinations of *noun + verb* such as e.g. '[to] run a program', '[to] execute a command', '[to] press a key', represent "**au même titre que les termes**, les moyens d'expression conventionnels du discours spécialisé, mis en œuvre par les spécialistes pour communiquer. " (Orliac 2006: 264 [emphasis added]), i.e. represent in the same way as terms the conventional means of expressions in specialised discourse adopted by specialists for communication purposes. This view is supported in an earlier study by Gréciano (1995) in which it is argued that "die Gemeinsamkeit zwischen Terminus und Phrasem liegt im Kernbereich ihrer Zeichenhaftigkeit" (Gréciano: 186) and subsequently that phrasemes fulfil the same role as a term in denominating a particular 'Sachverhalt' (subject matter).

She substantiates her argument with examples such as e.g. 'entrer en vigueur'/'in Kraft treten', 'prononcer un jugement'/'ein Urteil verkünden' (Gréciano: 187).

If we return to our topic of specialised collocations in economic language, Gläser (2007: 491) identifies the usual expected form of *noun + adjective* (premodifier) e.g. 'mittelfristige Finanzplanung' together with more examples taken from Bernem (1994) such as 'semi-skilled worker', 'depreciation on wear and tear' (*noun + adjective* (postmodifier), 'to levy income tax on sb.' (*verb + noun + prepositional phrase*) contrastive to the German collocations, among others.

The topic of collocations, and in particular in economic language, is obviously particularly important when dealing with specialised lexicography/terminography. It is commonly acknowledged that in specialist communication the command of the relevant terminology alone is not enough and should be complemented by the command of the collocations used with the particular terminology.

L'Homme (2009: 238) rightly refers to the fact that non-experts may encounter difficulties in producing the correct verb, noun or adjective "that is typically found in combination with a specific term". Hence her study investigates a methodology for extracting collocations (candidates) and subsequently for encoding these in LSP dictionaries or terminological databases in domains such as stock trading and business. According to L'Homme, the recommended way of representing collocations should be to account for their linguistic properties (syntactic structure (e.g. 'fixer le prix'), i.e., ("somme d'argent (ou partie d'un autre bien ou service) qui représente la valeur d'un bien ou d'un service (Y) offert à la vente par un agent économique [(... – X)] à un autre agent économique [(...–Z)]' and the actantial structure of the keyword (X and Z in this case) (L'Homme 2009: 253). As mentioned above, there is no common agreement on what should be seen as collocations. Hence the question of the representation of phraseological data, including collocations, in a systematic way in general and in specialised dictionaries in particular, is still unsolved. A recent study by Patiño (2017) offers a description and classification of English and Spanish specialised collocations from Free Trade Agreements that appear in a parallel corpus, an area which belongs to the subarea of international trade in macroeconomics.

3.5 Domain loss, term dynamics and term formation

English is to an ever increasing extent gaining ground as the *lingua franca* in many domains (Anderman and Rogers 2005; Fuertes Olivera and Nielsen 2014; Kristiansen 2014b), and increasingly so also in economic domains. In Europe this development has been intensified by the Bologna declaration which promotes an easy transfer of students, lecturers and researchers in higher education, making it more important to have one common language of communication. Thus, internationalisation has become important both in research and teaching, and the language gap has been bridged by English.

This situation has fuelled a growing concern for the development and maintenance of native LSPs and terminology and whether or not several domains are heading towards domain loss. Consequently, domain loss has in the last decade or so received much attention in LSP research too. We use *domain loss* in line with the definition in Laurén, Myking and Picht (2004: 8):

> *Verlust der Kommunikationsfähigkeit in der Muttersprache auf allen Ebenen eines Wissensgebiets aufgrund fehlender Weiterentwicklung der erforderlichen fachsprachlichen Mittel*

or the equivalent definition in English in Picht (2014: 188):

> *Loss of ability to communicate in the national language* ***at all levels of an area of knowledge*** *because of deficient further development of the necessary means of professional communication* (emphasis in the original).

Thus, total domain loss means an inability to communicate in the mother tongue at any level of a given domain because of a deficient development of the necessary LSP means (cf. chapter 23).

The influence of English and the increased use of e.g. anglicisms may result in a deterioration of a particular language. The degree to which anglicisms are accepted in a language will, however, vary greatly. In French for instance, anglicisms should be avoided according to the Académie française and instead be replaced by words of French origin, e.g. 'prix hypotécaire à risque' instead of 'subprime'. France even has a special act that regulates the usage of French (*Loi Toubon* 1994), mandating the use of French in official government publications, in all advertisements, all workplaces, commercial contracts, in some other commercial communication contexts, in all government-financed schools, and some other contexts (www.legifrance). The language policy is promoted even at the highest political level, here illustrated by a quotation from former President Sarkozy, who supported the French language policy by stating that

> *Je veillerai à ce que, dans les entreprises installées sur le territoire français, la langue de travail soit le français, dès lors qu'il n'y a aucune nécessité économique ou commerciale qui oblige à s'exprimer dans une autre langue.* (cited in Moraldo 2008: 16 f.)

thus announcing that he wanted to see to it that the working language in companies in France would be French as long as there is no economic or commercial need to use another language.

Also in Germany the use of anglicisms is being discussed, however, the language policy is not as strict as in France. Busse (2008: 56 f.) discusses for instance a survey conducted by the Institut für Deutsche Sprache in 1997/1998 which includes expressions such as 'Shop', 'Shopping', 'shoppen'; 'managen', 'Manager', 'Management' and 'City'. These expressions, however, are not related to economic language in particular.

A similar investigation has been made on modern import words, including anglicism, in the Nordic languages (Sandøy 2000, 2005). Not surprisingly, Sandøy's investigation (2005) reveals that in general the highest percentage of import words is to be

found in the text genre advertisements in newspapers, with a marked lower percentage for Icelandic. However, his investigation relates to general language and not to economic language in particular.

In the following we will instead present a few illustrative studies which relate to the formation and change of economic terminology, the influence of English and possibly domain loss.

Finance is a highly global domain with for instance a number of cross-border financial market mergers or acquisitions (guardian.co.uk). The most recent global financial crisis also illustrates the highly international character of the domain. Thus the domain is one which may be heading towards domain loss. As the financial crisis evolved into a macroeconomic crisis with the increase in sovereign debt, i.e., government debt in many countries, society at large took a growing interest in finance and financial issues. Consequently, finance became a topic of interest for almost everyone. This led to the emergence of typical financial jargon and technical expressions such as 'shorting', 'credit default swaps' and 'structured products' even in daily newspapers.

An illustrative example might be the occurrence of 'derivat' ('derivative') in Norwegian newspapers, illustrated by means of the Norwegian Newspaper Corpus (NNC; http://avis.uib.no/) in Figure 7 (Simonnæs and Roald 2009). The term refers to a security whose price is dependent upon or derived from one or more underlying assets (investopedia.com). Figure 7 illustrates the occurrence of the anglicism in Norwegian newspaper texts. The highest frequency is found in the already mentioned financial daily *Dagens Næringsliv* (DN). For an overview of the newspapers that are included in the NNC, see http://avis.uib.no/.

In Kristiansen (2011, 2012a, 2012b) the occurrence of English financial terminology in the NNC is studied in more depth, including analyses of possible term variants designating financial concepts such as SUBPRIME, HEDGE FUND, CREDIT CRUNCH and SHORT SELLING. The analyses demonstrate that even when Norwegian designations (terms) exist for concepts, they are frequently expressed by anglicisms, e.g. 'CDO' (collateral debt obligation), 'CDS' (credit default swap), and/or by calques such as 'subprimelån' ('subprime loan'), 'hedgefond' ('hedge fund') or 'shortsalg' ('short selling').

These different categories of designations are also used relatively consistently and in the same time period, resulting in many term variants as illustrated in Figure 8 where five variants used to denote the concept of SUBPRIME LENDING in the NNC are displayed, including 'subprimelån' ('subprime loan'), 'subprime boliglån' ('subprime mortgage'), 'høyrisiko-boliglån'/'høyrisiko boliglån'('high-risk mortgage'), 'råtne boliglån'('rotten mortgages') and 'lavt gradert lån (subprime)' ('low-graded mortgage').

By counting the frequency of each variant per year, it is evident that some expressions are more used than others. As the bar chart demonstrates, 'subprimelån' and 'råtne boliglån' are by far the most frequent, and these two variants compete in frequency from year to year. The latter is obviously more informal and carries a clear

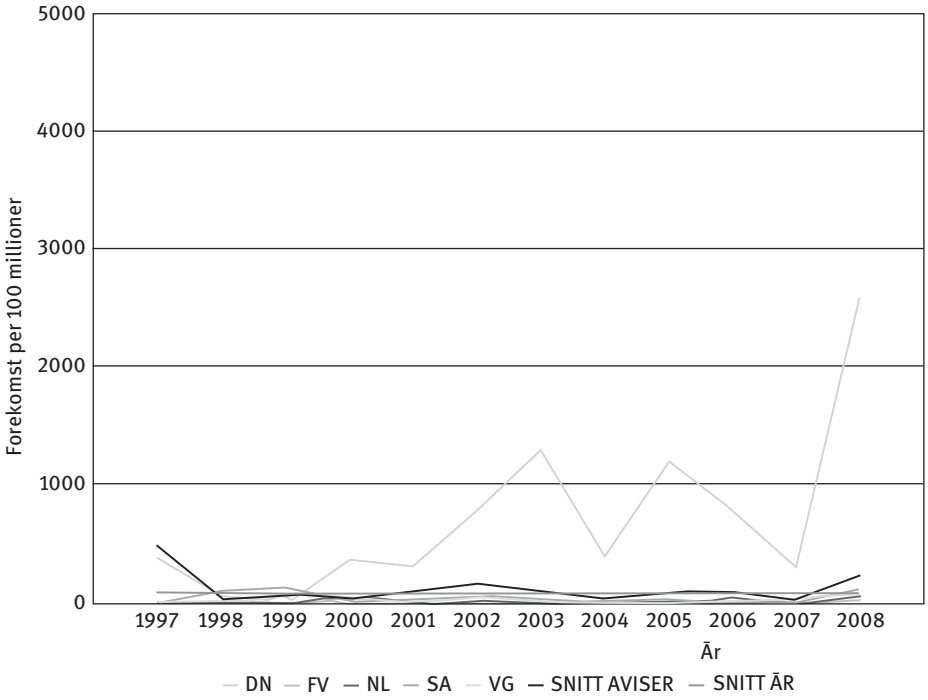


Figure 7: Instances of 'derivat' in the NNC (Simonnæs and Roald 2009).

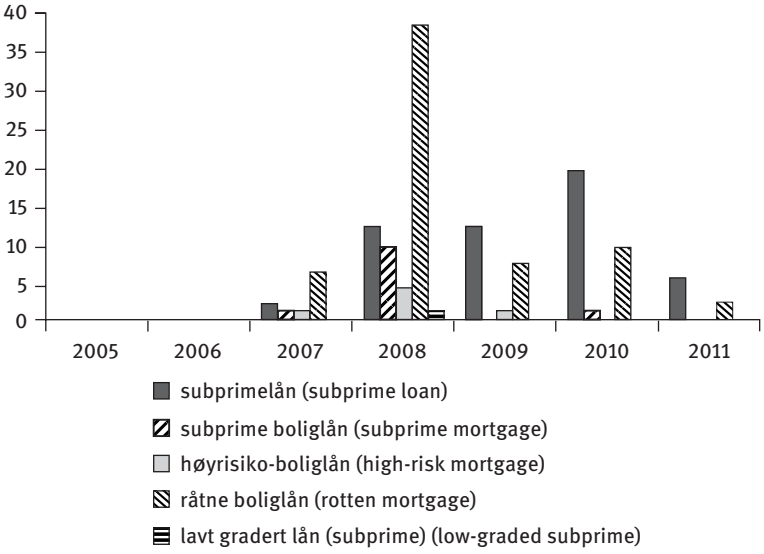


Figure 8: Term variants for the concept of subprime lending in the NNC (Kristiansen 2012b).

negative connotation not necessarily suitable in a formal specialised setting like for instance teaching. In addition, the calque 'subprimelån' is preferred compared with the Norwegian expression 'høyrisiko-boliglån', although the latter is more transparent.

Another example may be the concept of STRUCTURED PRODUCT, which is discussed in Kristiansen and Andersen (2012: 47). The concept refers to customised financial products designed to meet the specific needs of investors and which are linked to the price development of an underlying market, such as commodities, shares or debt issuance. Hence the synonymous term 'market-linked product'. These financial products consist of either a deposit or a bond part, i.e., the guaranteed return and a derivative element which may generate returns beyond the guaranteed amount. This explains the Norwegian term variants 'garantert product' and 'garantert spareprodukt' (lit. 'guaranteed (savings) product'). A typical way to introduce the concept in Norwegian is shown in the example taken from the NNC [10].

(10) ... såkalte strukturerte spareprodukter, som også blir omtalt som garanterte spareprodukter eller råtne spareprodukter. (DN060111)

[*so-called structured savings products, which are also referred to as guaranteed savings products or rotten savings products*]

As many as 11 variants are used in the NNC from 2000 until 2011 to denote the concept of STRUCTURED PRODUCT, although the term variant 'strukturert product' is an elliptical (clipped) version of 'strukturert spareprodukt' ('structured (savings) product'), for' garantert (spare)produkt' ('guaranteed (savings) product'), for 'sammensatt (spare)produkt' ('combined (savings) product') and for 'komplisert (spare)produkt' ('complex (savings) product').

By comparing occurrences over the period analysed Kristiansen and Andersen (2012) are able to pinpoint the distribution of term variants for STRUCTURED PRODUCT which they suggest should be taken into consideration when terms are selected for inclusion in terminographic/ lexicographic databases to denote this particular financial concept. The distribution gives an interesting perspective on which of the neologisms have gained ground and which seem to be short-lived. The term 'indeksprodukt' ('index product'), for instance, has only been used once or twice each year in the period analysed. The most frequent term pair, 'strukturert (spare) produkt' is clearly the strongest competitor from 2008 onwards.

Based on these analyses in finance, there is no indication of domain loss in Norwegian yet, however, calques and anglicisms are gaining ground. Furthermore, it is evident that a large general corpus like the NNC can reveal the dynamics of term formation and neologisms. The strategies for neology include, not surprisingly perhaps, the borrowing of existing terms, usually taken from English, and/or various types of secondary term formation, as translation loans, calques or other adaptions. These are phenomena that are often discussed in the field of translation studies as well, where the same strategies often are applied when a concept from the source culture and language is not known in the target culture and language and the translator has to

find an adequate designation. Particularly interesting in this context is the discussion in Kristiansen and Andersen (2012) of extensive terminological variation due to the 'laissez-faire' term formation process (cf. Sager 1997; Temmerman and Kerremans 2011). Too much terminological variation in LSP communication may hamper the knowledge transfer and is therefore subsequently often standardised by domain experts, standardisation organisations or language regulatory bodies. However, in Norway for instance, there is presently no such process carried out, contrary to what happens in other countries such as Turkey (cf. Karabacak 2009).

Another dynamic economic domain is that of accounting (Fuertes-Olivera and Nielsen 2011; 2014) which has been subject to major changes the last decade or so due to the European initiative to harmonize the presentation of financial statements of public limited companies, through the international accounting standards (IAS) and the international financial reporting standards (IFRS) adopted by the EU in 2002. In the adaptation process of implementing the standards, initially set forth using the English language, it has not only been a challenge to establish native terminology, but also to delineate the accounting concepts in such a way that the adaptation to a national accounting legislation is successful. This includes both harmonising the international accounting standards with already established national accounting practices, and ensuring convergence between the various national accounting acts upon the completion of the translation and adaptation processes.

In their article on dynamic terms in accounting, and in particular financial reporting, Fuertes-Olivera and Nielsen (2011) discuss the need for specialised language resources which allow for the dynamic nature of economic language, a view also supported in Kristiansen (2011) in which financial accounting and finance are used to illustrate the dynamic nature of economic terms. An example discussed in Fuertes-Olivera and Nielsen (2011) may be the term 'enterprise' which is used to denote the business unit that issues the financial reports to its stakeholders. During the 1990s this term has gradually been replaced by the term 'entity' (Fuertes-Olivera and Nielsen 2011: 159.). Another example may be that of the financial report which discloses the profits or losses of the business unit in a given accounting period, previously called 'profit and loss account' in British English. Following the international harmonisation process, this statement is now called 'income statement', which is the term used in American English. Table 1 illustrates this term variation in international financial reporting (Kristiansen 2011: 42):

Table 1: Term variation in international financial reporting.

UK	US	IASB	Norway
stock	inventory	inventory	beholdninger
shares	stock	shares	aksjer
profit and loss account	income statement	income statement	resultatregnskap

3.6 Terminology and translation

A commonly acknowledged prerequisite for LSP translations of good quality is solid knowledge about a particular domain and insight into form and content of the particular linguistic expression. For this purpose LSP dictionaries (mono- and bilingual) have always played an important role, but are nowadays more often supplemented by concept-based text and termbase knowledge management systems as e.g. discussed in Brekke and Innselset (2004) and Budin (2012). The applicability of language technology tools to translation is seen as important also to further improve machine translation in the context of professional communication in English (and Norwegian). However, this issue will not be pursued further in this chapter.

For minor languages like the Nordic languages, bilingual dictionaries are often a must when it comes to LSP. This is why the user of one particular LSP, e.g. economic language, in a first attempt tries to look up the needed translation suggestion. However, as is commonly acknowledged, the search should not stop here but should be continued in at last a monolingual dictionary. Here one expects to find good examples and perhaps even definitions of the specific concept and relations to its superordinate concept etc. together with the linguistic representation(s) (term). A good example, although covering English and not a minor language, may be Black, Hashimzade and Myles (2009). This dictionary contains some 2,500 entries on all aspects of economics, ranging from microeconomics and macroeconomics to e-commerce and international trade (from the internet). The same holds for the use of bilingual dictionaries. In the domain of economics we find e.g. Dietl, Moss and Lorenz (1979–1983) and their bilingual English-German/German-English dictionary covering legal, commercial and political terms. The title once again demonstrates the overlap between legal and economic language. Nowadays electronic available dictionaries and glossaries have in many cases supplemented earlier print versions (cf. *Gabler Volkswirtschafts Lexikon* vs. *Wirtschaftslexikon.gabler.de*).

Another study, Monsen (2006), compares the differences between the English concept of REVENUES and EXPENDITURES, the German EINNAHMEN and AUSGABEN and the Norwegian INNTEKTER and UTGIFTER in private sector income statements vs. in public sector statements. The Norwegian terms are developed on the basis of German due to the influence of Schmalenbach on the development of the discipline of financial accounting in Norway (Norstrøm 2002). Monsen points to the well-known challenge of importing concepts and terminology which have been developed in another cultural context with another legal tradition than the Norwegian one.

Furthermore, he argues that the future challenge consists in developing a concept system, including national (Norwegian) terminology which is harmonised with the concept system of the new international accounting standards IAS/IFRS. Such harmonisation may require a revision of the established terminology at a later stage.

Metaphors in economics represent yet another challenge in translation. Fuertes-Olivera and Nielsen (2011) investigate and compare the information in

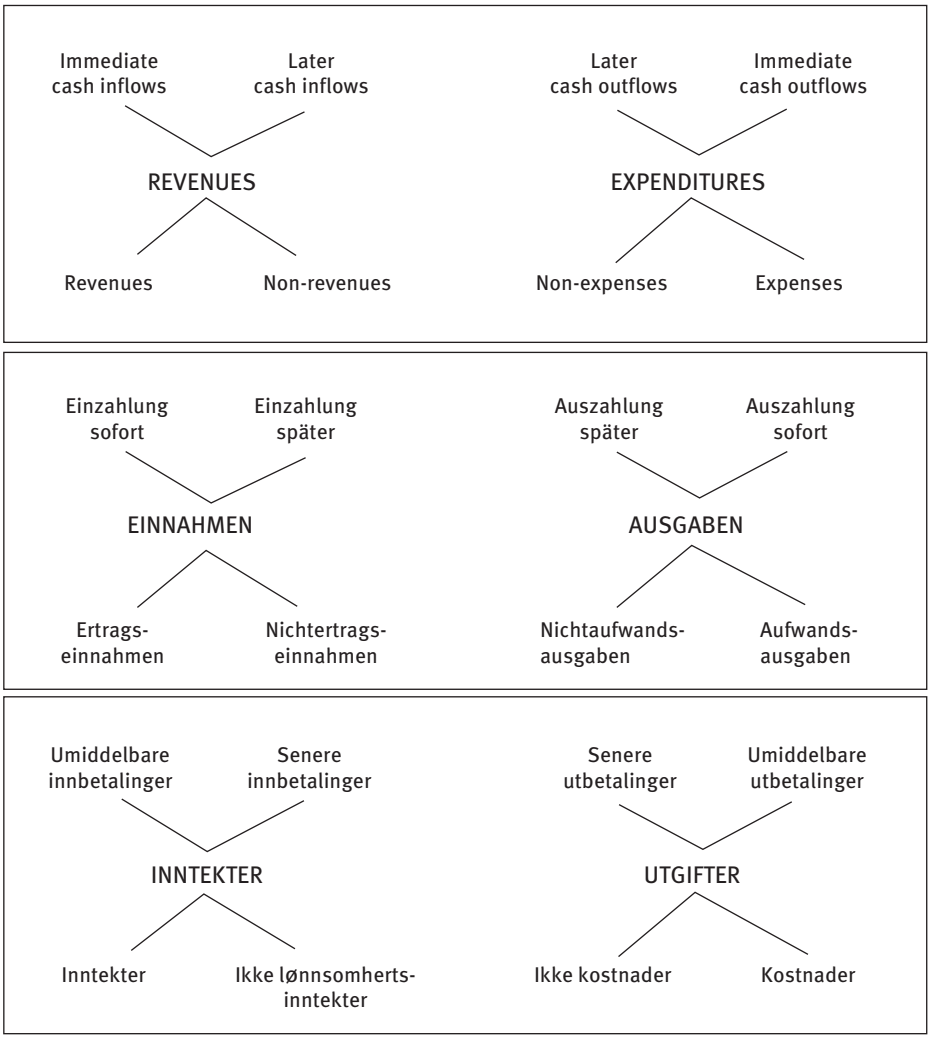


Figure 9: Comparison of concept systems across languages (Monsen 2006: 34, 33).

different economic dictionaries about metaphorical terms in culture-bound domains using financial accounting as an example. Supporting their argumentation about the structural and terminological changes in this domain both on a national as well as an international level due to the introduction of the international accounting standards (IAS/IFRS), their study seems highly relevant. Metaphorical terms such as e.g. 'PIGS', 'arm's length' and 'hedge fund' with their translation into Spanish are discussed together with the challenge of coming up with a good translation. In their discussion about 'arm's length', for instance, the authors demonstrate that the literal translation *longitude del brazo* exist and is used in Spanish medical discourse, but not

in Spanish accounting texts. Hence they refer to a translation strategy by substitution using a conceptually related methaphorical term 'a precio de Mercado' ('at market price') as a synonym to 'en condiciciones de igualdad' (Fuertes-Olivera and Nielsen 2011: 172–173). Another illustrative example the authors refer to is 'thin capitalisation' which traditionally was rendered by 'subcapitalización' in Spanish whereas the IAS/IFRS standards introduce a novel metaphor 'capitalización delgada'. This suggested term means, however, literary speaking "nonsensical in Spanish", something which has resulted in the continued use of the previous term 'subcapitalización' although this has no official status anymore (Fuertes-Olivera and Nielsen 2011: 174).

Likewise, Temmerman (2011) concludes that evocative language and metaphors are often difficult to translate. Her research object is evocative language and the use of metaphors once again in the domain of finance, accounting, but also banking. According to Temmerman, evocative language stimulates thinking, makes ideas advance and helps resolve cognitive and communication problems (2011: 49). Neologisms as part of evocative terminology creation are in many cases language and culture bound and thus often difficult to translate. Therefore Temmerman uses *inter alia* examples of evocative metaphorical terminology in an English text on the financial crisis translated into Dutch and French. She demonstrates that neutral wording in English sometimes is turned into more colourful expressions e.g. "[The EU] saw its socio-economic model **assailed from several sides**" [emphasis added] compared to the French translation "[avec] un modèle économique et social **de toutes parts accusé**" [emphasis added] or that the connotations are changed when translating "crash", usually connotated with 'rapid' and 'dramatic', into 'déliquescence' which is connotated with a slow process in time (2011: 57–58).

However, with regard to translation method(s), the linguistic and extra-linguistic knowledge found in dictionaries should, as argued above, whenever possible be supplied by other search methods such as trying to find comparable texts on the topic at hand. Nowadays this is not a major problem as searches on the internet in many cases result in a plethora of texts. In this connection approaches from text linguistics prove to be useful. Therefore our next section will focus briefly on text linguistics and its relevance to economic LSP texts, whether these are monolingual or bilingual.

3.7 From terminology to text linguistics

The heading of this section indicates that the research focus in LSP has changed substantially: Traditionally the concern about terminology has been at the centre of LSP studies together with the investigation of the use of specific linguistic means more frequently found in LSP than in LGP. Consequently, there has been a special focus on teaching foreign language skills to students and/or professionals for their language use in professional settings. However, current LSP research uses a more all-embracing approach: the aim of text linguistics is to focus on the description of the whole text

in a particular communicative setting, using *inter alia* discourse analysis including genre analysis. This involves the study of linguistic patterns in a text type having a specific communicative purpose or purposes. We will in the following illustrate this change by some illustrative examples.

Holmes (2001) studies research articles in agricultural economics journals sponsored by national professional associations in the United States, Canada, the United Kingdom, Australia and India. He analyses the "move" structure of the discussion sections of different articles by examining the frequency and distribution of moves and the degree of structural complexity. One of his findings is that these texts show distinct preferences for certain moves. His suggestion is that the variation seems to reflect economic, social and cultural pressure and constraints.

In Bondi (2006), the interplay between narrative and argumentative structures in research articles in economics and business management is analysed. According to her findings, narrative inserts are usually intended for the purpose of testing models in economics in contrast to function as tools to develop models in business management.

Another interesting example is Flowerdew and Wan (2010) who use the domain of accounting as the background for their study. The authors focus more specifically on the genre of the company audit report. Their study has a clear didactic approach in that it outlines how language trainers may focus on particular sections of the audit report in order to help auditors improve their writing skills (Flowerdew and Wan: 78).

In the KIAP project (Kulturell Identitet i Akademisk Prosa [Cultural Identity in Academic Prose]) by Fløttum, Dahl, Kinn (2006) the object of study is *inter alia* economics texts approached by a text linguistic analysis. Its main objective has been to investigate whether authors of academic prose (research articles *in casu*) are primarily influenced by their cultural identity as linked to their language and national culture or rather to discipline-specific features identifiable in the texts. The study demonstrates that there are significant differences in comparison to the two other disciplines investigated, i.e., medicine and linguistics. In a pilot study within the KIAP project, the authors conclude with respect to economic texts that "Economists are shy writers who avoid promoting themselves by means of personal pronouns in connection with stating personal opinions." (Dahl et al. 2002: 232).

In a her study of 2009 Dahl investigates how economists present their knowledge claims, realised in terms of three specific linguistic features: overt signalling of the claim, hedging the claim and use of tense in the claim sentence. Again the genre of research articles, as a subcorpus from the above mentioned KIAP corpus, is the text basis for this explorative study. Her findings show that economist authors more often than not draw the attention of their readers by an overt signalling of the claim, such as *Our main finding is* using as preferred tense the simple present. Her analysis reveals that the location for the knowledge claim(s) is not only in the introduction, but also in the conclusion, which clearly seems to indicate the strategic nature of the research communication process.

4 Concluding remarks

The aim of our article has been to highlight some characteristics of economic language as one particular LSP. After having delineated economic language for the purpose of our investigation, we use a descriptive approach and discuss relatively recent research accessible to us from the point of view of language.

We discuss the scope of research on economic language in seven subsections starting with the impact of terminology on the particular subject field of economics. Here we choose to follow the categorisation of economic-administrative domains according to the Norwegian Association of Higher Education Institutions (UHR) and argue for the inclusion and exclusion of certain subdomains for the purpose of our study.

Next, we discuss the relevance and advantage of dichotomisation and even trichotomisation in the conceptualisation of economic issues. This approach is seen as especially useful by simplifying the vagueness and complexity of real-life phenomena.

In the same vein metaphors and evocative use of language, discussed in the third section, are also seen as facilitating our understanding of economic texts, since in modern metaphor theory the conceptualisation of one mental domain in terms of another is acknowledged as a means of knowledge transfer.

The use of specialised collocations/phraseology in economic language is a well-known challenge especially for non-native speakers, particularly due to the different terminological problems in designating the linguistic phenomena to be included. In the studies we have discussed the focus is on the one hand on recurrent lexico-grammatical patterning, e.g. *verb + noun* combinations, and on the other hand on methods for collecting and subsequently encoding such collocations in LSP dictionaries or terminological databases.

Internationalisation and globalisation have given rise to the growth of English worldwide, and this has caused the so-called domain loss for minor languages such as e.g. Norwegian. This issue is discussed in relation to that of term dynamics and term formation. The studies investigated show typical examples of how the financial crisis after the bankruptcy of Lehman Brothers in 2008 caused an overuse of English terms in Norway in the domain of finance and the emergence of many term variants including hybrid Norwegian-English terms.

The discussion about the possible negative consequences of too much terminological variation in LSP communication constitutes a natural transition to the penultimate section about terminology and translation. The studies referred to in this section emphasise the indispensable connection between in depth subject matter knowledge and linguistic competence which is commonly recognized and emphasised in many LSP studies.

The last section deals with the modern approach in LSP research where the focus has changed from primarily terminology to the whole text. We have referred to the discussion of discourse analysis as a research method used in some LSP studies on the basis of three different types of economic texts: textbook, audit reports and research

articles. The findings from these studies seem to underpin the text linguistic approach as a powerful instrument to reveal the use of specific linguistic means in LSP texts.

References

Alejo, Rafael. 2009. Where does the money go? An analysis of the container metaphor in economics: The market and the economy. *Journal of Pragmatics* 42. 1137–1150.

Alexander, Richard John. 1999. The recent English-language register of economics and its present importance for world commerce and trade in the late 20th century. In Lothar Hoffmann, Hartwig Kalverkämper and Herbert Ernst Wiegand (Herbert Ernst Wiegand, eds.), *Fachsprachen – Languages for Special Purposes. Ein internationales Handbuch zur Fachsprachenforschung und Terminologiewissenschaft – An International Handbook of Special Languages and Terminology Research* (Vol. 2), 1466–1472. Berlin and New York: Mouton de Gruyter.

Anderman, Gunilla and Margaret Rogers. 2005. *In and Out of English: For Better, For Worse?* Buffalo: Multilingual Matters.

Andersen, Gisle. 2008. Quantifying domain-specificity: the occurrence of financial terms in a general corpus. *SYNAPS – Fagspråk. Kommunikasjon. Kulturkunnskap* 21/2008. *Festskrift for Magnar Brekke*. 37–52. https://brage.bibsys.no/xmlui/handle/11250/2394872 (accessed 11 July 2017).

Bernem, van Theodor. 1994. *Wirtschaftsenglisch-Wörterbuch:Englisch-Deutsch. Deutsch-Englisch*, 3rd edn. München: Oldenbourg.

Biel, Łucja. 2014. The textual fit of translated EU law: a corpus-based study of deontic modality. *The Translator* 20(2). 10.1080/13556509.2014.909674. http://dx.doi.org/10.1080/13556509.2014.909675 (accessed 4 September 2014.

Black, John, Nigar Hashimzade and Gareth Myles. 2009. *Oxford Dictionary of Economics,* 3rd edn. Oxford: Oxford University Press.

Boers, Frank. 1999. When a Bodily Source Domain Become Prominent. The joy of Counting Metaphors in the Socio-Economic Domain. In Raymond W. jr. Gibbs and Gerard J. Steen (eds.), *Metaphor in cognitive linguistics. Selected papers from the fifth international cognitive linguistics conference*, 47–56. Amsterdam, July 1997. Amsterdam and Philadelphia: John Benjamins,

Bondi, Marina. 2006. 'A case in point': Signals of Narrative Development in Business and Economics. In Ken Hyland and Mariana Bondi (eds.), *Academic discourse across disciplines*, 47–72. Bern: Peter Lang.

Bracker, Nicole and Stefan Herbrechter. 2005. *Metaphors of economics*. Amsterdam and New York: Rodopi.

Breivega, Kjersti R., Trine Dahl and Kjersti Fløttum. 2002. Traces of self and others in research articles. A comparative pilot study of English, French and Norwegian research articles in medicine, economics and linguistics. *International Journal of Applied Linguistics* 2. 218–239.

Brekke, Magnar and Kai Innselset. 2004. KB-N (KunnskapsBank for Norsk økonomisk-administrativ domene). Presentasjon av et korpusbasert terminologiprosjekt [KB-N (KnowledgeBank for Norwegian economic domain). Presentation of a corpus based terminologly project]. *SYNAPS – Fagspråk. Kommunikasjon. Kulturkunnskap* 15. 1–19. https://brage.bibsys.no/xmlui/handle/11250/2394872 (accessed 11 July 2017).

Brekke, Magnar. 2008. Heuristics for Term Extraction from Parallel and Comparable Text: The KB-N Legacy. LREC 2008. Poster presentation, Language Resource and Evaluation Conference (LREC), Marrakech, May 2008. http://www.lrec-conf.org/proceedings/lrec2008/ (accessed 15 April 2012).

Brekke, Magnar, Kai Innselset, Marita Kristiansen and Kari Øvsthus. 2006. KB-N: Automatic Term Extraction from Knowledge Bank of Economics. In *LREC 2006 – 5th International Conference on Language Resources and Evaluation,* 21.05.–26.05.2006. 1912–1915. http://www.lrec-conf.org/proceedings/lrec2006/summaries/807.html (accessed 27 January 2012).

Budin, Gerhard. 2012. The evolution from paper-based to electronic dictionaries. Talk given at the seminar LexicoGrafitti, Luxembourg, 23 January 2012.

Burger, Harald, Dmitrij Dobrovol'skij, Peter Kühn and Neal R. Norrick (eds.). 2007. *Phraseologie – Phraseology. Ein internationales Handbuch der zeitgenössischen Forschung. An International Handbook of Contempory Research.* Berlin and New York: Mouton de Gruyter.

Busse, Ulrich. 2008. Anglizismen im Deutschen. Entwicklung, Zahlen, Einstellungen. In Sandro M. Moraldo (ed.), *Sprachkontakt und Mehrsprachigkeit. Zur Anglizismendiskussion in Deutschland, Österreich, der Schweiz und Italien*, 37–68. Heidelberg: Winter.

Dahl, Trine. 2009. The Linguistic Representation of Rhetorical Function. A Study of How Economists Present Their Knowledge Claims. *Written Communication* 26(4). 370–391.

Dahl, Trine and Kjersti Fløttum. 2011. Wrong or Just Different? How Existing Knowledge Is Staged to promote New Claims in English Economics and Linguistics Articles. In Françoise Salager-Meyer and Beverly A. Lewin (eds.), *Crossed Words: Criticism in Scholarly Writing*, 257–282. Bern: Peter Lang.

Devitt, Ann and Khurshid Ahmad. 2010. The Language of Emotion and Financial News. In Walter von Hahn and Christina Vertan (eds.), *Fachsprachen in der weltweiten Kommunikation. Akten des XVI Europäischen Fachsprachensymposiums, Hamburg 2007*, 40–49. Frankfurt/Main: Peter Lang.

Dietl, Clara-Erika, Anneliese A. Moss and Egon Lorenz. 1979–1983. *Wörterbuch für Recht, Wirtschaft und Politik* [Dictionary of legal, commercial and political terms]. München: Beck.

Driedger, Elmar. 1976 [1957]. *The Composition of Leglislation. Legislative Forms and Precedents*. Ottawa: Dept. of Justice.

Eco, Umberto. 1984. *Semiotics and the Philosophy of Language*. Bloomington: Indiana University Press.

Fløttum, Kjersti and Trine Dahl. 2011. Climate change discourse: scientific claims in a policy setting. *Fachsprache* 3–4. 205–219.

Fløttum, Kjersti, Trine Dahl and Torodd Kinn. 2006. *Cultural identities and academic voices. Across languages and disciplines.* Amsterdam and Philadelphia: John Benjamins.

Flowerdew, Jon and Alina Wan. 2010. The linguistic and the contextual in applied genre analysis: The case of the company audit report. *English for Specific Purposes* 29. 78–93.

Frønsdal, Harald. [1992] 1996. *Bedriftsøkonomi på tysk* [Microeconomics in German]. Bergen: Fagbokforlaget.

Fuertes-Olivera, Pedro A. and Sandro Nielsen. 2011. The dynamics of terms in accounting: What the construction of the accounting dictionaries reveals about metaphorical terms in culture-bound subject fields. In Rita Temmerman and Marc van Campenhoudt (eds.), *The Dynamics of Terms in Specialized Communication. An Interdisciplinary Perspective. Terminology* 17(1). 157–180.

Fuertes-Olivera, Pedro A. and Sandro Nielsen. 2014. The dynamics of accounting terms in a globalized environment: The role of English as *Lingua Franca*. In Rita Temmerman and Marc Van Campenhoudt (eds.), *Dynamics and Terminology. An interdisciplinary perspective on monolingual and multilingual culture-bound communication*, 215–234. Amsterdam and Philadelphia: John Benjamins.

Gabler Volkswirtschafts Lexikon. 1990, 3rd edn. Wiesbaden: Gabler.

Garzone, Giuliana. 2013. Variation in the Use of Modality in Legislative Texts: Focus on Shall. *Journal of Pragmatics* 57. 68–81.

Gläser, Rosemarie. 2007. Fachphraseologie. In Harald Burger, Dmitrij Dobrovol'skij, Peter Kühn and Neal R. Norrick (eds.), *Phraseologie – Phraseology. Ein internationales Handbuch der zeitgenössischen Forschung. An International Handbook of Contempory Research,* 482–505. Berlin and New York: Mouton de Gruyter.

Gréciano, Gertrud. 1995. Fachphraseologie. In Réne Métrich and Marcel Vuillaume (eds.), *Rand und Band. Abgrenzung und Verknüpfung als Grundtendenzen des Deutschen. Festschrift für Eugène Faucher zum 60. Geburtstag*, 183–195. Tübingen: Gunter Narr Verlag.

Grundt, Lars Otto, Jan Roald, Harald Frønsdal, Einar Hansen and Terje Selmer. 1989. *Arbeidslivets terminology* (1 NOTED, norske Terminologidata, rapportserie 4). Bergen: Universitetet i Bergen/ Norges Handelshøyskole.

Hansen, Einar. 1992. *Engelsk-norsk samfunnsøkonomisk ordbok* [English-Norwegian macroeconomic dictionary]. Oslo: Universitetsforlaget.

Holmes, Richard. 2001. Variation and Text Structure: The Discussion Section in Economics Research Articles. *ITL. Review of applied linguistics* 131(1). 107–137.

Hundt, Markus. 1998. Neuere institutionelle und wissenschaftliche Wirtschaftsfachsprachen. In Lothar Hoffmann, Hartwig Kalverkämper and Herbert Ernst Wiegand, (eds.), *Fachsprachen – Languages for Special Purposes. Ein internationales Handbuch zur Fachsprachenforschung und Terminologiewissenschaft – An International Handbook of Special Languages and Terminology Research* (Vol. 1), 1296–1304. Berlin and New York: Mouton de Gruyter.

Jäkel, Olaf. 1993. *Economic growth versus pushing up the GNP. Metaphors of quantity from the economic domain*. Duisburg: L.A.U.D.

Karabacak, Erkan. 2009. Acceptance of terminology sanctioned by the Turkish Language Society. *Terminology* 15(2). 145–178.

Kjær, Anne Lise. 2007. Phrasemes in legal texts. In Harald Burger, Dmitrij Dobrovol'skij, Peter Kühn and Neal R. Norrick (eds.), *Phraseologie – Phraseology. Ein internationales Handbuch der zeitgenössischen Forschung. An International Handbook of Contempory Research*, 506–516. Berlin and New York: Mouton de Gruyter.

Koskela, Merja. 2010. Tax authorities on the web – a genre system view. In Walter von Hahn and Christina Vertan (eds.), *Fachsprachen in der weltweiten Kommunikation. Akten des XVI Europäischen Fachsprachensymposiums,* Hamburg 2007, 431–440. Frankfurt am Main: Peter Lang.

Kristiansen, Marita. 2004. *The Multi-Disciplinary Nature of the Social Sciences. Investigating Disciplinary Autonomy in Organisational Behaviour by means of Terminological Analysis*. Bergen: University of Bergen unpublished dissertation.

Kristiansen, Marita. 2005. Disciplinary autonomy and concept relations in electronic knowledge bases. A theoretical approach to KB-N – a knowledge base for economic-administrative domains. *SYNAPS – Fagspråk. Kommunikasjon. Kulturkunnskap* 17. 1– 7. https://brage.bibsys.no/xmlui/handle/11250/2394905 (accessed 11 July 2017).

Kristiansen, Marita. 2007. Complexity and Indeterminacy in Delineating Scholarly Areas. Some Implications for LSP Research and Teaching. *LSP and Professional Communication. An International Journal* 7(1). 62–84.

Kristiansen, Marita. 2010. Language Planning in Higher Education. The Case of Microeconomics. In Carmen Heine and Jan Engberg (eds.), *Online proceedings from the XVII European LSP Symposium 2009*, 1–13. http://www.asb.dk/fileadmin/www.asb.dk/isek/kristiansen.pdf (accessed 15 April 2012).

Kristiansen, Marita. 2011. Domain dynamics in scholarly areas. How external pressure may cause concept and term change. In Rita Temmerman and Marc Van Campenhoudt (eds.), *The Dynamics of Terms in Specialized Communication. An Interdisciplinary Perspective.* [Special Issue. The dynamics of terms in specialized communication. An interdisciplinary perspective]. *Terminology* 17(1). 30–48.

Kristiansen, Marita. 2012a. Financial jargon in a general newspaper corpus. In Gisle Andersen (ed.), *Exploring Newspaper Language – Using the web to create and investigate a large corpus of modern Norwegian* (Studies in Corpus Linguistics 49), 257–283. Amsterdam and Philadelphia: John Benjamins.

Kristiansen, Marita. 2012b. Using web-based corpora to find Norwegian specialised neologisms. *Communication and Language at Work – Bridging theory and practice* 1. 11–20. http://www.languageatwork.eu (accessed 15 April 2012).

Kristiansen, Marita. 2014a. Concept change, term dynamics and cultural boundedness in economic-administrative domains. In Rita Temmerman and Marc Van Campenhoudt (eds.), *Dynamics and Terminology. An interdisciplinary perspective on monolingual and multilingual culture-bound communication*, 235–256. Amsterdam and Philadelphia: John Benjamins.

Kristiansen, Marita. 2014b. Domain loss. On parallel language use, language policy and terminology. In Els Ruijsendaal and Cornelia Wermuth (eds.), *TiNT-dag 2013*, 9–25. Gent: Academia Press.

Kristiansen, Marita and Gisle Andersen. 2012. Corpus approaches to neology and their relevance for dynamic domains. *Neologica* 6. 43–62.

Kristiansen, Marita and Norvald Monsen. 2010. The concepts of revenue and expenditure and their accounting effects. *Synaps – Fagspråk. Kommunikasjon. Kulturkunnskap* 25(2010). *Festskrift for Åge Lind:* 9–18. Bergen: Norges Handelshøyskole. https://brage.bibsys.no/xmlui/handle/11250/2434922 (accessed 11 July 2017).

L'Homme, Marie-Claude. 2009. A methodology for describing collocations in a specialised dictionary. In Sandro Nielsen and Sven Tarp (eds.), *Lexicography in the 21st Century*, 237–256. Amsterdam and Philadelphia: John Benjamins.

Lakoff, George.1993.The contemporary theory of metaphor. In Andrew Ortony (ed.), *Metaphor and Thought*, 2nd edn., 202–251. Cambridge: Cambridge University Press.

Lakoff, George and Mark Johnson. [1980] 2011. *Metaphors we live by*, 6th edn. Chicago: University of Chicago Press.

Langerfeld, Christian. 2015. *Metaphern und metaphorische Modelle in Artikeln der Wirtschaftspresse und in wirtschaftswissenschaftlichen Zeitschriftenaufsätzen. Am Beispiel des Deutschen und Norwegischen*. Bergen: University of Bergen unpublished dissertation.

Laurén, Christer, Johan Myking and Heribert Picht. 2004. Sprache, Domäne und Domänendynamik. *Fachsprache/International Journal of LSP* 26(1–2). 5–13.

Lind, Åge. 2006. The Ambiguous Terminology of Business Entities: On the Quest for Equivalence in Corporation and Enterprise Law. In Elisa Corino, Carla Marello and Cristina Onesti (eds.), *Proceedings XII Euralex International Congress* (Vol. II), 779–786. University of Turin, 6th–9th September 2006. Alessandria: Edizioni dell'Orso.

Lind, Åge and Einar Hansen. 2010. *Norsk-engelsk økonomisk-juridisk ordbok* [Norwegian-English economic-legal dictionary]. Oslo: Cappelen Akademisk Forlag

Loi Toubon. 1994. https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=LEGITEXT000005616341 (accessed 8 May 2018).

Lyng Svensson, Annemette. 2008. *Dansk-engelsk/Engelsk-dansk økonomisk ordbog*. [Danish-English/English-Danish economic dictionary]. Frederiksberg: Samfundslitteratur.

McCloskey, Donald N. 1995. Metaphors Economists Live By. *Social Research* 62(2). 215–237.

McClintock, Barbara with the assistance of R. Clive Meredith. 2015. The English translation of the Civil Code of Quebec: A controvery. *The Journal of Specialised Translation* 23. [n. p.].

Monsen, Norvald. 2006. Norsk bedriftsøkonomisk terminologi – nødvendig eller unødvendig? *SYNAPS – Fagspråk. Kommunikasjon. Kulturkunnskap* 18(2006). 31–40. https://brage.bibsys.no/xmlui/handle/11250/2406111 (accessed 11 July 2017).

Moon, Rosamund (2007): Corpus linguistic approaches with English corpora. In Harald Burger, Dmitrij Dobrovol'skij, Peter Kuhn and Neal R. Norrick (eds.), *Phraseologie – Phraseology. Ein internationales Handbuch der zeitgenössischen Forschung. An International Handbook of Contempory Research*, 1045–1059. Berlin and New York: Mouton de Gruyter.

Moraldo, Sandro M. 2008. Sprachkontakt und Mehrsprachigkeit. Zur Anglizismendiskussion in Deutschland, Österreich, der Schweiz und Italien – Editorial. In Sandro M. Moraldo (ed.), *Sprachkontakt und Mehrsprachigkeit. Zur Anglizismendiskussion in Deutschland, Österreich, der Schweiz und Italien*, 9–36. Heidelberg: Winter.

Morck, Christoph. 2007. Die norwegische GmbH – eine Aktiengesellschaft? Überblick zu Hintergrund, Organisationsstruktur und Haftungsfragen in den norwegischen Kapitalgesellschaften aksjeselskap (AS) und allmennaksjeselskap (ASA). *Mitteilungsblatt der Arbeitsgemeinschaft für Internationalen Rechtsverkehr im Deutschen Anwaltverein* 1. 52–57.

Musacchio, Maria Teresa. 2011. Metaphors and Metaphor-Like Processes Across Languages: Notes on English and Italian Language of Economics. In Kurshid Ahmad (ed.), *Affective Computing and Sentiment Analysis: Emotion, Metaphor and Terminology*, 79 – 88. London: Springer.

Musacchio, Maria Teresa and Kurshid Ahmad. 2009. Citation Patterns in Nobel Prize Lectures in Economics. In Vijay Bhatia and Maurizio Gotti, (eds.), *Exploration in Specialized Genres*, 101–114. Bern: Peter Lang.

Musacchio, Maria Teresa and Giuseppe Palumbo. 2010. Following Norms, Taking Risks: A Study of the Use of Connectives in a Corpus of Translated Economics Articles in Italian. In Carmen Heine and Jan Engberg (eds.), *Reconceptualizing LSP. Online proceedings of the XVII European LSP Symposium 2009*. Aarhus [online]. http://bcom.au.dk/fileadmin/www.asb.dk/isek/musacchio_palumbo.pdf (accessed 11 July 2017).

Myking, Johan. 2007. Dichotomies: Impossible and indispensable? In Khurshid Ahmad and Margaret Rogers, (eds.), *Evidence-based LSP. Translation, Text and Terminology*, 265–283. Bern: Peter Lang.

Nissilä, Niina. 2006. Concept systems in the balance sheet. In Heribert Picht (ed.), *Modern Approaches to Terminological Theories and Applications*, 287–300. Bern: Peter Lang.

Nissilä, Niina. 2007. Studying concepts of business economics with terminological methods. *Terminology science and research – Journal of the International Institute of Terminology Research* (IITF) 18. [n. p]. hppt.//lipas.uwas.fi/hut/svenska/iitf/tsr/2005/vol18/vol18_nis-php (accessed 9 February 2012).

Nissilä, Niina. 2008. *Begrepp och termer inom området balansräkning. Teoretisk utveckling och empirisk förankring*. Acta Wasaensia no 189, Språkvetenskap 36. Vaasa: Universitas Wasaensis dissertation.

Norstrøm, Carl Julius. 2002. Eugen Schmalenbach – den tyske læremester [Eugen Schmalenbach – The German master]. *Magma* 5(5/6). 139–150.

Orliac, Brigitte. 2006. Colex. Un outil d'extraction de collocations specialisées basé sur les fonctions lexicales. *Terminology, International journal of theoretical and applied issues in specialized communication* 12(2). 261–280.

Orlikowski, Wanda J. and JoAnne Yates. 1994. Genre Repertoire: The Structuring of Communicative Practices in Organizations. *Administrative Science Quarterly* 39(4). 541–547.

Parsenow, Günter. [1975] 1985. *Fachwörterbuch für Recht und Wirtschaft. Schwedisch/Deutsch – Deutsch/Schwedisch.* Köln: Heymanns.

Patiño, Pedro. 2011. A specialized parallel corpus of English and Spanish Free Trade Agreements for the study of specialized collocations. *SYNAPS –A Journal of Professional Communication* 26(2011). 85–89. https://brage.bibsys.no/xmlui/handle/11250/92962/discover?field=author&query=SYNAPS&filtertype=author&filter_relational_operator=equals&filter=Pati%C3%B1o%2C+Pedro (accessed 28 January 2012).

Patiño, Pedro. 2014. Towards a Definition of Specialized Collocations. In Gabriel Quiroz and Pedro Patiño (eds.), *LSP in Colombia: advances and challenges*, 119–133. Bern: Peter Lang.

Patiño, Pedro. 2017. *Description and representation in Language Resources of Spanish and English Specialized Collocations from Free trade Agreements*. Bergen: NHH Norwegian School of Economics unpublished dissertation.

Picht, Heribert. 1999. Die Begriffe 'Fachmann' und 'Laie' in der Fachkommunikation. In Wilfried Wieden and Andreas Weiss (eds.), *Internationale Wirtschaftsbeziehungen: Mehrsprachige Kommunikation von Fachwissen*, 29–42. Göppingen: Kümmerle Verlag.

Picht, Heribert. 2014. Domain, domain loss and parallellingualism – a challenge for the Nordic languages. In Gerhard Budin and Vesna Lusicky, (eds.), *Languages for Special Purposes in a Multilingual, Transcultural World, Proceedings of the 19th European Symposium on Languages for Special Purposes*, 186–195. University of Vienna, 8–10 July 2013.

Pindyck, Robert S. and Daniel L. Rubinfeld. 2005. *Microeconomics.* New Jersey: Pearson Prentice Hall.

Roald, Jan. 2010. Strates discursives, textes de specialités et terminologie: Le droit et les relations du travail. *Arena Romanistica* 7. 104–114, also published In Walter von Hahn and Cristina Vertan (eds.), *Fachsprachen in der weltweiten Kommunikation. Akten des XVI Europäischen Fachsprachensymposiums, Hamburg 200*, 354–358. Frankfurt am Main et al.: Peter Lang.

Saarinen, Tania. 2011. Nordisk syntes. Preliminära resultat av utredningen om den språkutbildningspolitiska situationen vid högskolorna i deltagarländerna. Presentation held at the conference Synlig politik – osynligt språk. University of Helsinki, 4 November 2011.

Sager, Juan C. 1997. Term formation. In Sue Ellen Wright and Gerhard Budin (eds.), *Handbook of Terminology Management*, 25–41. Amsterdam and Philadelphia: John Benjamins.

Salway, Andrew and Khurshid Ahmad. 1997. *The Role of Metaphors in Financial Texts*. http://epubs.surrey.ac.uk/505/ (accessed 20 March 2012).

Samuelson, Paul A. and William D. Nordhaus. [1948] 2010. *Economics*. New York: MacGraw-Hill.

Sandøy, Helge. 2000. *Lånte fjører eller bunad? Om importord i norsk*. Oslo: LNU/Cappelen akademisk.

Sandøy, Helge. 2005. *Moderne importord. Ei undersøking av utalandsk påverknad på språka i norden*. http://www.hf.uib.no/moderne/.

Seoane, Elena and Christopher Williams. 2006. Changing the Rules: A Comparison of Recent Trends in English in Academic Scientific Discourse and Prescriptive Legal Discourse. In Marina Dossena and Irma Taavitsainen (eds.), *Diachronic Perspectives on Domain-Specific English*, 255–276. Bern: Peter Lang.

Simonnæs, Ingrid. 1994. *Norsk-tysk juridisk ordbok* [Norwegian-German legal dictionary]. Bergen: Fagbokforlaget.

Simonnæs, Ingrid. 2001. Fachkommunikation – Zu den Voraussetzungen für eine gelungene Fachkommunikation im Bereich des Wirtschaftsrechts beleuchtet anhand des Sprachenpaars Norwegisch-Deutsch. *SYNAPS – Fagspråk. Kommunikasjon. Kulturkunnskap. Festskrift for Harald Frønsdal og Einar Hansen* 8. 66–78. https://brage.bibsys.no/xmlui/handle/11250/2406132 (accessed 11 July 2017).

Simonnæs, Ingrid and Jan Roald. 2009. Fra kunnskapsenhet til kunnskapsnett. Eksempler fra finanskrisen – Nyttige tips for strukturering av kunnskap [From knowledge unit to knowledge web. Examples from the financial crisis – Some hints on how to structure knowledge]. Lecture on language independent seminar for candidates to the Norwegian national translator accreditation exam, NHH Norwegian School of Economics, 14 February 2009.

[s.n.]. 2012. Business Entities. *German Desk Newsletter* 2/2012. www.grette.de (accessed 17 March 2012).

Soffritti, Marcello. 2002. Die doppelte Fachsprachlichkeit in aktuellen Norm setzenden Texten. In Maurizio Gotti, Dorothee Heller and Marina Dossena (eds.), *Conflict and Negotiation in Specialized Texts. Selected Papers of the 2nd CERLIS Conference*, 59–77. Bern: Peter Lang.

Spang-Hanssen, Henning. 1983. Kommunikation og fagsprog. *Språk i Norden* 14(1). 25–38.

Stefanowitsch, Anatol and Stefan Th. Gries (eds.). 2006. *Corpus-Based approaches to metaphor and metonymy.* Berlin and New York: Mouton de Gruyter

Synnestvedt, Terje. 2007. *Mikroøkonomi i korte trekk*. Oslo: Zigma forlag.

Temmerman, Rita. 2011. Stars, problem children, dogs and cash cows: Evocative terminology in multilingual business communication. *SYNAPS – A Journal of Professional Communication* 26. 48–59. https://brage.bibsys.no/xmlui/handle/11250/2394009 (accessed 8 February 2012).
Temmerman, Rita and Koen Kerremans. 2011. Secondary term formation in EU translations: A case of 'monitored laissez-faire'? Presentation held at the 4th Joint Termisti/CVC Seminar. Brussels, 29 April 2011.
The Stanford Encyclopedia of Philosophy [online]. http://plato.stanford.edu/ (accessed 3 February 2011).
Tiersma, Peter M. 1999. *Legal Language*. Chicago and London: The University of Chicago Press.
Toft, Bertha and Eva Roth. 1990. *Mikroøkonomisk glossar – Samt teoretiske og praktiske betragtninger over terminologi og vidensrepræsentation*. Herning: Systime.
Weinrich, Harald. [1958] 1976. Münze und Wort: Untersuchungen an einem Bildfeld. In Harald Weinrich (ed.), *Sprache in Texten*, 276–290. Stuttgart: Klett.
White, Michael. 2003. Metaphor and economics: the case of growth. *English for Specific Purposes* 22. 131–151.
Williams, Christopher. 2005. *Tradition and Change in Legal English. Verbal Constructions in Prescriptive Texts*. Bern: Peter Lang.
Williams, Christopher. 2006. Fuzziness in Legal English: What Shall we Do with *Shall*? In Anne Wagner and Sophie Cacciaguidi-Fahy (eds.), *Legal Language and the Search for Clarit*, 237–263. Bern: Peter Lang.

Web Sources

Bank for international settlements. http://www.bis.org/publ/bcbs209.htm (accessed 19 March 2017).
Economist.com. http://www.economist.com/economics-a-to-z (accessed 7 March 2012).
Fachsprache. www.fachsprache.net (accessed 10 April 2012).
Forskning.no. URL: http://www.forskning.no/english/ (accessed 11 February 2012).
guardian.co.uk. URL: http://www.guardian.co.uk/business/2011/feb/09/ stock-exchange-merger-frenzy-shocks-markets (accessed 15 April 2012).
Liblicense. http://liblicense.crl.edu/resources/licensing-terms-descriptions/general-clauses/severability/ (accessed 11 July 2017). http://www.rechtslexikon-online.de/Salvatorische_Klausel.html (accessed 11 July 2017).
IFRS. http://www.ifrs.org/Home.htm (accessed 15 April 2012).
Investopedia.com. http://www.investopedia.com/ (accessed 3 February 2012).
Kiap.uib.no. http://kiap.uib.no/index-e.htm (accessed 15 April 2012).
Legifrance.gouv.fr. http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=LEGITEXT000005616341&dateTexte=vig (accessed 3 February 2012).
Library.yale.edu. http://www.library.yale.edu/~llicense/sevcls.shtml (accessed 11 July 2017).
Merriam-Webster.com. http://www.merriamwebster.com/dictionary/economics (accessed 20 March 2012).
Norsk aviskorpus. http://avis.uib.no (accessed 28 January 2012).
Rechtslexikon-online.de. http://www.rechtslexikon-online.de/Salvatorische_Klausel.html (accessed 28 January 2012).
UHR.no. http://www.uhr.no/aktuelt_fra_uhr/ny_plan_for_bachelor_i_okonomi_og_administrasjon. (accessed 30 March 2012).
Wirtschaftslexikon.gabler.de. http://wirtschaftslexikon.gabler.de/ (accessed 30 March 2012).

Ingrid Wiese

8 Medical language

Abstract: The paper describes the historical development of medical terms and characterizes the specific features of medical terminology. It outlines the function of scientific journals in scientific medical communication. The most important text types in scientific journals as well as the central text types of medical practice are characterised as to their text-type conventions. Doctor-patient communication is described on a discourse-analytical basis.

1 The subject of medicine

Though European medicine has roots that go back to ancient Greece, the foundation of modern medicine was laid in the eighteenth century, at the time of the Enlightenment. With the rise of the natural sciences in the second half of the nineteenth century, the age of modern scientific medicine can be said to have begun (Bruchhausen and Schott 2008: 12–17). The enormous growth in knowledge which has marked the time since then has been accompanied by a sharp division between individual disciplines. Medicine was thus divided up into medical-theoretical disciplines (for example anatomy, physiology), clinical-theoretical disciplines (for example pathology, medical microbiology, human genetics), the mostly conservative clinical disciplines (such as internal medicine, paediatrics, neurology, psychiatry) and the essentially operative surgical disciplines (such as surgery, orthopaedics, urology, gynaecology) (Murken 2009: 124–128). The clinical disciplines with their multitudes of specialisations are reflected in the names given to the specialists. In the German extended training system, more than forty medical specialities are recognised. In addition, there are further focuses. For internal medicine the following focuses are recognised: angiology, endocrinology and diabetology, gastroenterology, haematology and oncology, cardiology, nephrology, pneumology as well as rheumatology (Preusker 2013: 166–167). Because of this extreme fragmentation into specialisations and subspecialisations, the field of medicine is characterised by a complex communication structure.

At present, the results of biomedical research and the developments in medical technology are leading to new insights into pathogenetic link-ups and to new methods of diagnosis and therapy. The exponential development of medical knowledge has led to the creation of many new terms and the restructuring of the terminological system.

Ingrid Wiese, Leipzig (Germany)

https://doi.org/10.1515/9783110228014-008

2 Terminology

2.1 Historical development

A large proportion of the terminology used in medicine today comes from Latin and Greek, owing to the long historical development of medical vocabulary. The medical knowledge of the Greeks was taken over by the Romans, who partially Latinised the vocabulary. Since Latin was the learned language of the Middle Ages, new concepts were named analogically in that language. Anatomical terminology in particular is of Latin origin, as the sixteenth up to the eighteenth centuries are considered the heyday of anatomy. In naming clinical concepts, however, preference went to Greek roots. Between the sixteenth and nineteenth centuries, the national languages of Europe became the medium for scientific discourse. In the course of this process, the medical vocabulary of Greek and Latin origin was incorporated into the national languages. The terms were adapted in spelling, pronunciation and in their morphological structure, so that national medical languages emerged (cf. Ahrens 1977: 16–20; Murken 2009: 4–19; Caspar 2007: 4).

At an international convention held in Basel in 1895, a binding nomenclature for anatomy was decided on. For the anatomical content, systematic designations were laid down in Latin. The *Baseler Nomina Anatomica* has since been added to and corrected. The version of 1998 agreed on internationally is entitled *Terminologica Anatomica. International Anatomical Terminology*. English equivalents are listed after the Latin forms.

Clinical terminology comprises the designations for symptoms, syndromes and diseases, methods of diagnosis and therapeutic procedures. As far as parts of speech are concerned, nouns and adjectives are primarily represented. Adjectives describe the course of the disease, the causes and origins of diseases, and effects (cf. Caspar 2007: 43–45). Clinical terminology of Greek and Latin origin is characterised by the iterative use of word elements which go into making complex terms. Knowledge of the meaning of the most frequent roots and the rules of composition makes it possible to deduce the meaning of complex terms. Comprehensive explanations of these principles can be found in the introductions to medical terminology. Their aim is to give insight into the types of constructions used in medical terminology (cf. Karenberg 2015; Lippert-Burmester and Lippert 2014; Caspar 2007). In the next sections, the formation and structure of complex medical terms will be illustrated by means of examples.

The technical term for the inflammation of the stomach and intestine, *gastroenteritis*, consists of the Greek roots *gastr* (bowel) and *enter* (intestine) and the Latinised suffix *-itis* (inflammation). The inserted vowel *o* is just a linking vowel. By combining *gastroentero* with the Greek root *-logy* (science, study), the name of the study of diseases of the stomach and the bowel, *gastroenterology*, is obtained. If the

stem form *-scope* (with the meaning "apparatus") is added, the name for the apparatus that explores these organs, *gastroscope*, is obtained. The terms are analogous in other national medical terminologies, so that German has *Gastroenteritis*, *Gastroenterologie*, *Gastroskop*, French *gastroentérite*, *gastro-entérologie*, *gastroscope* and Spanish *gastroenteritis*, *gastroenterología*, *gastroscopio*.

A large number of Greek and Latin prefixes and suffixes are used with mainly Greek lexical roots. When terms are incorporated into the national languages, the Greek or Latin word elements are adapted to the structures of these languages. Here are some frequently used prefixes: *anti-*, *contra-*, *hyper-*, *hypo-*, *dys-*, *trans-*, *peri-* and *post-*, which are the same in English and in German. The equivalents for the terms *hypertension* (high blood pressure) and *hypotension* (low blood pressure) are *Hypertonie* and *Hypotonie* in German, *hypertension* and *hypotension* in French, and *hipertensión* and *hipotensión* in Spanish.

Here are some frequent word elements of Greek or Latin origin in anglicised and Germanised forms:

-itis / *-itis* (inflammation)
-ia, *-y* / *-ie* (state of illness)
-oma / *-om* (swelling)
-tomy / *-tomie* (operative incision)
-pathy/ *-pathie* (disease)

A good example of term formation can be found with the Greek lexical root *nephr*. The term for an inflammation of the kidneys is *nephritis* in English and German, *nefritis* in Spanish and *néphrite* in French. *Nephropathy* is a general term for kidney disease. The corresponding equivalents are *Nephropathie* in German, *néphropathie* in French and *nefropatía* in Spanish.

Terms containing more than one root of Greek or Latin origin can take on several forms. Some terms are used with the original Latin declensions, but others have been adapted to national languages. Indeed, the national medical discourses have evolved differing conventions, so that within one national terminology, both forms can occur. The following terms are used in English and German in their original forms *angina pectoris*, *anorexia nervosa*, *bulimia nervosa*, *core pulmonale*, *diabetes mellitus*, *otitis media*. In French medical discourse these terms have been either transformed into the structures of the national language or form hybrids: *angine de poitrine*, *anorexia nerveuse*, *boulimie nerveuse*, *cor pulmonaire*, *diabète sucré*, *otite moyenne*.

In German medical parlance, the following terms are used preferentially in their original form: *Asthma bronchiale*, *Ulcus ventriculi*, *Ulcus duodeni*, *Colitis ulcerosa*. These concepts are rendered in French and English by equivalents which correspond to the structure of the language, giving in English *bronchial asthma*, *gastric ulcer*, *duodenal ulcer*, *ulcerative colitis* and in French *asthme bronchique*, *ulcère gastrique*, *ulcère duodénal*, *colite ulcéreuse*. The difference between the forms *Ulcus ventriculi*

(German) on the one hand and *gastric ulcer* (English) and *ulcère gastrique* (French) on the other is explained by the fact that the concept of stomach in medical terminology can use either the Latin name *ventriculus* or the Greek word *gaster*.

Greek and Latin terms made up of more than one element as well as hybrid complex terms are often abbreviated, as in *diabetes* (German *Diabetes*, French *diabète*), *colitis* (German *Kolitis*, French *colite*), *bulimia* (German *Bulimie*, French *boulimie*). These simplified single-element names for diseases are known as trivial terms, and in German it is recommended that they be written according to German spelling conventions (*Duden. Wörterbuch medizinischer Fachbegriffe* 2012: 30). Differences can be found in complex terms due to varying word order in the individual languages. These complex terms can have the same Greek and Latin elements, but the order they come in may differ. Thus the equivalent for the name of the disease *rheumatoid arthritis* is *arthrite rhumatoïde* in French. This results in differing abbreviations and acronyms, which obscure the deducible meaning that characterises the full form. Thus *MRI* (*magnetic resonance imaging*) becomes *IRM* (*imagerie par résonance magnétique*) in French. Similarly, the French equivalent for *AIDS* (*acquired immune deficiency syndrome*) is *SIDA* (*syndrome d'immunodéficience acquise*).

Present-day medical terminology is marked by Anglo-American scientific discourse. This is because the centre of biomedical progress and medical technology is to be found in the USA, so that English has become the lingua franca of research and technology in medicine. The leading databanks are in the USA, and the use of English-language keywords even in journal articles published in other languages is yet another sign of this process. The importance of English is also underlined by the fact that German medical dictionaries such as *Roche Lexikon Medizin* (2009) and *Pschyrembel Klinisches Wörterbuch (2014)* have begun indicating the English equivalent for German entries.

The adoption of new expressions from the English-speaking world is facilitated by the fact that these are often based on Greek or Latin roots in the first place, or are hybrid forms. Thus, the German equivalent of the English term *cardiac contractility modulation*, which designates a new therapeutic procedure in the field of cardiology, is *kardiale Kontraktilitätsmodulation*. However, the English abbreviation *CCM* is used in German too. Similarly, the acronym used in German for *severe acute respiratory syndrome* (German: *schweres akutes respiratorisches Syndrom*) is the English *SARS*.

In German medical discourse, terms are adopted which come directly from English or are hybrids: terms for operation procedures, such as *Bypass* and *Shunt*; names of diseases, such as *Sick-Sinus-Syndrom*, *Slow-Virus-Infektion*, *Restless-Legs-Syndrom*, *Borderline-Persönlichkeitsstörung* (borderline personality disorder); expressions for types of patients, such as *Responder* and *Non-Responder*; and expressions for laboratory values, such as *LDL* (low density lipoproteins) and *HDL* (high density lipoproteins). English terms are used as the names for special sections of German hospitals. Thus, stroke patients ("Schlaganfall-Patienten") are treated in a *Stroke-Unit*. Nevertheless, the German expression for *stroke* ("Schlaganfall") continues to dominate in German. Hadlich (2011: 292–314), who analysed the use of Anglicisms in

German psychiatry discourse, states that the English terms are used for new forms and models of therapies developed in the USA.

Loan translations are also used in German medical terminology. Thus, the English term *viral load* is rendered in German as *Viruslast*, *preload* as *Vorlast*. In new antiviral therapies, the different phases of the virological therapy process are to be distinguished. The English terms are translated into German, whereas the corresponding abbreviations remain in English, for example *extended rapid virologic response* is, in German, *anhaltendes rasches virologisches Ansprechen* (*eRVR*) and *sustained virologic response* is *dauerhaft virologisches Ansprechen* (*SVR*). In present-day scientific communication in German-speaking countries, both the English term and the German equivalent are used concurrently, since it often takes some time for a native equivalent to become established, resulting in the use of synonyms.

Besides the terminologies derived from Greek and Latin, individual national languages have also developed medical terminology using native or mixed elements. Thus the following names of diseases are hybrid forms in both German and English: *coronary heart disease – koronare Herzkrankheit*, *liver cirrhosis – Leberzirrhose*, *sleep apnoea – Schlafapnoe*. Here are two examples of terms using only native words, in English and German. The native equivalent for the infectious diseases *pertussis* and *parotitis epidemica* are in English *whooping cough* and *mumps* and in German *Keuchhusten* and *Mumps*. In addition to the Greco-Latin term *hypertension*, *high blood pressure* is used in English and *Bluthochdruck* in German. For the term *icterus*, English has *jaundice* and German *Gelbsucht*.

Medical terms derived from native sources are generally used in doctor–patient communication. The use of these as synonyms in scientific medical texts for stylistic variation or as preferred expressions is governed by convention and is partly specific to certain classes of texts (Wiese 1984: 108–112).

In contrast to the internationally binding nomenclature for anatomy, clinical terminology takes on a different face. Karenberg (2015: 22) characterises the situation for clinical terminology thus:

> Trotz engagierter Projekte wie **ICD** (**I**nternational **C**lassification of **D**iseases) und **SNOMED** (**S**ystematized **No**menclature of **Med**icine) kann man bis heute nicht von einer „pathologischen Nomenklatur“ sprechen. Zwar kommt es durch die einheitliche Verwendung griechischer und lateinischer Wortstämme zu einer gewissen internationalen Verbindlichkeit. Jedoch erscheint die klinische Terminologie gleichzeitig als lebendiger, ständig sich wandelnder Sprachkörper, der sich an jede moderne Nationalsprache anpasst und anpassen muss. [In spite of projects such as **ICD** (**I**nternational **C**lassification of **D**iseases) and **SNOMED** (**S**ystematized **No**menclature of **Med**icine) it is not yet possible to speak of a nomenclature of pathology. There is a certain international consensus on a unified use of Greek and Latin roots, but clinical terminology is a living, ever-changing body of language use, which adapts and indeed must adapt to individual languages.]

The ICD is a classification of diagnoses used worldwide. This classification has been developed under the responsibility of the World Health Organization (WHO)

in English and translated by national cooperation centres. SNOMED is a universal, multiaxial nomenclature used for indexing medical content (Leiner et al. 2012: 232).

2.2 Medical terms incorporating proper names

In medicine, efforts are made to name nosological units with aetiopathogenetically motivated terms, as these are the most informative for diagnostics and therapy. There are however other means of naming, in particular with proper names, which since the middle of the nineteenth century, starting with neurology, has been used for medical content. The use of proper names in creating medical terms can be justified by the traditional inclination to recognise scientific achievement, but there can be other specific reasons for using this means of naming. The most common form is the eponym, that is a term formed with the name of a person. Thus the person or persons who originally described a feature will be recognised, though sometimes this recognition falls to later discoverers or rediscoverers. Sometimes diseases are named after patients who enabled a particular diagnosis to be made (Leiber and Olbert 1968: V–VIII). Manuals and sometimes also journal articles go into detail about the historic circumstances linked with the names, so that the eponym contributes to keeping the history of the science alive.

Names of diseases which honour the person who first described them include *Alzheimer's disease*, *Addison's disease*, *Menière's disease*, *Scheuermann's disease* and *Creutzfeldt-Jakob disease*. Eponyms usually enjoy international circulation: *Crohn's disease* is thus known as *Crohn-Krankheit* or *Morbus Crohn* (German), *maladie de Crohn* (French), *enfermedad de Crohn* (Spanish) and *morbo di Crohn* (Italian). In German medical parlance the Latinism *Morbus* (cf. *Morbus Alzheimer*) is used alongside the traditional German *Krankheit* for a disease. There may also be differences in the use of eponyms in the various national languages. For example, the disease named after the German doctor Karl von Basedow is known as *Morbus Basedow* in German, while English uses another eponym, *Grave's disease*, in honour of the Irish doctor R.J. Graves. Eponyms can also be abbreviated, for example *patient with Alzheimer*'s *disease* (*Alzheimer's patient*). Eponyms are often used to label syndromes, such as *Cushing's syndrome*, *Marfan syndrome*, *Budd-Chiari syndrome* and *Asperger's syndrome*.

Using eponyms has the advantage of not explicitly verbalising conceptual features. Since syndromes can be more or less well understood, such neutral names can be the preferred choice (Spranger 1996: XXX).

Some clinical entities other than nosological units can be named with eponyms, for example *Koch's bacillus*, *islets of Langerhans*, *Heimlich manoeuvre*, or *Billroth's operation*. Laboratory testing is a field where proper names are used in abundance. Frequent stem words are *test*, *reaction*, *stain* and *reagent* (Leiber and Olbert 1968: VI), as in *Quick's test*, *Schilling test*, *Gram stain* and *Schiff's reagent*.

Apart from names of persons there are also geographical names which can go into making medical terms, in particular names of continents, countries, localities

and so on. There are two motivations for using geographical names. The proper noun component of a term may be a conceptual feature, for example when it refers to a locality where the disease or the cause of the disease is present, for example *Bornholm disease*, *Rocky Mountain spotted fever* and *Lassa fever*. Within this category of proper names there are many variants, since a disease may be prevalent in different localities within the same general area, so that more than one proper name may be chosen, for example *Malta fever* and its synonym *Mediterranean fever*.

In the other category are names of places which happened to be where the disease first emerged, e.g. *Ebola hemorrhagic fever*, *Ebola virus*, or was first identified, such as *Marburg disease*, *Norwalk virus*.

2.3 Abbreviations

Applying the principle of informative naming structures leads to the creation of complex terms, which are abbreviated for reasons of linguistic economy. In recent decades, a large increase has been noted in the number of abbreviated forms created mostly from the first letters of complex terms (Brunt 1998/1999: 1455). The increase in the number of entries in the recent editions of dictionaries of medical abbreviations illustrates this point. Heister in the fourth edition of the *Lexikon medizinisch-wissenschaftlicher Abkürzungen* (1998) notes that the volume has doubled since the first edition in 1980, and the new edition comprises over 20,000 concepts. This dictionary lists abbreviations in several languages, and Heister reports that the overwhelming majority of these are taken over directly from Anglo-American spelling practice. The degree of acceptance of abbreviations is varied. Those with a high degree of acceptability may figure in medical dictionaries under their own entry. From the point of view of language economy, abbreviations also make it easier to create further complex terms. Thus, starting from the abbreviation *HCV* (the abbreviation for *hepatitis C virus*), the complex terms *HCV infection* and *HCV therapy* are formed. *ECG* is the basis from which *prolonged ECG* and *stress ECG* are formed.

The increasing use of abbreviations for specific terms in scientific medical texts is problematical, especially for non-specialists, since they make high demands on concentration, without any direct access to the elements of meaning. In scientific journals there are often glossaries where the abbreviations used in the text are explained.

It would be interesting to know just how far the use of English-language abbreviations in national language medical writing has spread, and to what extent this enhances the international character of medical terminology. When a comparative survey is made of the creation and use of English and German abbreviations, several observations can be made.

In English and German, the same abbreviations of complex terms based on Greek and Latin roots may occur, for example in names of diseases such as *MS* (*multiple sclerosis*, *multiple Sklerose*), *RA* (*rheumatoid arthritis*, *rheumatoide Arthritis*) and *BSE*

(*bovine spongiform encephalopathy*, *bovine spongiforme Enzephalopathie*). Abbreviations for complex terms in diagnostic procedures are particularly common, and a part of everyday clinical life, for example *EEG* (*electroencephalogram*, *Elektroenzephalogramm*), *CT* (*computerised tomography*, *Computertomographie*) and *ERCP* (*endoscopic retrograde cholangiopancreatography*, *endoskopische retrograde Cholangiopankreatographie*). Hybrid terms can also have the same initial letters, as with the name of the *DFS* syndrome: *diabetic foot syndrome*, *diabetisches Fußsyndrom*.

Differences in abbreviations may occur when the complex term is a hybrid or when the Greek or Latin root is written according to German spelling. Examples of the abbreviation of a hybrid would be *CHD* (*coronary heart disease*) – *KHK* (*koronare Herzkrankheit*); *PAD* (*peripheral artery disease*) – *pAVK* (*periphere arterielle Verschlusskrankheit*). The German K spelling of the middle letter in EKG comes from *Elektrokardiogramm*, corresponding to the English *electrocardiogram* and its abbreviation *ECG*. It can also happen that different elements are chosen from the Greek and Latin stock, so that differing abbreviations result. Thus what is known in English as *MRI* is based on *magnetic resonance imaging*, whereas in German the same technique is known as *Magnetresonanztomographie*, abbreviated to *MRT*.

In German-language medical texts, more and more English abbreviations are being used. It is easy to work out the meanings of those which show German adaptation of the letters of Latin and Greek origin, for example ACS (from *acute coronary syndrome*) whereas the full German form is *akutes Koronarsyndrom*. Differences may occur when complex terms in German and English are made up of elements of varying origin. This means for example that the German term *chronisch obstruktive Lungenerkrankung* is abbreviated as *COPD*, corresponding to the English full form *chronic obstructive pulmonary disease*. The German term *Vorhofseptumdefekt* is abbreviated to *ASD* (*atrial septal defect*). The synonym *Atriumseptumdefekt* can, however, also be used in German. As a last example, the German term *tiefe Venenthrombose* is abbreviated to *DVT*, corresponding to the English full form *deep vein thrombosis*, a hybrid form.

3 Scientific communication in the German-speaking countries

3.1 Specialised journals

3.1.1 Overview

Scientific journals are the main instruments that guarantee scientific exchange in the field of medicine. Presenting the results of research in scientific periodicals as quickly as possible is an absolute priority in the field. Nowadays ground-breaking

research in medicine is published in English-language journals. The most important medical journals in the world are the *New England Journal of Medicine*, *The Lancet*, the *Journal of the American Medical Association* and the *British Medical Journal* (Rothmund 2001: 172). As English has been the lingua franca of scientific communication since the middle of the twentieth century, researchers make sure that their research results achieve the maximum dissemination by being published in English-language journals with a high impact factor.

Medical journals originated in the seventeenth century. The development of journals is closely related to that of innovation in the science itself. Thus the scientific outlook in medicine has been accompanied by a rapid rise in the number of specialised journals (Siefert 1969: 321). The increasing differentiation in medical fields of research has led to the founding of specialised and subspecialised journals (Weinreich 2010: 51–55). The growing gap between the increase in the number of new medical periodicals and the possibilities of the average doctor to access this knowledge was recognised as a problem early on. In his opening speech for the 25th Conference for the German Association of Internal Medicine in 1908, F. von Müller declared:

> Die Journalliteratur der inneren Medizin und der damit in Zusammenhang stehenden Fächer lässt sich auch bei Aufwand von viel Zeit und Fleiss kaum mehr bewältigen. Die Zahl der Zeitschriften und speziell der Neuschöpfungen ist so gross geworden, dass selbst wohldotierte Bibliotheken nicht mehr imstande sind alle Zeitschriften anzuschaffen, die in den Interessenkreis der inneren Medizin gehören. Das ist ein grosser Missstand, und wir müssen ernstlich darauf bedacht sein, hier Abhilfe zu schaffen. [...] Darum dürfen wir auch an den Verlegerstand mit der Aufforderung herantreten, inne zu halten mit Neugründungen von Zeitschriften, die nicht unbedingt notwendig sind und denen nicht ein ganz besonderes und neues Programm, ein wirkliches Bedürfnis, zu Grunde liegt.
>
> [It is becoming more and more difficult to keep abreast of what is appearing in the journals of internal medicine and those branches of medicine related to it. The number of journals and in particular the number of new periodicals appearing has become so enormous that even well-resourced libraries are no longer able to procure all medical journals that come within the scope of internal medicine. This is a deplorable situation, and ways to remedy it must be found. [...] This is why we must approach the publishing houses with the request that they keep in check the founding of any new journals which might not be fully justified, which do not have a specific new programme and which do not correspond to a real need.] (Lasch and Schlegel 1982: 267–268).

The increase in the number of medical journals and the change in the language preference of the research world can be gauged by the data from the *Index Medicus*. The *National Library of Medicine* in the USA has put out a catalogue of journals, *Index Medicus*, since 1879. It lists the most important medical journals. In 1879 the *Index Medicus* included in total 810 journals. Of these, 284 were in English, 201 in German and 160 in French. The *Index Medicus* has since been transformed into the databank *Medline*. In 2007 Medline listed 5204 medical journals, 4609 in English, 98 in German and 81 in French (Baethge 2011: 110). This means that German and French now only

play a marginal role as languages for world-wide medical publication. German as the second-most used language only accounts for 2% of the publications. Baethge (2011: 111) shows that in 2007 425 medical journals listed in Medline were published in Germany, Austria or Switzerland, the vast majority of which appear in English. Apart from these English-language journals, which present innovations in medical research and are the most important place for scientific exchange, there are also medical publications in the national languages. Baethge (2008: 38) shows from the data in the databank *Ulrich's Periodicals Directory* that there are 22,257 medical journals listed, of which only 10,000 can be classified as scholarly/academic, and of which 3,000 are in languages other than English. Baethge (2008: 38) gives information on German publications from the Deutschen Zentralbibliothek für Medizin, which lists 1,236 German-language publications. This means that over 1,100 German-language medical publications are not indexed in the Medline databank.

The medical periodicals appearing in the national languages are especially intended to communicate the results of research to doctors working in practical and clinical environments.

Nearly all the relevant scientific medical journals publish in both print and electronic versions. The *Deutsche Ärzteblatt* publishes the scientific part of its edition in the online version in English.

Medical journals can be distinguished by the scope of the content which they offer. There are general medicine journals such as the *New England Journal of Medicine*, *The Lancet* and the German journal *Deutsche Medizinische Wochenschrift* (*DMW*). Most medical journals are limited to one area of practice, aimed at surgeons, interns, paediatricians or some area of medical specialisation:

> *Zeitschrift für Gastroenterologie, Journal of Hepatology, Liver, Thrombosis and Haemostasis, Cardiology, Diabetologia.*

3.1.2 Text types of scientific medical journals

In this section, the most important text types of medical periodicals will be described.

Original articles present the results of scientific studies and set out the scientific methods applied in carrying out the research. An original article is preferentially presented to highly ranked journals. German journals which accept both German- and English-language articles preferably publish original articles in English. In all well-known medical journals the original article is submitted to the peer review process, as recommended by the Vancouver group, the conference of the most important medical journals in the world. This is to ensure that only confirmed information is published and scientific misconduct is excluded. In some circumstances the language of the manuscript will be taken into account by the reviewers (Rothmund 2001: 172).

The basic macrostructure of an original research paper has international validity and corresponds to the IMRAD format *Introduction – Methods – Results and Discussion*. Ylönen (2001: 214–221), in a diachronic analysis of articles from the *Deutsche Medizinische Wochenschrift* (*DMW*), worked out in what period the structure of research articles was set. Whereas in 1943 most of the articles were unstructured, by 1964 articles were structured under titles and subtitles; from 1984 most of the articles corresponded to the IMRAD format and all of them did by 1989. Ylönen (2001: 221) remarks that this change in genre corresponds to the orientation towards the English-speaking world, and notes that the American journal *JAMA* (*Journal of the American Medical Association*) was publishing half their research papers as early as 1934 in the IMRAD format. In a contrastive text-linguistic study, Busch-Lauer analysed the structure of the text of research articles in German and English or American journals. She concluded that all the articles analysed used the IMRAD format, and that even the subsections were indicated with subheadings in the same way (Busch-Lauer 2001: 291).

The essential components of original articles also include a heading (title, name of author, institution of the author) and references. Optional components include an acknowledgement and a statement on conflict of interest. Since most articles have multiple authors, the address of the corresponding author is indicated at the end of the article. The date the article was received is indicated as well as the date of acceptance and the bibliographical reference. The research article is accompanied by an abstract, which is also structured, and by keywords. The keywords are used for indexing in a databank. In German publications, the abstract and the keywords appear both in German and in English.

Review articles are the most important secondary research genre and are a component of all scientific medical journals. Their function is to indicate and to evaluate the state of the art in a particular area. Reviews are generally written by acknowledged experts in the field concerned. The structure of the text is organised under headings and subheadings, and is dependent on the subject treated. The most important outcomes are often summarised in the subsection *Fazit für die Praxis* (Conclusions for clinical practice). Tables are often used in review articles, since they can provide a comprehensive overview of data and classification. Like research articles, reviews also include an abstract and keywords.

In those journals that are primarily concerned with medical education, review articles are the main feature of each issue, or at least a very important one. This is how the aim of *Der Internist*, the most important internal medicine journal in the German-speaking countries, is portrayed: "*Der Internist* bildet mit seinen Schwerpunktthemen in jeder Ausgabe ein zentrales Thema der Inneren Medizin unter Berücksichtigung der verschiedenen Schwerpunkte umfassend und aus verschiedenen Perspektiven in mehreren Übersichten ab. Dieses Konzept ist einzigartig und schafft mit jeder Ausgabe ein weiteres Kapitel eines fortgeschriebenen Handbuchs für Innere Medizin." [In each issue *Der Internist* develops a central theme which contains

several highlights and looks at the issue from various perspectives. This concept is unique and each issue provides a fresh chapter in a continuing handbook of internal medicine.] (Herrmann, Meyer zu Tittingdorf, and Wieland 2009: 6).

The connection with evidence-based medicine is made manifest in the form of *systematic reviews*, which are composed according to a defined method. In contrast to this, the conventionally written article is referred to as a *narrative review*. Systematic reviews are based on a project blueprint and begin with a systematic review of the literature. As an introduction, it is usually noted in the articles which keywords were used to search databases. The inclusion or exclusion of primary research is carried out according to pre-established criteria. The scientific processing of published results is supposed to guarantee objectivity and transparency in the choice, evaluation and interpretation of the underlying primary research (Claes et al. 2011: 39). Systematic reviews are entered in the Cochrane databank library and are particularly important for setting up guidelines.

The *case report* is still a basic feature of medical journals. Wildsmith (1998: 83) claims that case reports may well be the oldest form of communication in medicine. Ylönen (2001: 209) in her survey on the text types in DMW points out that earlier articles tended to be a mix of reviews and case studies, and that only gradually was the transition made to a separation of the text types original article, review and case report. Case reports occupy a particularly important place in the acquisition of medical knowledge. The description of an "interesting" case can enrich the doctor's everyday experience. Maisch (1994: 133) justifies case reports in the following way:

> Gerade weil jeder Patient anders ist, weil jeder Arzt sich an einem Fallbeispiel viel konkreter vorstellen kann, selbst in der Differentialdiagnose und -therapie gefordert zu sein, übt medizinisches Lernen am Fallbeispiel einen besonderen Reiz aus: „Dieser Patient hätte auch der eigene sein können!" [Simply because every patient is different, because any doctor can relate much more concretely to an example, even when they are required to undertake a differential diagnosis and therapy, case studies exercise a particular attraction in medical training: 'This could have been my patient!']

The case report is generally made up of the following elements: *introduction* (optional), *case description* – *discussion* – *conclusions* (optional) – *acknowledgements* (optional) – *references*. The part of the text devoted to describing the case is divided up into strict headings and subheadings, and is dependent on the subject treated. The constitutive elements of this text type are: *case history*, *findings on admission*, *clinical and chemical findings*, *technical examination findings*, *therapy and progression of the disease*. Here the data about the patient and the disease and treatment are presented in an anonymous form. There are also photos of the patient (also anonymous) and of histological or macroscopic effects or imaging modalities of results. Case reports are usually an account of the illness and its progression in particular patient. If there is more than one case of the illness, each will be described separately (*case 1, case 2*). As case studies intend for the professional medical reader to identify with the author, it is necessary, when writing a case report, that the chronology of the progression of the illness, the

individual medical decisions made and any changes in the diagnosis should be made as clear as possible. The definitive diagnosis is explicitly formulated. In the text part *discussion* the validity of the case reported is weighed up against the state of the art as found in the relevant literature. Just like research articles and reviews, case reports are completed with an *abstract* and *keywords* (Wiese 2000/2001: 711–721).

The medical journals publish *guidelines* specifically for their particular subject area. These guidelines exist to ensure that progress in medical research is passed on to actual medical practice. Guidelines are characterised as systematically developed aids in making decisions to ensure proper medical practice in dealing with specific health problems; they are recommendations for treatment which are scientifically founded and which are oriented towards medical practice (Bloch et al. 1997: A 2154).

Guidelines are prepared on behalf of medical organisations by guideline committees, which often consist of several multidisciplinary subcommittees. On the basis of the assessment of international scientific sources, recommendations are made on preventative, diagnostic, therapeutic and rehabilitative measures, which have achieved the desired consensus based on a defined approach.

For any given condition, several guidelines are possible: US/American, European (compiled by national European medical associations) and national guidelines. The German medical associations, as a member of the *Arbeitsgemeinschaft der Wissenschaftlichen Fachgesellschaften (AWMF)* (a working group of scientific medical societies), produce guidelines which are divided up into three classes (S1, S2 and S3 guidelines) according to the way they are produced: informal consensus, formal consensus and systematic development.

As an example of text structure, the construction of the German S3 guideline *Prophylaxe, Diagnostik und Therapie der Hepatitis-C-Virus (HCV)-Infektion* (Prophylaxis, Diagnosis and Therapy of Hepatitis C Virus (HCV) Infection: The German Guidelines on the Management of HCV Infection) (Sarrazin, Berg, and Ross 2010) can be given. It is built up as follows: To start off with, the following information is given under the heading: name of the medical association on whose behalf the guidelines were elaborated, the names of the members of the guideline committee and the additional members of the consensus conference, and a declaration of any possible conflict of interest. After that, the goals of the guidelines are laid out. The stages of the elaboration of the guidelines are set out in detail: the keywords used in the literature search are given, as well as the databanks consulted, the figures for the publications found and the process of evaluating the publications. The scientific sources quoted in the guidelines are listed as bibliographical references. It is further noted which criteria were used for the classifying of evidence and what level of confidence can be attributed to it. Then there are explanations of how to formulate recommendations (the Delphi Rounds, consensus conference). Other parts of the text include stating how the guidelines were financed, measures taken for publication and implementation, details of planned updating and evaluation of the guidelines. The recommendations for hepatitis C infection are organised in seven parts: diagnosis, prevention,

indications as to therapy, therapy, transplantation, co-infection, children. In this section, the presentation is made according to a unified form: enquiry, recommendation, explanation. For some individual recommendations, the degree of recommendation and the percentage achieved for the consensus are also provided. The recommendation section is highlighted in colour for optimal visibility. So that the medical decision process can be made as quickly as possible, algorithms are now used, for example an algorithm for virological-serological diagnostics or a treatment algorithm. The guidelines are published in the house organ of the medical association responsible and posted on its homepage. An abbreviated version of the guidelines may be published in other journals.

Cutting-edge research is preferentially presented at conferences. Specialised journals publish the *abstracts*, where the lectures and posters are indicated, as a volume of abstracts, and thus guarantee that the contents of the conference are also made available to the broader scientific community. *Posters* are succinct presentations of the results of scientific research. They are displayed in a poster room at the conference. Poster presentations make it possible to significantly increase the opportunity for scientific dialogue during a conference. Visitors can acquaint themselves individually with subjects that interest them and discuss them with the authors at poster sessions. Posters usually have very dense text. They are in principle structured on the IMRAD format. The main information is often given in the form of tables and graphics.

Text types which show how new research is integrated into the state of the art and weigh up research results are very useful for scientific communication. Texts known as *editorials* play this role in medical journals. These may be divided into different categories. In journals of professional organisations and in journals dedicated to continuing medical education, the editorial written by the editor-in-chief aims to establish an explicit partnership reference. The declaration editorial is also used by a guest editor to introduce an issue devoted to a particular subject which sheds light on a particular problem, summarises the most up to date research and works out the specific contributions of the published articles for the presentation of the whole theme. In the international literature, editorials are published which comment on one original research paper or review article published in the issue. In this case, the editorial may be placed separately from the text it is referring to. Some issues may have more than one editorial. Editorials give an evaluation of conclusions drawn from the data presented in the research contribution. Editorials are relatively short texts and can make the reading of the reference text easier or encourage the reader to look up a particular item of research (Wiese 2011).

Reviews have always been part of medical journals (Siefert 1969: 338). They appear under several headings (*Read for you*, *Journal Club*) and review original articles published in international journals. After a usually also structured presentation of the contents of the reviewed article, there is generally a subtext *Commentary* in scientific journals, in which the article's contribution to progress in research and in medical practice is evaluated.

Journals which mainly target the further training of doctors active in clinical practice have been trying to adapt to changing demands. With the introduction of the obligation of doctors to undergo further training, the German medical journals have begun to publish articles for Continuing Medical Education (CME). These articles, which concentrate on confirmed knowledge on a subject, are clearly structured and easy to take in. By answering the CME questionnaires included in the issues, doctors can earn CME-credits.

Weinreich (2010) analysed the range of textual types in three German medical publications (*Medizinische Klinik*, *Zeitschrift für Kardiologie*, *Ultraschall in der Medizin*) over a period of thirty years (1975 or 1980 to 2005). The analysis of these three journals underlines the challenge that the editors face in finding new ways of representing medical knowledge. The survey shows that original research articles and reviews still make up the backbone of the journals, but that since the 1970s a larger variety of text types or categories have appeared. Short texts are increasingly published (notes, reports) to cater for readers' browsing habits. Contact with the reader is promoted through such sections as *Letters to the editor* or *Discussion* (Weinreich 2010: 206).

3.2 Textbooks and dictionaries

In German-speaking countries, in contrast to what has been seen for medical journals, textbooks and specialised monographs are overwhelmingly written in German. Baethge (2011:113) confirms that all medical specialities are still taught in German – textbooks are in German and lectures are given in German. Since 2004 all clinically active doctors undergo their obligatory continuing medical education in German, too. Textbooks are designed for acquisition of knowledge or further training and transmit the basic knowledge of a given subject field in a structured form. In a standard textbook for internal medicine the description of disease is described under the following headings: *definition*, *aetiology and pathogenesis*, *clinical picture*, *diagnostics*, *therapy*, *progression of the disease* and *prognosis*. The aim of these books is to provide comprehensible access to the contents using tables, graphs, infoboxes and mnemotechnic devices. Thus many illustrations are utilised. In order to adhere to practice as closely as possible, case reports are also used as a means of knowledge transfer. Topics are provided with bibliographical references as well as web links.

The fast growth in knowledge in medicine is shown by the rate at which textbooks need to be updated and by the increasing number of authors. It is not uncommon for over one hundred authors to take part in producing a textbook.

Lippert (1998/1999: 1970) indicates that a handbook comprising between ten and thirty volumes that attempts to provide a comprehensive presentation of the whole disciplinary field, with German medicine having a particularly long history, quickly becomes out of date due to the rapid development of medical science, since the time it takes to

bring out new editions of such handbooks means that the information contained in them may not be up to date. The present-day state of research in various subfields of medicine is reflected in a huge variety of specialised textbooks. In these publications, there is a detailed description of all individual aspects of the contents. At the end of chapters there are bibliographical references. Increasingly readers have the possibility to refer to the online references provided by the publisher and to use links to the medical databanks.

Due to the developments in the field of imaging procedures an increasing number of textbooks have been termed *Atlas* or *Learning Atlas* in their title. The core of these publications is made up of illustrations of typical findings of the diseases and comparative pictures, as well as interpretations of the images. Special atlases also present a comparison of images which have been obtained by different procedures. These textbooks are often provided with DVDs with video sequences showing the imaging methods.

Medical dictionaries mirror the dynamic development of medical research and technology. The nomenclature of these reference works requires extremely rapid updating to answer the demand for quick access to present-day knowledge. This means both the inclusion of new terms and the updating of existing entries. Thus the 266th, updated edition of the *Pschyrembel Klinisches Wörterbuch* (2014) claims to contain more than 3,000 updated entries and more than 700 new specialised concepts. The specialisation of medicine is reflected in specialised lexicography, so that in addition to the traditional dictionaries of clinical medicine more and more reference works are appearing that focus on a subfield. Lippert (1998/1999: 1967–1970) gives a brief overview of the most important medical dictionaries and lexicons in German. Dressler and Schaeder (1994) provide a comprehensive survey of the principles which order and structure medical dictionaries. Bilingual dictionaries are particularly helpful in the translation of specialised medical texts. Hüging (2011: 181–187) gives a survey of monolingual and bilingual online dictionaries and evaluates their usefulness for translating purposes.

The structure of dictionary entries is generally standardised. Increasingly illustrations and graphics are included in entries. One of the important functions of a medical dictionary is to indicate synonyms and how to use them.

4 Discourse genres and text types in medical practice

4.1 Doctor–patient communication

The communication between doctor and patient has been the subject of medical sociological and medical psychological research, and since the beginnings of the 1970s conversational analysis has also been conducted of this interaction. Thompson (2001:

73) gives a survey of the English-speaking publications on doctor–patient interaction and cites as avenues of research information problems, communication skills, empathy, use of specialised medical concepts, giving wrong diagnoses and models of health communication, among others.

In medical discourse, the subject of doctor–patient communication has been discussed against the background of changes in the way the roles of doctor and patient are now seen. Complex modern therapies demand the active participation of the patient since a satisfactory outcome of the therapeutic process is also determined by the patient being prepared to participate in the diagnostic and therapeutic measures and his/her confidence in following the treatment prescribed. The change in the doctor–patient relationship from a traditional paternalistic model to a participatory treatment model, as exemplified in the concept of Shared Decision Making, places higher demands on the communicative skills of the doctor. The concept of Shared Decision Making aims at involving the patient more closely in the how the therapy planning is to work. The concept of compliance is abandoned in favour of that of adherence (Greß-Heister 2009: 190). One of the major difficulties in establishing a participatory treatment model is to be found in the asymmetric relationship between doctor and patient. Discourse analysis has highlighted as particularly problematical the differing levels of knowledge between the patient and the doctor, the process of the acquisition of medical knowledge and the problem of the transfer of medical knowledge from the doctor to the patient (Rehbein 1993; Löning 1994; Brünner 2005; Peters 2008; Spranz-Fogasy 2014). Koerfer et al. (2010: 117) indicate that coming to a common decision is essentially based on shared knowledge, which must be built up individually to suit the situation. If a patient is to be made ready to participate, decision aids must be made available so that specific knowledge about the disease and the treatment can be conveyed in a comprehensible manner. One study made by Lenz et al. (2012: 406) on the quality of decision aids in the German language comes to the conclusion that a multiplicity of information sources, such as Internet portals for patients, videos and brochures, does exist, but that the user hardly has the possibility to evaluate the reliability of these sources. Since the Internet is increasingly being used by patients for specific information about specific diseases, there is an urgent challenge to provide criteria for the certification of patient information in regard to its dependability (Wiese 2004: 313).

The analyses of doctor to patient communication carried out using methods of linguistic conversation research explore the institutional conditions, and describe the course of the exchange and the characteristics of the various types of exchange, not forgetting the communication demands in relation to certain categories of patients (Ehlich et al. 1990; Löning and Rehbein 1993; Redder and Wiese 1994; Neises, Ditz, and Spranz-Fogasy 2005; Menz 2015).

Löning (2000/2001) produced a typology of exchanges based on a study of doctor–patient interaction, and describes the aims of treatment and communicative characteristics of individual types of exchange. She categorises verbal medical

exchanges according to the following criteria: institutional setting (exchanges in the surgery, in hospital, e.g. rounds), type of disease (e.g. exchanges with the chronically ill), category of patient (e.g. aged or foreign patients), goal of the act (medical history, obtaining consent). It is intended that the patient should be informed about what steps are to be taken and what the risks are of an impending operation. These interviews are backed up with written information known as medical consent forms (Busch 1994; Meyer 2004). Huber and Hohenfellner (2009: 206) have suggested that additional needs for information by the patient should be taken into account and that computer-based presentation should accompany the exchange regarding any preoperative request for consent.

In a discourse analysis metastudy of the results of twelve primary studies of doctor–patient communication Nowak (2010: 340–341) derived an outline for the categorisation of medical verbal exchanges. He comes to the conclusion that there are eight central components to be distinguished in interactive medical exchanges:

- opening the exchange,
- opening initiatives,
- listening, not listening,
- requesting information,
- give orientation during exchange,
- giving information, leading the exchange, counselling,
- joint planning and decision-making, and
- terminating the exchange.

4.2 Case history and medical report

Documenting the patient's treatment is part of a doctor's professional obligations. The *case history* (German: Krankengeschichte) is the most important form of documentation concerning the patient. This includes all documents which are created in connection with the treatment of a patient. These individual documents are anamnesis, documentation on medical findings (documents of physical examinations, laboratory tests, diagnostic examinations), diagnoses, descriptions of prescribed treatments, the progress of the illness and discharge summaries. The discharge summary is a succinct retrospective account of the evolution of the illness and is usually included in the medical report (Leiner et al. 2012: 77–78). Von Burg carried out a linguistic analysis of the text type of the case history based on those drawn up in Swiss hospitals. In relation to the linguistic form of the written part of the case history, von Burg (1990: 209) speaks of 'schriftliche Berufssprache' [written professional language] or the 'Arbeitssprache' [doctor's working language].

The *medical report* (German: Arztbrief) is a document intended for an addressee which contains the results of a diagnosis or the treatment given (Glazinski 2005: 24). For Glazinski the medical report is a multifunctional document: its main function is to

inform the doctor taking over about previous diagnoses and treatment given to a particular patient, but it is also documentation about the treatment for potential secondary addressees such as those paying for the treatment or insurances (Glazinski 2005: 25–52).

Jakob (2005) analysed discharge letters from German and Swiss clinics in relation to their text-linguistic and language features. He notes that the document is traditionally called an *Arztbrief* in German for historical reasons, but nowadays the text's function is to document. Since the medical report contains expressions of courtesy such as a greeting and a leave-taking and generally includes thanks for taking on the patient referred, Jakob (2005: 164) characterises it as an institutionally frozen form manifested 'in normierter, formelhafter Briefform' [in a formal, standardised letter form]. The macrostructure of the text can be broken up into the following elements: patient data, diagnosis and differential diagnosis, case history, findings, therapy, progress and prognosis, whereby the actual form may differ widely depending on the professional situation. The language can be characterised according to Jakob as efficient. Characteristic features are a severely limited range of syntactic possibilities, reduced to main clauses, phraseological units and ellipses, as well as abbreviations.

References

Ahrens, Gerhard. 1977. *Naturwissenschaftliches und medizinisches Latein.* 6. Auflage. Leipzig: Verlag Enzyklopädie.

Baethge, Christopher. 2008. Die Sprachen der Medizin. *Deutsches Ärzteblatt* 105(3). 37–40.

Baethge, Christopher. 2011. Die Lage der Wissenschaftssprache Deutsch in der Medizin. In Wieland Eins, Helmut Glück and Sabine Pretscher (eds.), *Wissen schaffen – Wissen kommunizieren. Wissenschaftssprachen in Geschichte und Gegenwart*, 109–116. (Fremdsprachen in Geschichte und Gegenwart 8.) Wiesbaden: Harrassowitz.

Bloch, Ralph E., Karl Lauterbach, Ulrich Oesingmann, Otto Rienhoff, Horst Dieter Schirmer and Friedrich Wilhelm Schwarz. 1997. Beurteilungskriterien für Leitlinien in der medizinischen Versorgung. Beschlüsse der Vorstände von Bundesärztekammer und Kassenärztlicher Bundesvereinigung. Juni 1997. *Deutsches Ärzteblatt* 94. A 2154–2155.

Bruchhausen, Walter and Heinz Schott. 2008. *Geschichte, Theorie und Ethik der Medizin.* Göttingen: Vandenhoeck & Ruprecht.

Brünner, Gisela. 2005. Arzt-Patient-Kommunikation als Experten-Laien-Kommunikation. In Mechthild Neises, Susanne Ditz and Thomas Spranz-Fogasy (eds.), *Psychosomatische Gesprächsführung in der Frauenheilkunde. Ein interdisziplinärer Ansatz zur verbalen Intervention*, 90–109. Stuttgart: Wissenschaftliche Verlagsanstalt.

Brunt, Richard. 1998/1999. Medical English since the mid-nineteenth century. In Lothar Hoffmann, Hartwig Kalverkämper, Herbert Ernst Wiegand, Christian Galinski and Werner Hüllen (eds.), *Fachsprachen. Ein internationales Handbuch zur Fachsprachenforschung und Terminologiewissenschaft,* 1452–1459. (Handbücher zur Sprach- und Kommunikationswissenschaft 14.1–2). Berlin: de Gruyter.

Burg, Engelina von. 1990. *Die schriftliche Arbeitssprache der Medizin. Eine linguistische Untersuchung am Beispiel der Krankengeschichte.* (Europäische Hochschulschriften, XXI, Linguistik 80.) Bern/Frankfurt am Main/New York/Paris: Lang.

Busch, Albert. 1994. *Laienkommunikation. Vertikalitätsuntersuchungen zu medizinischen Experten-Laien-Kommunikationen.* Frankfurt am Main/Berlin/New York: Lang.

Busch-Lauer, Ines. 2001. *Fachtexte im Kontrast. Eine linguistische Analyse zu den Kommunikationsbereichen Medizin und Linguistik.* Frankfurt am Main: Lang.

Caspar, Wolfgang. 2007. *Medizinische Terminologie.* 2., überarbeitete Auflage. Stuttgart/New York: Thieme.

Claes, Lutz, M. Schieker, E. Neugebauer, S. Sauerland and R. Lefering. 2011. Projektskizze. In Edmund A. M. Neugebauer, Wolf Mutschler and Lutz Claes (eds.), *Von der Idee zur Publikation. Erfolgreiches wissenschaftliches Arbeiten in der medizinischen Forschung, 17–46.* 2. Auflage. Heidelberg: Springer.

Dressler, Stephan and Burkhard Schaeder (eds.). 1994. *Wörterbücher der Medizin. Beiträge zur Fachlexikographie.* (Lexicographica, Series Maior 55.) Tübingen: Niemeyer.

Duden. *Wörterbuch medizinischer Fachbegriffe.* 2012. 9., überarbeitete und ergänzte Auflage. Mannheim/Zürich: Dudenverlag.

Ehlich, Konrad, Armin Koerfer, Angelika Redder and Rüdiger Weingarten (eds.). 1990. *Medizinische und therapeutische Kommunikation. Diskursanalytische Untersuchungen.* Opladen: Westdeutscher Verlag.

Glazinski, Rolf. 2005. *Arztbriefe optimal gestalten: Leitfaden zur Erstellung qualifizierter ärztlicher Berichte in Klinik und Praxis.* Eschborn: Brainwave Wissenschaftsverlag.

Greß-Heister, Markus. 2009. Worüber man nicht schweigen darf, muss man reden … Kommunikation als integraler Bestandteil der modernen Medizin. In Hans Werner Ingensiep and Theda Rehbock (eds.), *„Die rechten Worte finden …" Sprache und Sinn in Grenzsituationen des Lebens*, 179–199. Würzburg: Königshausen & Neumann.

Hadlich, Nancy. 2011. *Analyse evidenter Anglizismen in Psychiatrie und Logistik.* (Forum für Fachsprachen-Forschung 85.) Berlin: Frank & Timme.

Heister, Rolf. 1998. *Lexikon medizinisch-wissenschaftlicher Abkürzungen.* 4. Auflage. Stuttgart/New York: Schattauer.

Herrmann, Paul, Jürgen Meyer zu Tittingdorf and Esther Wieland. 2009. Der Internist. Die Nr. 1. der Inneren Medizin im 50. Jahrgang. *Der Internist* 50, Supplement 1. 6–7.

Huber, Johannes and Markus Hohenfellner. 2009. Das präoperative Aufklärungsgespräch im Spannungsfeld von juristischer Sicherheit, ethischem Anspruch und Patientenorientierung. In Hans Werner Ingensiep and Theda Rehbock (eds.), *„Die rechten Worte finden …" Sprache und Sinn in Grenzsituationen des Lebens*, 201–210. Würzburg: Königshausen & Neumann.

Hüging, Anna-Katharina. 2011. Übersetzerisches Handeln im Kontext der medizinischen Fachkommunikation. (Heidelberger Studien zur Übersetzungswissenschaft 15.) Trier: Wissenschaftlicher Verlag.

Jakob, André. 2005. So kommt der Patient auf's Papier: Fachtextanalyse klinischer Arztbriefe. *Fachsprache* 27. 159–172.

Karenberg, Axel. 2015. *Fachsprache Medizin im Schnellkurs.* 4., überarbeitete Auflage. Stuttgart: Schattauer.

Koerfer, Armin, Karl Köhle, Rainer Obliers, Walter Thomas and Christian Albus. 2010. Narrative Wissensgenerierung in einer biopsychosozialen Medizin. In Ulrich Dausendschön-Gay, Christine Domke, Sören Ohlhus (eds.), *Wissen in (Inter-)Aktion. Verfahren zur Wissensgenerierung in unterschiedlichen Praxisfeldern,* 91–132. (Linguistik – Impulse & Tendenzen 39). Berlin/New York: de Gruyter.

Lasch, Hanns-Gotthard and Bernhard Schlegel (eds.). 1982. *Hundert Jahre Deutsche Gesellschaft für Innere Medizin. Die Kongress-Eröffnungsreden der Vorsitzenden 1882–1982.* München: Bergmann.

Leiber, Bernfried and Theodor Olbert. 1968. *Die klinischen Eponyme. Medizinische Eigennamenbegriffe in Klinik und Praxis.* München/Berlin/Wien: Urban & Schwarzenberg.

Leiner, Florian, Wilhelm Gaus, Reinhold Haux, Petra Knaup-Gregori, Karl-Peter Pfeiffer and Judith Wagner. 2012. *Medizinische Dokumentation. Grundlagen einer qualitätsgesicherten integrierten Krankenversorgung.* 6., überarbeitete Auflage. Stuttgart: Schattauer.

Lenz, Matthias, Susanne Buhse, Jürgen Kasper, Ramona Kupfer, Tanja Richter and Ingrid Mühlhauser. 2012. Entscheidungshilfen für Patienten. *Deutsches Ärzteblatt* 109. 401–408.

Lippert, Herbert. 1998/1999. Die Fachlexikographie der Medizin: eine Übersicht. In Lothar Hoffmann, Hartwig Kalverkämper, Herbert Ernst Wiegand, Christian Galinski and Werner Hüllen (eds.), *Fachsprachen. Ein internationales Handbuch zur Fachsprachenforschung und Terminologiewissenschaft,* 1966–1975. (Handbücher zur Sprach- und Kommunikationswissenschaft 14.1–2.) Berlin: de Gruyter.

Lippert-Burmester, Wunna and Herbert Lippert. 2014. Medizinische Fachsprache – leicht gemacht. 6., erweiterte Auflage. Stuttgart: Schattauer.

Löning, Petra. 1994. Versprachlichung von Wissensstrukturen bei Patienten. In Angelika Redder and Ingrid Wiese (eds.), *Medizinische Kommunikation. Diskurspraxis, Diskursethik, Diskursanalyse*, 97–114. Opladen: Westdeutscher Verlag.

Löning, Petra. 2000/2001. Gespräche in der Medizin. In Klaus Brinker, Gerd Antos, Wolfgang Heinemann and Sven F. Sager (eds.), *Text- und Gesprächslinguistik. Ein internationales Handbuch zeitgenössischer Forschung,* 1576–1588. (Handbücher zur Sprach- und Kommunikationsforschung 16.1–2.) Berlin/New York: de Gruyter.

Löning, Petra and Jochen Rehbein (eds.). 1993. *Arzt-Patienten-Kommunikation. Analysen zu interdisziplinären Problemen des medizinischen Diskurses*. Berlin/New York: de Gruyter.

Maisch, Bernhard. 1994. Kasuistik – Klassische medizinische Lehrstücke oder Ausnahmen von der Regel? *Herz* 19. 133–137.

Menz, Florian. 2015. Handlungsstrukturen ärztlicher Gespräche und ihre Beeinflussung durch institutionelle und soziale Rahmenbedingungen. In Albert Busch and Thomas Spranz-Fogasy (eds.), *Handbuch Sprache in der Medizin,* 75–92. (Handbücher Sprachwissen 11). Berlin/Boston: de Gruyter.

Meyer, Bernd. 2004. *Dolmetschen im medizinischen Aufklärungsgespräch. Eine diskursanalytische Untersuchung zur Wissensvermittlung im mehrsprachigen Krankenhaus.* (Mehrsprachigkeit 13). Münster/New York/München/Berlin: Waxmann.

Murken, Axel Heinrich. 2009. *Lehrbuch der Medizinischen Terminologie. Grundlagen der ärztlichen Fachsprache.* 5. Auflage. Stuttgart: Wissenschaftliche Verlagsgesellschaft.

Neises, Mechthild, Susanne Ditz and Thomas Spranz-Fogasy (eds.). 2005. *Psychosomatische Gesprächsführung in der Frauenheilkunde. Ein interdisziplinärer Ansatz zur verbalen Intervention*. Stuttgart: Wissenschaftliche Verlagsanstalt.

Nöhring, Fritz-Jürgen (ed.). 2010. *Pschyrembel Fachwörterbuch Medizin.* Deutsch-Englisch / Englisch-Deutsch. 4. Auflage. Berlin/New York: de Gruyter.

Nowak, Peter. 2010. *Eine Systematik der Arzt-Patient-Interaktion. Systemtheoretische Grundlagen, qualitative Synthesemethodik und diskursanalytische Ergebnisse zum sprachlichen Handeln von Ärztinnen und Ärzten.* (Arbeiten zur Sprachanalyse 51). Frankfurt am Main: Lang.

Oxford *Concise Medical Dictionary.* 2010. 8th edition. Oxford: Oxford University Press.

Peters, Tim. 2008. *Macht im Kommunikationsgefälle: der Arzt und sein Patient.* (Forum für Fachsprachen-Forschung 82). Berlin: Frank & Timme.

Preusker, Uwe K. 2013. *Lexikon des deutschen Gesundheitssystems.* 4., neu bearbeitete Auflage. Heidelberg: medhochzwei.

Pschyrembel *Klinisches Wörterbuch.* 2014. 266., aktualisierte Auflage. Berlin/New York: de Gruyter.

Redder, Angelika and Ingrid Wiese (eds.). 1994. *Medizinische Kommunikation. Diskurspraxis, Diskursethik, Diskursanalyse.* Opladen: Westdeutscher Verlag.

Rehbein, Jochen. 1993. Ärztliches Fragen. In Petra Löning and Jochen Rehbein (eds.), *Arzt-Patienten-Kommunikation. Analysen zu interdisziplinären Problemen des medizinischen Diskurses*, 311–364. Berlin/New York: de Gruyter.

Roche *Lexikon Medizin*. 2009. 5., neu bearbeitete und erweiterte Auflage. München: Elsevier/Urban & Fischer.

Rothmund, Matthias. 2001. Die Zukunft medizinischer Zeitschriften. In Hanns-Peter Schuster and Walter Siegenthaler (eds.), *Innere Medizin am Übergang in das 3. Jahrtausend*, 171–176. Stuttgart: Thieme.

Sarrazin, Christoph, Thomas Berg and R. Stefan Ross et al. 2010. Update der S3-Leitlinie Prophylaxe, Diagnostik und Therapie der Hepatitis-C-Virus (HCV)-Infektion, AWMF-Register-Nr.: 021/012. *Zeitschrift für Gastroenterologie* 48. 289–351.

Siefert, Helmut. 1969. Rudolf Virchow und das medizinische Schrifttum des 19. Jhs. *Technikgeschichte in Einzeldarstellungen* 17. 315–347.

Spranger, Jürgen 1996. Der Syndrom-Begriff. In Guido Adler, Günter Burg, Jürgen Kunze, Dieter Erich Pongratz, A. Schinzel and Jürgen Spranger (eds.), *Die klinischen Syndrome. Syndrome, Sequenzen und Symptomenkomplexe/Leiber.* Beg. von Bernfried Leiber und Gertrud Olbrich. Vol. 1 XXV–XXX. 8., neu bearbeitete und erweiterte Auflage. München/Wien/Baltimore: Urban & Schwarzenberg.

Spranz-Fogasy, Thomas. 2014. *Die allmähliche Verfertigung der Diagnose im Reden. Prädiagnostische Mitteilungen im Gespräch zwischen Arzt und Patient.* Berlin/Boston: de Gruyter.

Tamayo Delgado, Juan. 2011. *Medizinisches Wörterbuch Spanisch–Deutsch*. Borsdorf: edition winterwork.

Terminologica Anatomica. International Anatomical Terminology. 1998. Stuttgart: Thieme.

Thompson, Theresa L. 2001. Die Beziehung zwischen Patienten und professionellen Dienstleistern im Gesundheitswesen. In Klaus Hurrelmann and Anja Leppin (eds.), *Moderne Gesundheitskommunikation: vom Aufklärungsgespräch zur E-Health,* 73–93. Bern/Göttingen/Toronto/Seattle: Huber.

Unseld, Dieter Werner (ed.). 2001. *Medizinisches Wörterbuch französisch–deutsch, deutsch–französisch.* 2. Auflage. Stuttgart: medpharm.

Weinreich, Cornelia. 2010. *Das Textsortenspektrum im fachinternen Wissenstransfer. Untersuchung anhand von Fachzeitschriften der Medizin.* (Reihe Germanistische Linguistik 288). Berlin/New York: de Gruyter.

Wiese, Ingrid. 1984. *Fachsprache der Medizin. Eine linguistische Analyse.* Leipzig: Verlag Enzyklopädie.

Wiese, Ingrid. 1998/1999. Die neuere Fachsprache der Medizin seit der Mitte des 19. Jahrhunderts unter besonderer Berücksichtigung der Inneren Medizin. In Lothar Hoffmann, Hartwig Kalverkämper, Herbert Ernst Wiegand, Christian Galinski und Werner Hüllen (eds.), *Fachsprachen. Ein internationales Handbuch zur Fachsprachenforschung und Terminologiewissenschaft,* 1278–1285. (Handbücher zur Sprach- und Kommunikationswissenschaft 14.1–2). Berlin/New York: de Gruyter.

Wiese, Ingrid. 2000/2001. Textsorten des Bereichs Medizin und Gesundheit. In Klaus Brinker, Gerd Antos, Wolfgang Heinemann and Sven F. Sager (eds.), *Text- und Gesprächslinguistik. Ein internationales Handbuch zeitgenössischer Forschung,* 710–718. (Handbücher zur Sprach- und Kommunikationsforschung 16.1–2). Berlin/New York: de Gruyter.

Wiese, Ingrid. 2004. Das Internet als Informations- und Kommunikationsmedium für Patienten und Gesundheitsinteressierte. In Sigurd Wichter and Oliver Stenschke (eds.), *Theorie, Steuerung und Medien des Wissenstransfers*, 311–320. (Transferwissenschaften 2). Frankfurt am Main: Lang.

Wiese, Ingrid. 2011. Die Textsorte Editorial in medizinischen und technischen Fachzeitschriften. In Klaus-Dieter Baumann (ed.), *Fach-Translat-Kultur. Interdisziplinäre Aspekte der vernetzten Vielfalt,* Volume 1, 341–359. (Forum für Fachsprachen-Forschung 99). Berlin: Frank & Timme.

Wildsmith, J. A. W. 1998. Wie man einen Fallbericht schreibt. In George M. Hall (ed.), *Publish or perish. Wie man einen wissenschaftlichen Beitrag schreibt, ohne die Leser zu langweilen oder die Daten zu verfälschen,* 83–89. Bern et al.: Verlag Hans Huber.

Ylönen, Sabine. 2001. *Entwicklung von Textsortenkonventionen am Beispiel von ‚Originalarbeiten' der Deutschen Medizinischen Wochenschrift (DMW).* (Leipziger Fachsprachen-Studien 15). Frankfurt am Main: Lang.

John Humbley

9 LSPs in French

Abstract: Though the term langue de spécialité (LSP) is a relatively recent one, French has a long tradition of specific study of specialised communication. This chapter aims at providing a guide to research in LSPs in French and adopts a chronological presentation, introducing the different dimensions which have gone into making up the discipline as it is understood in France today. It is shown how the fundamental split between general and specialised language in fact goes back to long-held social attitudes, reflected in particular in the way dictionaries were conceived. The lexicological, sociolinguistic, didactic dimensions are then reviewed and examples of research in various contemporary LSPs are presented.

1 Aims and scope

In-depth studies on French Language for Special Purposes (LSP) have already been published. The most recent at the time of writing is by Forner and Thörle (2016). The aim of this chapter is not to propose another summary of characteristics, but rather to give an overview of LSP research, usually published in French, thereby providing the reader with a guide to further study. A second objective is to suggest just what the French equivalent of LSP, *langue de spécialité*, actually corresponds to. This historical overview therefore surveys the evolving understandings of the nature of specialised communication and how linguists explore it.

The understanding of what makes up LSP is partly dependent on language and cultural communities, so it is not surprising that the scope of this concept varies perceptibly along the lines of national or regional traditions. In French, the expression *langue de spécialité* is of relatively late appearance and tends to have a similar didactic orientation as its English-language model, ESP (English for Specific Purposes). However, the study of the language of specialised communication is in fact a well-established French scholarly tradition, and is based on far-reaching lexicographical activity going back as far as the seventeenth century. A brief historical overview will suggest how the various dimensions of LSP emerged over the centuries. Awareness of differences between LSP and the general language was made manifest when French was first equipped with dictionaries, a sharp distinction being made between general language dictionaries and encyclopaedic dictionaries, the latter blossoming out into full-fledged encyclopaedias. The lexicographical tradition was continued in the form of lexicology, recalling the very broad scope of the German concept of *Fachsprache*,

John Humbley, Paris (France)

https://doi.org/10.1515/9783110228014-009

including the role of terminology embedded in LSP. The didactic applications of French LSP, now known as *français sur objectifs spécifiques* (FOS), are also sketched out, in particular as they are used to initiate non-French speakers into academic or professional life in France or other French-speaking countries.

2 Definitions of LSP in French

It is useful to review the names that LSP has been given in French, before accounting for the main trends of its study, as the different names given reflect the attitudes of the times. As has been suggested above, the distinction between what we now know as LSP and LGP has a long history in France and goes back to the classical era, when the former was termed *langue des arts* (*art* being used in a much broader sense than today, encompassing crafts and techniques). As has been mentioned, the most common designation used today, though one that is hardly consensual, is *langue de spécialité*. The first attestation of this expression seems to be in a dictionary of didactics (Galisson & Coste 1976), which is a rendering of the English *language for special purposes*. The expression was criticized by some linguists (Lerat 1995, Gambier 1998), who objected to the implication that French LSP was a different language from ordinary French, rather than simply a different register. The semantician Pierre Lerat suggested *langue spécialisée* as a more appropriate designation of the particular uses of French in specialised communication, thereby emphasing the discursive dimension. The representative of the Prague school, Rostislav Kocourek (1991), in his still unequalled survey of scientific and technical French, reviews the different approaches to this phenomenon of specialized communication and takes a broad view, placing emphasis on the language code itself and not just the way it is used. Cabré (1998: 111–145) also gives a thorough review of different attitudes and definitions of LSP, in particular in relation to terminology. The didactic dimension of French LSP for second-language speakers is known as *français sur objectifs spécifiques* or *FOS*; and has been fully integrated into work on teaching French as a foreign language (Lehmann 1993).

One of the competing designations for *LSP* in French is *technolecte*, defined in Dubois et al.'s dictionary of linguistics ([1994] 2004), but the definition refers only to terminology and not LSP in general. It is used by French-language ISO standards ISO – TR 22134 (2007), but relatively seldom elsewhere. Lerat (1995:18) previously criticised *technolecte*, as giving the false impression that it is a sort of language or dialect, but in his latest book (Lerat 2016: 78), he embraces it in the sense given by Leila Messaoudi (2002, 2010), who uses it in relation to North African Arabic in a broader sense than *langue de spécialité*, where it is used for specialised discourse which is at once multilingual, multimodal and, more particularly, multiskilled, or accessible to people with varying degrees of specialised competence.

There is thus in France a fragmented appreciation of what LSP is and what it should be called. Those teaching French as a foreign or second language use *français sur objectifs spécialisé* or *FOS*, to stress its discursive and pedagogical dimension, those teaching English use *anglais de spécialité* (see section 10), whereas outside the various didactic applications, *langue de spécialité*, *langue spécialisée* or *langage de spécialité* are used, as well as the Anglicism *LSP*.

There are scholars in the French-speaking world who limit the scope of the concept of language for special purposes. Frandsen (1998 : 30) first pointed out that the difference between LSP and LGP was an assymetrical one, the former being conceived ontologically, the latter epistemologically. Terminologist L'Homme (2011) does not reject the concept of LSP completely, as it has its practical uses in terminology, but she suggests the following definition:

> A subset of language, comprising all means of expression -i.e. lexical, morphological, syntactic and stylistic – mainly used by a group of specialists within a field of human knowledge (L'Homme 2011: 31, our translation).

The following sections present in a chronological form the different dimensions in which the concept is used.

3 The lexicographical dimension

The development of French as a scientific and technical language from the end of the Middle Ages on falls outside the scope of this chapter. For recent work on the emergence of scientific vocabulary in Latin and increasingly in the vernacular at the end of the Middle Ages, see Bertrand et al (2007) and more particularly Selosse (2007) and for the eighteenth century Zanola (2014). This latter work focuses on the various forms of study of the *langue des arts*, starting from the lexicographical tradition, which established terminology in French and paved the way for studies on specialised discourse and explains its initially lexicographical bias. A brief historical survey is called for, however, to understand how LSP is viewed today in relation to the vital role that the French language has always played in the history of France.

The French attitude to language, as reflected in lexicographical practice as from classical times, shows two apparently conflicting but in fact complementary approaches. The dominant institutional viewpoint from the seventeenth century on focused on the language itself and how it was used by the "healthier part of the court" as Vaugelas (1647) famously put it, eschewing technical and even scientific vocabulary as much as it did common or vulgar usage. This stance was embodied by the Académie française, founded in 1630, and by the dictionaries which it published from 1694 on, from which scientific and technical vocabulary was largely excluded, together with all that fell outside the canons of good taste. The

Académie's first dictionary was in fact preceded by Pierre Richelet's *Dictionnaire français contenant les mots et les choses* (1680), which, contrary to what the title may lead to expect, was very much a general language dictionary, though incorporating vocabulary from crafts, trades and the sciences. But parallel to this emphasis on the language as such there can be found an extremely firmly based tradition of lexicography which wholeheartedly embraces the vocabulary of the arts and crafts of the time, and which provides a representation of what is now known as LSP, starting, as far as monolingual dictionaries are concerned, with Antoine Furetière (1620–1688) and his two-volume *Dictionnaire Universel, contenant généralement tous les mots françois tant vieux que modernes et les termes de toutes les Sciences et des Arts* (1690), including as it did "natural history, experimental physics and the practice of crafts". Specialist discourse and its associated vocabulary were not limited to science: the language of classical dance, for example, is amply reflected in the entries of this dictionary (Roucher-Kougioumtzoglou 1994). In fact, the importance of technical vocabulary was illustrated even earlier in bilingual dictionaries, the famous Cotgrave (1611), *A Dictionarie of the French and English Tongues,* being the best-known example. This dictionary provides the first attestation – often in both languages – of much specialised vocabulary, as can be gauged by the numerous citations from it in the *Trésor de la langue française informatisé* (http://atilf.atilf.fr/).

This tradition of encyclopaedic dictionaries, Furetière's in particular, was continued throughout the eighteenth century by the Jesuits of Trévoux, *Dictionnaire Universel françois et latin* (1704–1771), though with a distinct Catholic bias. It nevertheless prefigures broader work on LSP, reaching its fullest statement in the *l'Encyclopédie ou le Dictionnaire raisonné des sciences, des arts et des metiers*, by Diderot and d'Alembert. By 1777, the *Encyclopédie* had reached 35 volumes, of which in particular two volumes of analytical tables and eleven of illustrations. The role which this venture played in the Enlightenment, providing access to the science and techniques of the time, and thereby furthering the role of reason, was at once the expression of rationalism and the means to promote it (Meschonnic 1996). But it also promoted scientific and, even more particularly, technical French, and contributed to providing a reference vocabulary, which was important for the new sciences, but even for the traditional crafts, with their extremely localised and highly segmented vocabulary. The authors' reflections on the language of what we now call technology prefigure both LSP and applied linguistics: language was seen as an important tool for furthering arts, crafts and science (Zanola 2014). The third major French encyclopaedia of the eighteenth century was by Charles-Joseph Panckoucke (1736–1798), who started off by producing a four-volume supplement to the *Encyclopédie* in 1776–7. His own *Encyclopédie méthodique*, organised in volumes devoted to a single subject, appeared from 1782 until 1832, by which time it had reached volume 166! (Rey 2010). It was important in disseminating taxonomies, in particular those of Lamarck for botany and Lavoisier for chemistry. (Zanola 2014).

The great encyclopaedias of the nineteenth century, that of Pierre Larousse in particular, grew out of general language dictionaries, but owed much to the extraordinarily prolific eighteenth century tradition. Larousse (1817–1875), originally a primary school teacher, started his lexicographical career by founding a publishing house (1852) and by producing a general language dictionary intended for schools, *Nouveau dictionnaire de la langue française (1856)* looked on the dictionary of both the general language and of science and technology, as a means of educating the future citizens of the republic (Lecherbonnier 1988). Known as the *Larousse du dix-neuvième*, the *Grand dictionnaire universelle du XIX*è *siècle* was published from 1866–1877 in 17 volumes with more than 1500 pages. It was referred to as "l'emblème du Livre des livres, nouvelle Bible mettant toutes les connaissances à la portée du plus grand nombre" – The emblem of the Book of books, a new Bible bringing knowledge within the reach of the masses [our translation] (BNF, 1996). Larousse also published further supplements in the form of a magazine, called *Revue encyclopédique* (1891–1900) then *Revue universelle* (1900–1905) (Pruvost 2006), which contributed to the dissemination of scientific and technical vocabulary to a broad section of the French public.

The sheer volume of specialised language incorporated in these volumes is worthy of note (Jacquet-Pfau 2007). Some idea of the development of French LSPs at the end of the nineteenth and twentieth century can be obtained in the relevant chapters of *Histoire de la langue française* (Antoine, Martin 1985, 1995, Antoine, Cerquiglini 2000), though from a lexical viewpoint.

The great Larousse tradition of encyclopaedias continued into the post-war period, the last edition (*Grand Larousse encyclopédique en dix volumes*) was in 1960 – 1964, with subsequent supplements, though there was nothing comparable as far as encyclopaedias are concerned in the CD ROM line.

4 The lexicological dimension

A major development in what would now be called LSP studies came out of a sociological slant on lexical studies, encouraged by Georges Matoré, who investigated the lexical evolutions which embodied social change. Some of his students continued his method (Matoré [1953] 1973) while focusing on more specialised vocabulary. Bernard Quemada (1968) introduced the first large scale studies of metalexicography, both in specialised vocabulary (medicine) and a general history of French dictionaries. He also pioneered the use of machine-readable corpora for French, though initially in literary studies. Others took to analysing large quantities of texts, generally of historical nature, in order to give a portrait of a particular vocabulary. One of the pioneers was Peter Wexler (1955), who published a major study on the creation of railway terminology in French. The approach was diachronic, inasmuch as the aim was to account for the creation of a new technical terminology in France,

and – within the limits of the mid-twentieth century technology – corpus based. The terminology was studied in the context of the texts in which it appeared. This method was continued and expanded by Louis Guilbert, the great theoretician of neology (see Guilbert & Peytard (eds) (1973) for technical vocabulary), who studied first how the terminology of aviation was formed (Guilbert 1965), and later and more briefly, that of space travel (Guilbert 1967). One central aspect of the method used was the study of the emergence of new terms in the context of discourse, thus paving the way for a comprehensive study of how the French language is used in specialised communication and how it expresses new technical concepts. Several major principles of term formation were firmly expressed in these studies: the role of variation in the emergence of new terms; the importance of the vocabularies of previous technologies in establishing new ones; the propensity of new terms to form paradigms (Guilbert 1965: 338); the exploitation of what he calls etymological series *aviation, aviateur, avier, aviable, aviablement, ave, avicelle, avicule; avion, avionnerie, avionneur ; aéromotion, aéromotive, aéromoteur*.... It is thus demonstrated how aviation (the emerging technology) was conceived in terms of sailing (the already known technology).

In spite of these solid lexicological beginnings, or perhaps because of their dominance, the study of language for special purposes in France tended to be directed either towards terminology or to didactics, causing such specialists as Wolfgang Pöckl (1999: 1491) to claim that France has lagged behind other industrialised countries as far as general LSP studies were concerned, pointing to the paucity of specialised journals, a pervasive disinterest in natural science and its language and the tendency observed of works on the subject to be researched and published outside France, in Canada and in German-speaking countries in particular.

5 The sociolinguistic dimension

Matoré's studies, and those of his successors, had a marked sociological dimension, and were inspired by the sociologist Émile Durkheim. Guilbert's sympathies were with a sociological approach, but it was his colleagues and disciples who established what was to become the French school of sociolinguistics, later transferred to Rouen, in particular the sociolinguist pioneer Jean-Baptiste Marcellesi, together with Bernard Gardin, Louis Guespin and Yves Gambier, who would all play a major role in different aspects of French LSP.

One of the earliest illustrations of this new direction was the field research done by Christiane Marcellesi (1971, 1973) on how information technology vocabulary was actually used by the workers (*pupitreurs*). This was very much a transitional study, as it focused on the emergence of a new terminology, but this was a contemporary one, and based as much on oral discourse as on written sources. Bernard Gardin

(1974) was instrumental in launching an interdisciplinary study group called *Langue et travail*, whose aim was to study how language was used in the workplace (Borzeix & Fraenkel 2001). Cusin-Berche's (1998) studies in companies stressed the importance of language to ensure the function of management. Behr and her colleagues (Behr et al 2007, 2010) and de Vecchi (see chapter 18) continued studies of language in the business context, the latter under the heading of pragmaterminology: how terminology – often the neglected terminology referred to derogatively as jargon – is used within organisations, i.e. LSP, as a component of specialised but more particularly institutionalised communication. Spoken discourse in business has been more recently studied by Thörle (2016).

Louis Guespin continued both Marcellesis' research interest, which he took further, in elaborating methods of observing actual usage in the laboratory, and tackling the question of multilingualism in the workplace, in particular in the research laboratory. The notion of linguistic insecurity, inspired from the Catalan school of sociolinguistics, was applied to the situation of French terminology (Gaudin 1994), increasingly influenced, dominated and eventually destabilised by English. Several of his PhD students applied his methods to the analysis of Arabic as a scientific and technical language (Laroussi 1997). From these studies, the role of standardisation emerged as a major issue in language planning, and in this context Guespin (1993: 217) adopted a nuanced attitude: while recognising the use for standardising, he stressed the need that the specialist had to be master of their own terminology, and proposed an intermediate stage, called *normaison*, a local or in-house norm, worked out from the bottom up, on a consensus basis, rather than the top down method adopted in particular by the Commissions ministérielles de terminologie.

This period achieved a study of specialised discourse which went beyond the use to which it could be put to create dictionaries: Gambier (1998) underlined the need to turn LSP into an object of study in its own right, though, as has been seen, the emergence of the concept had to await its pedagogical application.

6 The didactic dimension

The 1960s saw the emergence of basic French (*français fondamental*), the most frequent French words determined by corpus extraction, used in the teaching of French as a foreign language (called at the time *français langue étrangère*, or *FLE* as opposed, later, to *français sur objectif spécifique,* or *FOS* (Lehmann 1993). This was quickly supplemented in 1971 by a basic scientific vocabulary, elaborated on similar principles by the national pedagogical centre (Centre de recherche et d'étude pour la diffusion du français or CREDIF: 1959–1996) by André Phal (1971) and his colleagues. The third phase in providing prospective foreign-language students with a linguistic

preparation for specialised study in a French university was conceived in the form of a comprehensive handbook presenting the language usage in the actual field of study. Again, the CREDIF team, headed by J.-L. Descamps (ed) (1976), produced one pilot handbook on the LSP of geology. This presented not only the specific terminology of the area, but more particularly how it combined in discourse – exclusively written – and how general scientific vocabulary was actually used, including scientific usages of general vocabulary. For example, the verb *entraîner* is used to indicate the transporting of a geological entity, but also, in reasoning, to indicate a consequence. Unfortunately, the handbook proved a commercial failure (too great an effort was involved in producing excellent teaching material but for too few students) and many years were lost in the teaching of specialised French to prospective foreign-language students. The need to cater for training in specific fields by including the relevant LSP, known as FLP (français langue professionnelle), was again apparent by the turn of the twenty-first century, as exemplified by Letertre (2006) in the building industry, necessitating the inclusion of gestural as well as linguistic elements. Different didactic aims have been pursued by the Paris research group CEDISCOR, including, with associated researchers such as Jacobi (1999), the challenges and strategies involves in transmitting scientific knowledge to a lay public (Moirand et al 2016: 139), an activity and study which the authors claim goes beyond LSP to an analysis of secondary discourses.

It was however in this period and pedagogical context that the terms *langue de spécialité* and *français sur objectifs spécifiques* were first used, with links to work being done contemporaneously in English, thus rather cutting the research off from what had been done in the lexicological field. It is with hindsight that we now see the relationships between these movements. One of the best-known French-language LSP teaching intiatives is located in Belgium and centred on the *Dictionnaire d'apprentissage du français des affaires*, or *DAFA,* which will be mentioned under French for business.

LSP continues to be important from a didactical viewpoint in French as a foreign language, and the *français sur objectifs spécifiques* shows a shift towards communication studies in general. F. Mourloun-Daliès (2006, 2008) for example, focuses on issues of communication in which she situates the LSP required to function successfully in a francophone professional environment. Moirand and Tréguer-Felten (2007), in a remarkable overview of how what is considered to be LSP has evolved in the last thirty years, underline the necessity to match language skills with the corresponding scripts and 'praxeograms' peculiar to each professional situation.

As in other language communities, corpora are being increasingly used to back up the teaching of various LSPs, both in France and in teaching French abroad, such as the French for biotechnologists, developed by Rogers, Chambers and Le Baron-Earle (2011).

7 The terminological dimension

The study of terminology in France grew out of the lexicological and lexicographical groundwork which has just been described, but was also influenced by the strong pro-active language policies pursued at official levels. Both of these approaches tended generally to put the emphasis on the terms themselves rather than the way they were used in specialised discourse. In addition, Eugen Wüster's approach to terminology (Candel 2004), much discussed but in fact little known in France because of the lack of translations (Humbley 2004), was perceived to be both wholly conceptual and prescriptive in aim, focusing on terms as labels for concepts with the view to standardisation. It was against this perception of what came to be known as the doctrine of the Vienna school of terminology that several French linguists and terminologists called for a broader approach, one that drew in the different strands of LSP. Gambier (1991) insisted on the incorporation of the sociological dimension, and Bourigault and Slodzian in 1999 issued a manifesto placing terminology firmly in the context of the study of specialised communication, in particular in large bodies of written texts, either of scientific or professional nature. The question of terms in textual context was also taken up at the time by linguists more closely associated with the lexical tradition (Candel, Cormier, Humbley 1995) as an illustration of Quemada's method (Quemada 1978). The main points of the Bourigault-Slodzian (1999) proposal were taken up and developed by the *Equipe de recherche en syntaxique et sémantique* (UMR 5263), at the University of Toulouse (http://w3.erss.univ-tlse2.fr/). This largely adopted the principles of French discourse analysis (Maingueneau 1976, 1987), underlining the transphrastic nature of LSP and focusing on the identification of different professional types of discourse.

The field was further broadened by taking into account the diachronic aspect of LSP and examining how terms evolve in context over time. This was of course a feature of immediate post-war French lexicology, but it suffered a period of eclipse with the advent of more strictly synchronic terminology studies, and was only put back on the agenda thanks to the work of the socioterminologists, who pointed out the relevance of a diachronic dimension even in contemporary studies, and by Dury (1999), who advocated a global, including a historical, study of how terminologies came into being, focusing in a pilot study on the terminology of ecology.

8 Examples of French LSPs

Study on LSPs in French has concentrated on scientific and technical discourse (Kocourek 1991). Hänchen (2002) and Göke (2009) studied French as used in marketing, but the orientation is predominantly lexical. The study of French trade-

marks and product names has been more sporadic, though Laurent (2006, 2010) has worked extensively with data from the French Institute of Industrial property, and more recently Lobin (2016), who gives a good overview of typology and approaches. Galisson and André (1998) have shown how brand names permeate our everyday life and language, and suggest that they should be actively taught in French as a second language courses as part of French *lexiculture*.

Works of a didactic nature has also focused on tertiary sectors as well, among the most notable being the online *DAFA*, developed by Serge Verlinde and Jean Binon, in particular for French for business and commerce (http://www.projetdafa.net/ and the portal for online resources for learners of French, specialised or not: http://ilt.kuleuven.be/blf), which has spawned other similar web-based LSP dictionaries, such as *Dictionnaire contextuel du français économique* (Verlinde et al. 2002–2003) http://www.kuleuven.be/grelep/dicofe/

Medical French has been studied both from a global viewpoint (Hamburger (1982) and Meisser (1987)), and on the specificities of the medical research article in French in comparison with that of English (Régent 1992, 1993).

Legal linguistics in French has for many years constituted a separate field of inquiry. It is different from other LSPs inasmuch as it is the affair of lawyers rather than linguists, though there have been instances of very close collaboration. As is often the case in France, the beginnings were primarily lexicological, the dictionary of Henri Capitan, *Vocabulaire juridique* (1936), continued by another lawyer, Gérard Cornu, who initiated the studies into what he called legal linguistics or *linguistique juridique* (Cornu [1990] 2005), illustrated particularly by Jean-Claude Gémar (1995). Collaboration was the byword for the lawyer-linguist team Jean-Louis Sourioux and Pierre Lerat (1975, 1986). The study of legal linguistics in French has taken a different turn in Canada, where the legal situation is very different from that of France. Much work has gone into the definition of the legal status of language (as individual or a collective right), and a large-scale project was carried out from the University of Moncton in bilingual New Brunswick to translate the dominant common law (civil law is restricted to Quebec and only in certain areas) into French. This ongoing enterprise has had its own journal, *La revue de la common law en français* http://www.umoncton.ca/umcm-droit/node/34 since 1996. The result has been work on legal terminology on one hand, but also on legal translation, giving a comprehensive view of the LSP of law in French. The method used has been to take over legislative texts on the federal level, which in their French version use a style which is directly inspired from civil law, rather than a transposition of the dominant common law orientation of Canadian law (see Devinat 2011 for an overview). The result is a text which is considerably different in expression from its English-language counterpart, but which has the same effects on the legal level (Šarčević 2010). In yet other French-speaking countries research has been made into issues of adapting legal discourse to French-speaking African countries has been studied by Abolou (2011) and into Creole for Haiti by Guillaume (2011).

9 French LSPs at the beginning of 21st century

The early twenty-first century shows a continuing diversity of studies into French LSPs. French terminology studies maintain their strong anchorage in specialised discourse – written discourse in particular – where a syntagmatic approach dominates.

French for academic purposes, called *français sur objectif universitaire*, or *FOU*, has started to emerge as a branch of *français sur objectifs spécifiques*, and the first conference on the subject was held in Perpignan in 2010.

There is some cross-disciplinary collaboration, notably in the field of general scientific vocabulary, notably by Tutin (see in particular Tutin (ed) 2007, Tutin & Grossmann (eds) (2013)) and Pecman (2007), for French as well as for English. Some projects aim specifically at combining terminological and combinatory resources, such as ARTES (Pecman, Kübler 2011), a database designed to help French-language researchers write articles, in particular in English, and translators to deal with scientific translation.

Though belated compared to the United States, technical writing is emerging as an academic discipline in French universities, usually as a vocational master's course, and though there are very useful handbooks (Mallender 1999, 2002), there are few descriptions of French as a language of technical documentation. The annual conference *Communication technique de plein champ* was launched in 2011 to impulse research into the area http://cuef.univ-perp.fr/cuefp-colloque-fou-programme-27-24-0.html). Mention should be made of the LSP component of translation studies in French, which seems to have undergone an eclipse at least as far as terminology as a key element in translation studies are concerned (Humbley 2011).

A recent and welcome contribution has come in the form of a collective work from an international team of writers (Forner & Thörle eds. 2016), providing a most useful link with the broader and more deeply rooted German tradition of *Fachsprache*.

10 Other LSPs studied in France

The main research group studying English for special purposes is the Groupe d'études sur l'anglais de spécialité (GERAS, http://www.geras.fr/*www.geras.fr/)*, and the journal attached to it *Asp*, on line at asp.revue.org. One of the orientations, the study of *fiction à substrat professionnel* (FASP) or fiction with a specialised background, is an original way of presenting the learner with LSP as it is used in situations of professional communication, albeit a fictionalized version (see Petit (1999) for a definition and Petit & Isani (2004) for a collective work on the subject). There is also a group investigating Spanish LSP (GERES, https://www.geres-sup.com/) and one for German was set up in 2011 (GERALS).

11 Conclusion

This survey lays no claim to present the workings of LSPs in French. It instead provides a short history of the development of the study of specialised communication in French and how the linguistic elements of this were viewed over the centuries. The result is a portrayal of the most important dimensions of LSP in French, as they developed over time, and explain to some extent why the French understanding of what LSP is varies considerably from that of English-speaking countries.

References

Aboulou, Camille Roger. 2011. Le discours juridique en Afrique noire. Terminologie et traduction du droit. *Revue française de linguistique appliquée* XVI-1. 17–31.

Antoine, Gérald and Robert Martin (eds.). 1985. *Histoire de la langue française, 1880–1914*. Paris: CNRS Editions.

Antoine, Gérald and Robert Martin (eds.). 1995. *Histoire de la langue française, 1914–1945*. Paris: CNRS Editions.

Antoine, Gérald and Bernard Cerquiglini (eds.). 2000. *Histoire de la langue française, 1945–2000*. Paris: CNRS Editions.

Behr, Irmtraud et al (eds.). 2007. *Langue, économie, entreprise. Le travail des mots*. Paris: Presses de la Sorbonne Nouvelle.

Behr, Irmtraud et al (eds.). 2010. *Langue, économie, entreprise. Gérer les échanges*. Paris: Presses de la Sorbonne Nouvelle.

Bertrand, Olivier, Hiltrud Gerner and Béatrice Sumpf (eds.). 2007. *Lexiques scientifiques et techniques. Constitution et approche historique*. Paris: Les éditions de l'Ecole Polytechnique.

Borzeix, Anni and Béatrice Fraenkel (eds.). 2001. *Langage et travail. Communication, cognition, action*. Paris: Éditions du CNRS.

Bourigault, Didier and Monique Slodzian. 2000. Pour une terminologie textuelle. *Terminologies Nouvelles* 19. 29–32.

Cabre, Maria Teresa. 1998 [1992]. La terminologie: théorie, méthode, applications. Presses universitaires d'Ottawa, Armand Colin (eds.), Collection U.: Série linguistique Collection. Regards sur la traduction. See also English translation by Janet DeCesaris. 1999. Terminology: theory, methods and applications. Amsterdam/Philadelphia, John Benjamin.

Candel, Danielle. 2004. Wüster par lui-même. *Cahiers du CIEL* 2004. 15–32. Also availble at www.eila.univ-paris-diderot.fr/_media/recherche/clillac/ciel/…/wuster-candel.pdf (last accessed 15 April 2018).

Candel, Danielle, M. Cormier and John Humbley (eds.). 1994. *Hommage à Bernard Quemada: Termes et textes, Special issue Meta* 39(4).

Cornu, Gérard. [1990]2005. *Linguistique juridique*. 3rd edition. Paris: Montchrestien.

Cusin-Berche, Fabienne. 1998. *Le management par les mots*. Paris: l'Harmattan.

Descamps, Jean-Luc et al. 1976. *Dictionnaire contextuel de français pour la géologie*. Paris: Didier.

Devinat, Mathieu. 2011. Discours juridique en Amérique du Nord. Approches multilingues et interdisciplinaires. *Revue française de linguistique appliquée* XVI-1. 33–50.

Dubois, Jean, Mathée Giacomo, Louis Guespin, Christiane Marcellesi, Jean-Baptiste Marcellesi and Jean-Pierre Mével. [1994]2004. *Dictionnaire de linguistique*. Paris: Larousse/Bordas.

Dury, Pascaline. 1999. Etude comparative et diachronique des concepts Ecosystem et Ecosystème. *Meta* XLIV(3). 484–500.

Forner, Werner and Britta Thörle (eds.). 2016. *Manuel des langues de spécialité.* Berlin/Boston: De Gruyter.
Frandsen, Finn. 1998. Langue générale et de spécialité: une distinction asymétrique. In Yves Gambier (ed.), *Discours professionnel en français*, 15–34. (Nordeuropaische Beitrage). Frankfurt: Peter Lang.
Galisson, Robert and Daniel Coste. 1976. *Dictionnaire de didactique des langues.* Paris: Hachette.
Galisson, Robert and Jean-Claude Andre. 1998. *Dictionnaire de noms de marques courantes. Essai de lexiculture ordinaire.* Paris: Didier Erudition.
Gambier, Yves. 1991. Présupposés de la terminologie : vers une remise en cause. *Cahiers de linguistique sociale* 18. 31–58.
Gambier, Yves (ed.). 1998. *Discours Professionnels en Français*. Frankfurt: Peter Lang.
Gardin, Bernard. 1974. La néologie. Aspects sociolinguistiques. *Langages* 8/36. 67–73.
Gaudin, François. 1994. L'insécurité linguistique des scientifiques: à propos d'une enquête socioterminologique. *Cahiers de Lexicologie* 2(65). 47–58.
Gemar, Jean-Claude and N. Kasirer. 1995. *Jurilinguistique: entre langues et droits*. *Jurilinguistics: Between Law and Language*. Montréal: Thémis/Bruylant.
Göke, Regina. 2009. The development of French marketing terms: Term formation and semantic change. *Fachsprache* 31. 153–165.
Guespin, Louis. 1993. Normaliser ou standardiser. *Le Langage et l'Homme* 28(4). 213–222.
Guilbert, Louis. 1965. *La formation du vocabulaire de l'aviation (1861–1891).* Thèse en deux volumes. Paris: Larousse.
Guilbert, Louis. 1967. *Le vocabulaire de l'astronautique. Enquête linguistique à travers la presse d'information à l'occasion de cinq exploits de cosmonautes*. Rouen: Publications de l'Université de Rouen.
Guilbert, Louis and Jean Peytard (eds.). 1973. *Les vocabulaires techniques et scientifiques. Special issue Langue française* 17. Paris: Larousse.
Guillaume, Alain. 2011. L'expression créole du droit et la réduction de la fracture juridique en Haïti. *Revue française de linguistique appliquée* XVI-1. 77–91.
Hambuger, Jean. 1982. *Introduction au langage de médecine*. Paris: Flammarion.
Hänchen, Regina. 2002. *Die französische Marketingsprache. Eine diachrone Untersuchung ihrer Terminologie anhande der Revue française du marketing*. Frankfurt: Peter Lang. See also review by Jan Engberg, *LSP and Professional Communication* 5/1. 104–108.
Humbley, John. 2004. La réception de l'œuvre d'Eugen Wüster dans les pays de langue française. *Cahiers du C.I.E.L* 2004. 33–51.
Humbley, John. 2011. Terminologie et traduction une complémentarité oubliée? *Tralogy* II. http://lodel.irevues.inist.fr/tralogy/index.php?id=63 (last accessed 15 April 2018).
ISO – TR 22134. 2007. *Lignes directrices pratiques pour la sociolinguistique.* Geneva: ISO.
Jacobi, Daniel. 1999. *La communication scientifique*. Grenoble: Presses universitaires de Grenoble.
Jacquet-Pfau, Christine. 2007. Lexicographie et terminologie au détour du XIX^{e} siècle: *La Grande Encyclopédie. Langages 168. 24–38.*
Kocourek, Rostislav. [1982]1991. La langue *française* de la technique et de la *science*. Vers une linguistique de la langue savante.Wiesbaden: Oscar Brandstetter Verlag.
Laroussi, Foued. 1997. *Plurilinguisme et identités aux Maghreb*. Rouen: Publications de l'Université de Rouen.
Laurent, Bénédicte. 2006. *Noms de marque, noms* de produit. Analyse d'une exemplarité de la créativité lexicale. *Neologica* 1. 127–145.
Laurent, Bénédicte. 2010. *Nom de marque, nom de produit : sémantique du nom déposé.* Paris: L'Harmattan.
Lecherbonnier, Bernard. 1998. Encyclopédie et société: de Bayle aux CD-ROM et DVD. *Communication et langages* 118. 27–37.

Lehmann, Denis. 1993. *Objectifs spécifiques en langue étrangère*. Paris: Hachette.
Lerat, Pierre. 1995. *Les langues spécialisées.* (Collection Linguistique nouvelle). Paris: Presses universitaires de France.
Lerat, Pierre. 2016. *Langue et technique*. Preface by Alain Rey. (Collection Vertige de la langue). Paris: Hermann.
Letertre, E. 2006. *Les mots pour construire: Lexique français de la maçonnerie. Support de formation multimédia à destination des formateurs Bâtiment et FLE, Points communs* 27. 8–12. Chambre de Commerce et d'Industrie de Paris.
L'Homme, Marie-Claude. 2011. Y a-t-il une langue de spécialité? Points de vue théorique et pratique, *Langues et linguistique*. Numéro spécial, Journées de linguistique, 26–33. Available at https://www.lli.ulaval.ca/fileadmin/llt/fichiers/.../revue...2011/LLSP2011_26-33.pdf (last accessed 17 November 2017).
Lobin, Antje. 2016. Les noms de produits et de marques. In Werner Forner and Britta Thörle (eds.), *Manuel des langues de spécialité,* 101–117. Berlin/Boston: De Gruyter.
Maingueneau, Dominique. 1976. *Initiation aux méthodes d'analyse du discours*. Paris: Hachette.
Maingueneau, Dominique. 1987. *Nouvelles tendances en analyse du discours*. Paris: Hachette.
Mallender, Ariane. 2002. *ABC de la rédaction technique*. Paris: Dunod.
Mallender, Ariane. 1999. *Ecrire pour le multi-média*. Paris: Dunod.
Marcellesi, Christiane. 1971. Approche synchronique du vocabulaire de l'informatique (3ème génération). Thèse de troisième cycle. Université de Paris X, Nanterre.
Marcellesi, Christiane. 1973. Le langage des techniciens de l'informatique : quelques aspects de leur vocabulaire écrit et oral. *Langue française* 17. 59–71.
Matore, Georges. [1953]1973. La m*éthode en lexicologie, domaine français*. Paris: Didier.
Meschonnic, Henri. 1996. L'encyclopédie sortant de son mot pour se voir, 19–23. In Bibliothèque Nationale de France (ed.), *Tous les savoirs du monde: Encyclopédies et bibliothèques, de Sumer au XXIe siècle*, XX-XX. Paris: BNF/Flammarion.
Messaoudi, Leila. 2002. Le technolecte et les ressources linguistiques. *Langage et société* 99. Availble at http://www.cairn.info/article.php?ID_ARTICLE=LS_099_0053 (last accessed 15 April 2018).
Messaoudi, Leila. 2010. Langue spécialisée et technolecte: quelles relations? *Meta* 55(1).127–136.
Meisser, Bernadette. 1987. *Le lexique médical français : analyse linguistique sous l'angle particulier de la néologie et de la synonymie*. Frankfurt: Peter Lang.
Moirand, Sophie and Geneviève Treguer-Felten. 2007. Des mots de la langue aux discours spécialisés, des acteurs sociaux à la part culturelle du langage: raisons et conséquences d'un déplacement. *Asp* 51–52. 7–33.
Moirand, Sophie and Sandrine Reboul-Toure and Michele Pordeus-Ribeiro. 2016. La vulgarisation scientifique au croisement de nouvelles sphères d'activité langagière / A divulgação científica no cruzamento de novas esferas de atividade linguageira / Popular Science at the Crossroads of New Linguistic Spheres. Bakhtiniana 11(2). 137–161. Also available at http: *www.scielo.br/pdf/bak/v11n2/2176-4573-bak-11-02-0137.pdf* (last accessed 15 April 2018).
Mourlhon-Dallies, F. 2006. Apprentissage du français en contexte professionnel: état de la recherche. In *Apprendre le français dans un contexte professionnel,* Actes de rencontres de la Délégation Générale de la Langue Française (DGLF), 28–33. Paris: DGLF.
Mourlhon-Dallies, Florence. 2008. *Enseigner une langue à des fins professionnelles. Paris: Didier.*
Pecman, Mojca. 2007. Approche onomasiologique de la langue scientifique générale. *Revue française de linguistique appliquée*, vol. XII-2. 79–96.
Pecman, Mojca and Natalie Kübler. 2011. **ARTES: an online lexical database for research and teaching in specialized translation and communication.** In Proceedings from International Workshop on Lexical Resources (WoLeR) 2011 at ESSLLI. August 1–5, 2011 Ljubljana, Slovenia,

87–93. Available at http://alpage.inria.fr/~sagot/pub/WoLeR_2011_proceedings.pdf. (last accessed 15 April 2018).
Petit, Michel. 1999. La fiction à substrat professionnel: une autre voie d'accès à l'anglais de spécialité. *ASP* 23/26. 57–81.
Petit, Michel with Shaeda Isani (eds.). 2004. *Aspects de la fiction à substrat professionnel*. (Collection Travaux 2025). Bordeaux: Université Bordeaux 2.
Phal, André. 1971. *Vocabulaire général d'orientation scientifique*. Paris: Didier.
Pöckl, Wolfgang. 1999. Die französischen Fachsprachen im 20. Jahrhundert und ihre Erforschung: eine Übersicht. In Lothar Hoffmann, Hartwig Kalverkämper and Herbert Ernst Wiegand (eds.), *Fachsprachen/Languages for Special Purpose. Ein internationales Handbuch zur Fachsprachenforschung und Terminologiewissenschaft/ An International Handbook of Special-Language and Terminology Research*, vol 2, 1491–1503. Berlin/New York: Walter de Gruyter.
Pruvost, Jean. 2006. *Les dictionnaires français, outils d'une langue et d'une culture*. (Collection: L'Essentiel français). Paris: Éditions Ophrys.
Quemada, Bernard. 1968. *Les Dictionnaires du Français moderne 1539-1863: Étude sur leur histoire, leurs types et leurs méthodes*. Paris: Didier.
Quemada, Bernard. 1978. Technique et langage: la formation des vocabulaires français des techniques. In Bertrand dans Gille (éd.), *Histoire des techniques. Encyclopédie de la Pléïade*, 1146–1240. Paris: Editions Gallimard.
Regent, Odile. 1992. Pratiques de communication en médecine: contextes anglais et français. *Langages* 105. 66–74.
Regent, Odile. 1993. Apprendre la rédaction scientifique en langue étrangère. *Mélanges CRAPEL* 21. 121–127.
Rey, Christophe. 2010. *L'oeuvre encyclopédique de Charles-Joseph Panckoucke*. Deuxième Congrès mondial de linguistique française. Available at https://hal.archives-ouvertes.fr/hal-01366156/document (last accessed 15 April 2018).
Rogers, Omaith, Angela Chambers and Floence Le Baron-Earle. 2011. Corpora in the LSP classroom: A learner-centred corpus of French for biotechnologists. *International Journal of Corpus Linguistics* 16(3). 391–411.
Roucher-Kougioumtzoglou, Eugénia. 1994. Quand Furtière menait la danse. *Hommages à Bernard Quemada: Termes et textes*. *Meta* 39(4). 716–730.
Šarčević, Susan. 2010. *Legal Translation in Multilingual Settings.* In Icíar Alonso Araguás, Jesús Baigorri Jalón, Helen J.L. Campbell (eds.), *Translating justice. Traducir la justicia,* 19–45. Granada: Editorial Comares.
Selosse, Philippe. 2007. La dénomination des savoirs en français préclassique (1500–1650): bilan du colloque organisé à Lyon en juin 2005. In Olivier Bertrand, Hiltrud Gerner and Béatrice Stumpf, *Lexiques scientifiques et techniques. Constitution et approche historique,* 35–46. Palaiseau: Editions de l'Ecole Polytechnique.
Slodzian, Monique. 1995. Comment revisiter la doctrine terminologique aujourd'hui? *La Banque des mots*, numéro spécial CTN 7: Terminologie et intelligence artificielle. 11–18.
Sourioux, Jean-Louis and Pierre Lerat. 1975. *Le langage du droit.* Paris: PUF.
Sourioux, Jean-Louis and Pierre Lerat. 1986. *L'analyse de texte – Méthode générale et application au droit.* Paris: Dalloz.
Thörle, Britta. 2016. Textes de discours dans l'entreprise. In Werner Forner and Britta Thörle (eds.), *Manuel des langues de spécialité,* 185–204. Berlin/Boston: De Gruyter.
Tutin, Agnès (ed.). 2007. *Lexique des écrits scientifiques*, *Revue française de linguistique appliquée* Vol 2. XII.
Tutin, Agnès. 2007. Autour du lexique et de la phraséologie des écrits scientifiques. *Revue française de linguistique appliquée* Vol. 2(XII). 5–14.

Tutin, Agnès and Francis Grossmann (eds.). 2013. *L'écrit scientifique: du lexique au discours*. Rennes: Presses universitaires de Rennes.
VAUGELAS = Claude Favre. 1647. *Remarques sur la langue française*. Available at https://fr.wikisource.org/wiki/Remarques_sur_la_langue_fran%C3%A7aise,_utiles_%C3%A0_ceux_qui_veulent_bien_parler_et_bien_%C3%A9crire (last accessed 15 April 2018).
Verlinde, Serge, J. Binon and J. van Dyck. 2002–2003. *Dictionnaire Contextuel du Français Economique*. 4 Volumes. Leuven: Garant.
Wexler, Peter. 1955. *La formation du vocabulaire des chemins de fer en France (1778–1842)*. Genève: Droz.
Zanola, Maria Teresa. 2014. *Arts et métiers au XVIIIè siècle. Etudes de terminologie diachronique*. Préface d'Alain Rey, postface de Bénédicte Madinier. Paris: L'Harmattan.

Historic dictionaries

The historical dictionaries mentioned in the chapter can be accessed from the site of Atilf (Analyse et traitement informatique de la langue française. Available at http://dictionnaires.atilf.fr/dictionnaires/ (last accessed 15 April 2018).
For further reference to nineteenth and early twentieth century French encyclopaedias. See http://projects.chass.utoronto.ca/langueXIX/numlarou/(digitalized project) (last accessed 15 April 2018).

Pirkko Nuolijärvi

10 Finnish for special purposes: terminology work in Finland

Abstract: Looking at language for special purposes, it is obvious that we need to look beyond the terms and vocabulary, and consider genres as a whole. Yet, words and terms are an essential part of special language and the use of special words are what makes the style special. This chapter gives a general overview of the work for the vocabulary of special languages in Finnish. Firstly, it presents the history and the trends of terminology work for Finnish. It describes how Finnish multifaceted vocabularies were created in the nineteenth century and how the work continues and is organized today. Secondly, this chapter investigates how new terms are introduced into Finnish, which, as a Finno-Ugrian language, differs from many other European languages in its structure and vocabulary. Many terms have come to Finnish from the Indo-European languages, although there are also a large number of terms of Finnish origin in Finnish. Thirdly and finally, certain economic terms in the media and politicians' use of them are discussed as an example.

1 A brief history of Standard Literary Finnish

The beginning of the Finnish literary language is connected with the Church and the Lutheran reformation. Hence, the first special written Finnish language was religious language, translated from Latin, Greek, German and Swedish into Finnish. The sources of the religious vocabulary were in spoken dialects, especially in the south-western ones, and in other languages, whereby new calques were taken (Korhonen 1986: 14).

During the Swedish regime (–1809), in the Academy (University) of Turku, where theological and humanist studies had an essential role, the languages of higher education were Latin, Greek, and Hebrew (Korhonen 1986: 14). Even if the language of administration was Swedish in the entire Finnish area, local administrators also used Finnish in practice, and there were local scribes working in Finnish. Hence, the legislation and orders were in Swedish, but they were often also translated into Finnish, which made it necessary to have certain ordinary terms even in Finnish.

In the nineteenth century, during the Russian regime, Swedish was still a language of administration in and of higher education in the autonomous Finland. The National Romantic movement in Europe also rose in Finland and became stronger from the 1840s. The educated people (men) of the time started to develop Finnish into a full-fledged language in society. At the end of the nineteenth century the

Pirkko Nuolijärvi, Helsinki (Finland)

https://doi.org/10.1515/9783110228014-010

Swedish-speaking intelligentsia went over from Swedish to Finnish (Saari 2012: 190–191), and higher education in Finnish increased. Gradually, the Finnish language became as complete and essential to society as Swedish, and Finnish was also used more and more frequently at the university level. At the end of the nineteenth century, Modern Finnish could be used in all domains but, of course, the project of developing the Finnish language continued. Gradually, special Finnish genres developed, and the vocabulary of Finnish increased rapidly.

2 The development of Finnish vocabulary

The systematic development of the vocabulary for special varieties of Finnish started in the first half of the nineteenth century. In fact, all educated people took part in the reforming of the Finnish language by writing and translating texts and by developing terms and utterances for standard written language and special purposes (Laitinen 2009). The best-known creator of Finnish words was Elias Lönnrot (1802–1884), who also compiled the Finnish national epic Kalevala. He created neologisms for many areas, including scientific terminology, especially in botany, medicine, law, and mathematics. (Hakulinen 1961, Korhonen 1986: 74–79, Häkkinen 1994, Pitkänen 2008.) Many words created by Lönnrot are still in use in Modern Finnish. Furthermore, there were many other researchers, journalists, teachers, etc. who created new terms at that time, e.g., in geography (Laine 2007) and in geology (Horila 1967), as well as many other areas (Hakulinen 1961).

Especially at the end of the nineteenth century and the beginning of the twentieth century, the Finnish intelligentsia started to systematically work for the Finnish special languages. Different groups created special words and terms for different areas. The main work was done in scientific associations, e.g., the Biological Society of Finland Vanamo (Suomen Biologian Seura Vanamo), the Society for the Study of Finnish (Kotikielen Seura), the Finnish Lawyers' Association (Suomalainen Lakimiesyhdistys), Duodecim, the Medical Society of Finland (Suomalainen Lääkäriseura Duodecim), and other scientific societies. In addition, there were efforts to create new terms for practical purposes in working life. For example, the Society for the Study of Finnish tried to systematically produce new terms for different working areas. The members of the society discussed and created new terms and words for business life, the medical sciences, and traffic. (Paunonen 1976: 360–362.)

3 Terminology work in the twenty-first century

In the twenty-first century, the Finnish language has a rich vocabulary in all areas. Of course, the border between standard general language and special languages is often

very unclear, and special languages constantly lend words to standard language and vice versa.

The tradition to create new words is still strong in Finnish society. There are many active groups and associations that create new terms for special languages. However, there are many research areas that operate only in English, and for that reason there are special areas, e.g., some natural and technological sciences, which often lack terms for new phenomena.

The Finnish Terminology Centre TSK (Sanastokeskus TSK ry), founded in 1974, offers information and expert services related to terminology work and usage of special language terms. It produces vocabularies containing Finnish and Swedish and develops methods for terminology work and maintains the know-how required for terminology work. (http://www.tsk.fi/tsk/en/the_finnish_terminology_centre_tsk-118.html, accessed 31 July 2017) The work of the Finnish Terminology Centre TSK is mostly needed for practical purposes; yet it also supports the scientific use of terms in different areas.

The Finnish Terminology Centre TSK has become a national terminology centre offering a wide variety of terminological services. Its activities include the production and publication of terminologies, terminology planning and guidance, a library specialized in dictionaries and vocabularies, communications related to terminology work, the development and training of methods for terminology work, as well as international cooperation in the field of terminology.

The members of the Terminology Centre represent Finnish business life widely. Yet, the Terminology Centre cooperates as an independent expert body not only with its members but also with other communities interested in terminology. Although the State financing granted to this work is very small, cooperation is maintained, e.g., with the Institute for the Languages of Finland, Nordic terminology centres, and standardization bodies and units of the European Union.

There are also quite new projects and efforts to keep Finnish as a usable language at every level in special areas. One promising example is the Helsinki Term Bank for the Arts and Sciences (in Finnish Tieteen termipankki). It was started in 2011 as a project of the Academy of Finland at the University of Helsinki, and many scientific associations and expert groups are involved in the work. It is a common effort to keep Finnish as a scientific language in all research areas and work together for a common terminology bank where all researchers of various sciences and arts can discuss with each other and support both national and international contribution in terminology.

In June 2018, there are over 30 research areas in the Helsinki Term Bank for the Arts and Sciences e.g. linguistics, translation studies, terminology, archaeology, literary studies, textual arts, philosophy, performing arts, botany, mushroom sciences, biology, microbiology, zoology, epidemiology, geophysics, veterinary medicine, jurisprudence, social psychology, electricity technics. There are also small theme areas in Swedish, Finnish Romani, and English. The most extensive areas according to number of pages in June 2018 are environmental sciences (about 6 000 pages), linguistics

(about 5 000 pages), biology (about 5 000 pages), zoology (about 4 000 pages), and botany (about 2 600 pages). The next biggest groups also include a large collection of terms: epidemiology (about 1 300 pages), microbiology (about 1 200 pages), jurisprudence (about 2 200 pages), and literary research (about 1 200 pages). An important research area, medicine, is not part of the Bank, because The Finnish Medical Society Duodecim (http://www.duodecim.fi/ web/english/home, accessed 31 July 2017) has its own up-to-date medical databases published on the internet and mobile devices. Yet, these medical databases are chargeable, not freely open.

The number of terms in the Helsinki Term Bank for the Arts and Sciences increases all the time. Research groups and scientific associations in various areas have given their own term collections and dictionaries or other vocabularies to the Bank. Every group works voluntarily for the Bank.

In addition, there are many public institutions that publish their terms on the websites. A widely used terminology source is the Finnish Government Term Bank Valter, a multilingual (with 2–10 languages) term bank containing glossaries compiled by the Prime Minister's Office or other Government agencies. It also makes available smaller glossaries, term lists and other linguistic materials, e.g., the Budget Glossary, the Climate and Energy Glossary, the Finnish Parliamentary Glossary, the Higher Education Glossary, the Local Government Glossary, and the Glossary of Court Terms. (http://mot.kielikone.fi/mot/valter/netmot.exe?UI=enva2, accessed 31 July 2017)

Finally, it is worth mentioning that many private companies also provide useful terms to customers. When a housing cooperative in Helsinki plans its line re-engineering with an engineering firm, the firm provides a glossary of essential terms in order to give a clear picture about the re-engineering. Hence, it is really important in today's Finnish society that people know the contents of the terms used in various areas.

4 How to collect new terms and introduce them to Finnish?

The structure of Finnish is different from many other European languages from which Finnish has borrowed and continues to borrow words and special terms. Mostly, however, loan words are rapidly assimilated into the morphological and phonological system of Finnish.

There are four sources from which new terms are collected and introduced to special areas. All of the sources have been used during the written history of Finnish and are still used today. These sources are used not only for collecting new terms but they are also, in general, sources where ordinary new words are found (Hakulinen 1961, Haarala 1989, Nuopponen and Pilke 2010: 71–74).

First of all, a term can be adopted from Standard Finnish, which is a general and usual source of new terms in special languages (Haarala 1989, Nuopponen and Pilke 2010: 70–71). Such terms can include single words like *keskustella* 'discuss' in genetic engineering (about cells), *kanava* 'channel' in teletechnics, or compound words like *laajakaista* 'broadband' in telecommunication. Especially compound words are usual, and it is very easy to create new terms in Finnish that way. In addition, derived words and terms are typical in Finnish (e.g. *kirja* 'book', *kirja+sto* 'library', *kirja+lli+suus* 'literature', *kirj+oitta+a* 'write'). Derivation continues to be a good way to create new terms: *eväs+te* 'cookie' in information technology.

Previously, especially during the nineteenth century, it was very usual that a new term was adopted from a Finnish local dialect, using the term in a new sense. In certain dialects, words such as *kaasu* 'gas', which used to mean 'cold mist', *kide* 'crystal' (dial. i.a. snowflake) and *kone* 'machine' (dial. i.a. tool), were adopted to special and general language use. (Hakulinen 1961: 287.) Today, this type of producing new terms is not used as often as earlier. One explanation could be that there is need for more and more special terms in every area, and another explanation is that the vocabulary of dialects is no more as far away from standard language as earlier. Hence, it is no more very easy to find new terms in local dialects that could be used in the numerous special languages we need today in our diverse and convoluted society.

The third way of introducing new terms to a specific area is adopting them from one special language into another one, from linguistics into genetic engineering, etc. For instance, the term *transkriptio* 'transcription' has been introduced from linguistics to genetic engineering; it means 'move from one sign system to another' in both areas. Originally, such words have often been adopted from classical languages, Latin or Greek.

Finally, it is possible to borrow special terms from other languages. Previously, the special terms were taken from Latin, Greek, whereas the newer ones were adopted from the Scandinavian languages. Especially since the 1960s, it has been typical that the Finnish special languages borrow words and terms from English. (Hiidenmaa and Nuolijärvi 2004: 260–261.) Even if almost all of the above mentioned ways of creating new terms are still in use, English terms are common in every area, as quotations (*bestseller, come-back, free-lancer, hands-free, leasing, show, smog, smoking, speedway, team, tutor*) and in some cases as morphological adaptations (*liisaus, smokki, tiimi, tuutori).*

It is typical of Finnish that new loanwords are used as such at first, as English quotations. Afterwards, the terms are often adopted into the Finnish inflection and phonetic system. The language community also begins to use its own word, and both forms of the word are used. The loanwords may remain but it is also common that the loanword adopted into Finnish and the Finnish word live side by side, like *printteri* and *tulostin* 'printer' and *dipata* and *kastaa* 'dip'. There are often stylistic differences between these parallel terms, and they are used in different types of texts. In science and the arts, it is typical to only use the loanword as a term, e.g., *benchmarking,*

clearing, factoring. It often takes a long time to find a Finnish term for the referent, if a term is ever found in the first place.

Some 100 or 150 years ago, when educated people actively produced new Finnish special terms, they had to find terms for common referents in society (e.g. *tiede* 'science', *kaunokirjallisuus* 'fiction', *eduskunta* 'parliament', *tasavalta* 'republic', *urheilu* 'sport') (Hakulinen 1961). Today, when the various sub areas in sciences and arts are highly specialized, systematic terminology work is needed much more than before. The scientific associations are active in this field, as the example of the Helsinki Term Bank for the Arts and Sciences shows; yet it is typical that English terms are used for a long time before they get a corresponding Finnish term.

5 Terms used by politicians in the media

A typical phenomenon in our current society is that terms move from one special language to another and even to standard languages. The news, interviews and debates in the media also spread special terms, even if they are often used unclearly and for political purposes. It is typical that such political terms are used in debates, as if they were familiar to everybody. In the following, examples of such terms will be presented and discussed.

One term in the Nordic and Finnish public debates is 'the welfare state', in Finnish *hyvinvointivaltio*. In Finnish society this term is based on a way of thinking that social security does not entail expenditure or costs but rather investments. In fact, these investments and the welfare state make humane life possible. (Eskelinen and Juntumaa 2014: 83.) The Nordic countries have based their systems on this thinking for many decades. It means that the state is responsible for every individual; thus, the term has been an important part of the ethical and societal discourse in Finnish society.

In the 1980s, some political parties and economists started to criticize the Finnish welfare state. The criticizers blamed the welfare state for being too expensive, bureaucratic and nominalizing. Then, in public debate politicians and economists started to use the term *hyvinvointiyhteiskunta* 'welfare society'. There is an essential difference between this term and *hyvinvointivaltio* 'welfare state'. In the welfare society, the responsibility for public services and the development of society do not lie on the state but on all the actors of society. In the welfare society, public services are provided also by the third sector and voluntary actors. (Eskelinen and Juntumaa 2014: 83.) In political debate in the media, the terms *hyvinvointivaltio* and *hyvinvointiyhteiskunta* are often used as synonyms, as if the responsibility of the state still remained in the welfare society.

Another term used widely in the Finnish political debate is *kestävyysvaje* 'sustainability deficit'. It is a term used by the Finnish Ministry of Finance. It means that the

costs and the income of the state are in disproportion during the intermediate time frame. (Eskelinen and Juntumaa 2014: 116–117.) Politicians use the term frequently, especially when they are trying to justify saving programs that affect the public services. Hence, the term has moved from economic texts and speeches to general use in the media.

It is possible that a term is not always a special term from the very beginning. A good example is the word *palkkamaltti* 'salary temper'. It has been used by The Confederation of Finnish Industries (in Finnish Elinkeinoelämän keskusliitto, EK) in order to stress that it is not possible to raise salaries. (Eskelinen and Juntumaa 2014: 183.) The word is well established in Finnish public discourse, and it can be understood as a term in public debates and in the press.

The examples mentioned here are typical of today's society. We use terms or words like terms in various contexts and their exact meaning can vary when they are seen from different points of view. *Palkkamaltti* 'salary temper' has various meanings depending on who uses it – an employer or an employee.

Almost all terms are, in any case, quite neutral. The economic terms like *eräpäivä* 'due date', *hävikki* 'waste', *korko* 'interest', *rahasto-osuus* 'fund unit', *soliditeetti* or *vakavaraisuus* 'solidity', *talletustili* 'deposit account', *tilisiirto* 'account transfer', *valuutta* 'foreign currency' and *yksityinen kulutus* 'private consumption' are, in principle, clear for every adult (Taloussanasto 1995).

In political discourse in the media, politicians and moderators use terms that belong to their everyday language but are not everyday language for every listener or TV-viewer. These terms appear especially when talking about the international or European co-operation between different countries. The words are not difficult as such; they are, in fact, quite transparent, but the instances, consequences and events around them are not familiar to people. Hence, they are outside the discourse, even if they were interested in politics. Such terms are present in every debate, e.g., on TV. The following terms were taken from one TV debate on MTV3 in Finland in 2006: *nettomaksaja* 'net payer' (about some EU countries like Finland), *perustuslaillinen sopimus* 'constitutional convention', *rakenteellinen uudistus* 'structural reform', *siirtymätalous* 'transitional economy', *turvatakuu* 'defence guarantee', etc. To understand the content of these terms, you have to know quite a lot about the matters and affairs surrounding them and the thinking in the designated area (see also Hiidenmaa 2003: 117–121).

6 Discussion

Finnish people are extremely interested in science and the arts and the relevant research results. Laymen participate in general presentations and make questions about special matters in the media. It means that everybody has a need to understand

special languages, and it is necessary to create terms in every area of science and not only for scientific purposes, but also for adding knowledge of scientific results among ordinary people.

During the past years there has been widespread discussion on the status of Finnish as a scientific language. It has been noticed that many fields use only English and therefore, the domain of Finnish has narrowed down. According to the Finnish and Nordic language declarations and the program for the Finnish language it is important to use Finnish as a language that will continue to be complete and essential to society even in the future (Suomen kielen tulevaisuus 2009). To have terms in one's native language is really important from the point of view of democracy. Interested laymen and professionals in every field have to get information on the research results in their own language. The threshold between researchers or specialists and laymen should not be too high. It is also important that special languages should offer new notions to Standard Finnish and support its development as strongly as during the previous decades.

The same situation concerns various special themes and areas. If you are not familiar with the details in politics or economy, you can identify a term when you hear or read it many times, yet the content can still remain unclear. Term banks and explanations in glossaries help, but to understand the term, you always need more information about the context and the family of the notions the term belongs to. A term does not live an independent life but it is always linked to many other terms and contexts. Hence, one term can open many doors and attract you towards new areas.

References

Eskelinen, Teppo and Inari Juntumaa (eds.). 2014. *Kapitalismin sanakirja* [Dictionary of Capitalism]. Helsinki: Into.

Haarala, Risto. 1989. Sanat tiedon ja taidon palveluksessa [Words in the service of knowledge and skills]. In Jouko Vesikansa (ed.), *Nykysuomen sanavarat* [The lexical resources of Modern Finnish], 259–275. Helsinki: WSOY.

Hakulinen, Lauri. 1961. *The Structure and Development of the Finnish Language* (Uralic and Altaic Series 34). Translated by John Atkinson. Bloomington, Indiana University: Indiana University Publications.

Hiidenmaa, Pirjo. 2003. *Suomen kieli – who cares?* [The Finnish Language – who cares?]. Helsinki: Otava.

Hiidenmaa, Pirjo and Pirkko Nuolijärvi. 2004. Normering av främmande ord i finskan. [Standardization of foreign words in Finnish]. In Helge Sandøy and Jan-Ola Östman (eds.), *Det främmande" i nordisk språkpolitik. Om normering av utländska ord* ["The foreign" in Nordic language policy. On the standardization of foreign words], 253–274. Oslo: Novus.

Horila, Tapio. 1967. *1800-luvun geologiset uudissanat Antero Vareliuksen kielessä* [Geological neologisms of the 19th century in Antero Varelius' language] (Finnish Literature Society Editions 285). Helsinki: Finnish Literature Society.

Häkkinen, Kaisa. 1994. *Agricolasta nykykieleen. Suomen kirjakielen historia* [From Agricola to present-day language. The history of Standard Finnish]. Helsinki: WSOY.

Korhonen, Mikko. 1986. *Finno-Ugrian Language Studies in Finland 1828–1918* (The History of Learning and Science in Finland 1828–1918). Helsinki: Societas Scientiarum Fennica.

Laine, Päivi. 2007. *Suomi tiellä sivistyskieleksi. Suomenkielisen maantieteen sanaston kehittyminen ja kehittäminen 1800-luvulla* [Finnish on its way to a civilized language. Developing Finnish geographical lexicon during the 19th century]. Turku: Turun yliopiston suomalaisen ja yleisen kielitieteen laitoksen julkaisuja [Publications of the Department of Finnish and General Linguistics of the University of Turku].

Laitinen, Lea. 2009. Suomen kielen julkisen käytön ja aseman kehitys [The development of the official use and status of Finnish]. In *Suomen kielen tulevaisuus. Kielipoliittinen toimintaohjelma* [The future of Finnish. Language policy action programme], 15–43. Authors: Auli Hakulinen, Jyrki Kalliokoski, Salli Kankaanpää, Antti Kanner, Kimmo Koskenniemi, Lea Laitinen, Sari Maamies and Pirkko Nuolijärvi. Web publications by the Research Institute for the Languages of Finland 7. Helsinki: Research Institute for the Languages of Finland. http://scripta.kotus.fi/www/verkkojulkaisut/julk7/ (last accessed 8 June 2018).

Nuopponen, Anita and Nina Pilke. 2010. *Ordning och reda. Terminologilära i teori och praktik* [Order and arrangement. Terminology theory in theory and practice]. Stockholm: Norstedts.

Paunonen, Heikki. 1976. Society for the Study of Finnish 1876–1976. *Virittäjä Journal* 80(3–4). 310–432.

Pitkänen, Kaarina. 2008. *Suomi kasvitieteen kieleksi. Elias Lönnrot termistön kehittäjänä* [The development of botanical Finnish. Elias Lönnrot as the creator of new terminology] (Finnish Literature Society Editions 1164. Tiede [Science]). Helsinki: Finnish Literature Society.

Saari, Mirja. 2012. The development of Finnish into a national language. In Matthias Hüning, Ulrike Vogl and Olivier Moliner (eds.), *Standard Languages and Multilingualism in European History*, 179–204. Amsterdam: John Benjamins.

Sanastokeskus TSK. The Finnish Terminology Centre TSK. http://www.tsk.fi/tsk/en/frontpage-119.html (accessed 31 July 2017).

Suomen kielen tulevaisuus. 2009. *Kielipoliittinen toimintaohjelma* [The future of Finnish. Language policy action programme]. Authors: Auli Hakulinen, Jyrki Kalliokoski, Salli Kankaanpää, Antti Kanner, Kimmo Koskenniemi, Lea Laitinen, Sari Maamies and Pirkko Nuolijärvi. Web publications by the Research Institute for the Languages of Finland 7. Helsinki: Research Institute for the Languages of Finland. http://scripta.kotus.fi/www/verkkojulkaisut/julk7/ (last accessed 8 June 2018).

Taloussanasto. 1995. *Yritys- ja kansantaloutta suomeksi, ruotsiksi, englanniksi, saksaksi ja ranskaksi* [Business and national economy in Finnish, Swedish, German, and French], 6th revised edn. Helsinki: Taloustieto Oy.

Tieteen kansallinen termipankki. The Helsinki Term Bank for the Arts and Sciences. http://tieteentermipankki.fi/wiki/Termipankki:Etusivu/en (accessed 31 July 2017).

Øivin Andersen and Johan Myking

11 Norwegian LSPs

Abstract: In this paper we will first describe the historical background leading up to the present situation in Norway (section 2). In sections 3 and 4 Norwegian LSPs will be discussed in the context of the two Norwegian written standards Bokmål and Nynorsk, including their different social contexts and domains. In section 5 different aspects of term formation are described. Chapter 6 contains a survey of teaching, training and scientific research. Finally, in section 7 the challenges confronting Norwegian LSPs today are discussed.

1 Introduction

All definitions of LSP seem to agree that a sharp line of demarcation between LSP and LGP is not to be found. Hence we talk about gradience, i.e. degrees of LSPs (Laurén, Myking, and Picht 2008: 45–53).

Further, it is important to distinguish between the descriptive and the prescriptive aspects of LSP. In a descriptive framework we try to describe LSP practitioners and their use of LSP and terminology and their attitudes to language use. The prescriptive aspect of LSP deals with official language policy and how to deal with challenges such as domain loss and strategies for how to combat it, or, suggesting guidelines for efficient LSP usage in both academic and commercial areas.

In a simple way we can say that an LSP is used in a specific domain. In a Norwegian setting the LSP users of this domain normally use English, Norwegian or both in different contexts of the domain. In this survey the distribution of these two languages will be described in more detail, and so will the distribution of the two official Norwegian standard varieties.

It is important to relate use and attitudes to different LSPs to the general use and attitudes of the average Norwegian language user. This means that focus should be on the language users themselves, not only on formal properties of LSPs.

Language is often defined descriptively as a set of social norms which are tacitly agreed upon by the members of a speech community. Some of these tacit norms are prescriptively expressed by language policy institutions such as The Language Council of Norway and enacted by the national government.

Øivin Andersen and Johan Myking, Bergen (Norway)

https://doi.org/10.1515/9783110228014-011

2 Historical overview

2.1 The two written Norwegian standards

Norwegian has been described as a Multinorm Language (Trudgill 1995) due to the existence of two officially recognized written varieties, Norwegian *Bokmål* (lit.: "Book Language") and Norwegian *Nynorsk* (lit. "New Norwegian"). This situation emerges from the efforts of language reform to create a genuine Norwegian written language in the nineteenth century after the 400 years of political union with Denmark. The union was dissolved in 1814. Two solutions were proposed:

1) The gradual adaptation of the existing Dano-Norwegian standard to Norwegian pronunciation as found in the cultivated, yet casual, speech of the urban bourgeoisie. This solution was officially recognized in 1907, forming the basis of today's Bokmål.
2) The radical creation of a new norm based on the rural dialects least affected by the Danish linguistic influence and thereby allowing for distinctly 'Norwegian' solutions, especially at the morphological and orthographical levels: three-gender system, diphthongs instead of monophtongs, voiceless plosives etc. This solution was proposed by the self-taught linguist Ivar Aasen (1813–1895) and found its first official reform in 1901, later to be known as Nynorsk.

The two standard varieties were officially recognized by the parliament in 1885. By several joint linguistic reforms in 1917, 1938 and 1959, and on the background of an ardent cultural and political struggle, the two varieties were mutually 'rapproched' to a considerable extent. Such rapprochement is no longer part of the official language policy. The overall terminological strategies and principles are common to both varieties.

2.2 Norwegian LSPs 1897–2010

Until the year 1814 the history of written Norwegian LSP is part of the Danish language history. Writers were striving to write Danish correctly and without Norwegian interference. Latin, French and to a great extent German were used by scholars and scientists.

Individual writers and lexicographers early engaged in developing terminology in the two standards and thus elaborating Norwegian LSP. The first organized terminological efforts were made in 1897 when the Norwegian Association of Engineers formed a language committee with the task of collecting, systematizing and elaborating technical terminology. Renewed efforts had to be made several times until, after the war, the Norwegian Council for Technical Terminology (RTT) was reestablished in 1957 and continued its work until 1989 when it was liquidated for reasons of economy.

When the RTT was founded the modern terminology principles of Eugen Wüster were introduced in Norway as in the other Nordic countries during the same period. The work of the RTT was heavily focused on the production of domain-specific and onomasiology-based terminological dictionaries carried out by subject specialists aided by language experts. By 1989 the number of RTT dictionaries had mounted to around 40 including more than 30 subject fields. Computer-assisted terminography was introduced in the 1970-ies in cooperation with university-based research environments. RTT also acted as the Norwegian hub of terminology and took care of the relations to the international cooperation in the field.

After 1989 the national responsibility for terminology has been an integral part of the work of the Language Council of Norway. The work of the Language Council emphasizes strengthening the status of the Norwegian language, and its terminological mandate does not include the production of terminology resources. The work focuses on the stimulation and encouragement of terminology cooperation and projects as well as on information and advice to the general public. A special terminological service was established in 2010 within the framework of the Language Council.

2.3 The domain distribution of Nynorsk and Bokmål LSP

The domain distribution of Nynorsk and Bokmål is not even. Rough and modest attempts at estimating the number of primary users of Nynorsk suggest 300–400 000, but any such calculation is uncertain. Geographically, the 'core area' of Nynorsk is the Western territories of Norway, except the cities. Professionally and socially, the primary domains of Nynorsk are to be found in the public sector, notably in instruction. Nynorsk is used as the language of instruction by 11% of the pupils of primary school. It is the official language of 4 of 19 counties. The position of Nynorsk in the national media is (except the national broadcasting) insignificant, the position within private enterprises and economical/technological life is practically non-existent.

Within Nynorsk a significant development of lexicographical and terminological resources took place in the twentieth Century. This is basically due to efforts of individual domain experts from a variety of domains. Student-based work has played an important role during the entire century in the publishing of major domain dictionaries and textbooks.

The question of whether terminology resources in Norwegian should be developed on a parallel basis has proven delicate and is to be solved at the status level due to financial costs which, in turn, is due to the uneven domain distribution. At the corpus level, in the act of forming new terms, this strategy is strongly emphasized by the Language Council and in official policy documents (cf. Government white paper 35).

3 LSP in the context of a Norwegian national language policy

In 2005 The Norwegian Language Council published the report *Norsk i hundre! Norsk som nasjonalspråk i globaliseringens tidsalder – et forslag til strategi* (Norwegian at high speed! Norwegian as a national language in the age of globalization, Kristoffersen & al. 2005). This document was followed by the official Norwegian strategy document *Mål og meining* (Government white paper 35, literally: "Goal/tongue and meaning"), issued in 2008 and acknowledged by the Norwegian Parliament (Stortinget) in 2009. The document has outlined the principles of an all-encompassing national language policy for LGP as well as LSP, at the status as well as the corpus levels. The Language Council of Norway is the coordinating hub of the official language efforts.

The document calls upon institutions in industry and trade to develop a strategy of LSP for these domains. In order to stimulate these efforts, the government also intend to develop The Language Technology and Resource Collection for Norwegian (Språkbanken), established in 2010, in close cooperation with the Language Council. The Norwegian Standards Organization is also a major partner in terminological collaboration.

In 2010 the Language Council organized its terminological activities in a special section; this is a strong manifestation of the government's commitment to terminology as a central element of an all-encompassing language policy.

4 Norwegian LSPs in different social contexts and domains

4.1 What is a domain?

It has been demonstrated that domain may have a variety of meanings (i.e. covers a variety of related concepts): domain may be seen as situation type, subject field, broad societal arena, cognitive space etc. (Laurén, Myking, and Picht 2008, Jónsson et al. 2013, ch. 4, Myking 2011). The context-sensitivity of the concept makes it apt for efficient targeting of language policies provided that the meaning is fixed and defined according to the goals of language policy.

It has, further, been proposed that the concept of domain is integrated into a coherent, although open, framework of 'domain dynamics' according to the actual language processes. According to Laurén, Myking and Picht (2008) and Jónsson et al. (2013, ch. 4), domain dynamics is "the interplay of social, political, economic and cultural conditions existing at a certain point of time in a language community which is characterized by a will (directly or indirectly manifested) to maintain its overall

cultural identity by a language (Gesamtsprache) that can function in all areas of life, or by the partial or complete abandonment of this identity, respectively". (cf. also Laurén, Myking, Picht 2002, 2006).

The concept of 'domain dynamics' implies changes at the language status level caused by sociolinguistic (i.e. society) as well as socio-cognitive (i.e. subject fields) processes, and is firmly anchored in the discourse of language planning. As a counterpart to 'domain loss' the concept of 'domain conquest' clearly refers to the possibility of implementing positive and active measures of language planning. The practical consequence is the strengthening of status and corpus language planning, e.g. terminology development. The extensive whitepapers of language planning in the Nordic countries are modelled on the recognition of this dichotomy.

During the following discussion we do not aim at any further development of the concept of domain. A 'domain' is seen as a "Subject field or field of knowledge with corresponding linguistic and other professional communicative resources" (Myking 2011, based on Laurén, Myking and Picht 2008). We deal with LSP perspectives within certain domains of particular relevance to LSP: main societal sectors, professional activities and subject fields.

4.2 Essential domains vs. disciplines

The close cooperation between The Norwegian School of Economics (NHH) and the University of Bergen has resulted in many ground breaking projects, especially in the domain of economical language. The Department of Professional and Intercultural Communication at NHH has conducted research on LSP and terminology for several years. The project Knowledge Bank, Norway (KB-N) was financed by the Norwegian Research Council (Kristiansen 2005). The aim of the project was to develop domain specific conceptual systems with recommended terms by using domain specific experts and trained terminologists. The bank was also intended to be a pedagogical and research mediating tool. Moreover, the bank was meant to be a word sense disambiguation device for the automatic machine translation project LOGON. But the bank was also contextualized into the language technology research project KUNSTI (cf. Reference Section, Web Sources).

The tendency in recent years has been to integrate research on LSP and terminology into a comprehensive road map for research infrastructure. Thus the Research Council of Norway granted 25 million Norwegian kroner to the establishment of CLARINO, a common infrastructure for Norwegian and European language data bases. The KB-N project was continued within this framework at NHH. The basic idea is to harmonize language resources across Europe. The aim is to develop language-independent methods and tools for constructing and consolidating multilingual term bases and ontologies, for corpus-based term extraction and for ontology-based domain recognition of LSP texts.

Interdisciplinarity in LSPs is more widespread today than ever before, and some LSPs, like medicine and law, are more relevant to people's everyday life than earlier (see 4.4.1 and 4.4.2 for further details).

There is a considerable bulk of terminological dictionaries which can serve as an important basis for further work to improve the Norwegian medical language, such as Gundersen and Johannesen (2004) and Øyri (2002, 2011).

In psychology there are some valuable introductory text books written in Norwegian. The authors of some of these books are established authorities in their field. Olsvik (2011) points out that psychological practice involves much power.

Fyhri, Hauge and Nordh (2012) try to lay the foundation of a Norwegian LSP in the field of environmental protection and psychology. Special care has been taken to establish concepts which are generally accepted in the domain through discussions and consultations. The established terms are as usual English, but the authors and the publishers have come up with good Norwegian equivalents of the established English terms.

But research in terminology science has demonstrated that domain specific concepts which are analyzed systematically are easier to remember and easier to understand. This insight in fact stems from cognitive psychology itself (Miller and Johnson-Laird 1976). Raaheim and Raaheim (2011) to some extent tries to follow these principles. The collection of English terms and the authors' suggestions for Norwegian equivalents are intended to cover the basic domain specific terms in the field. It is a well-organized work and will serve to stimulate students of psychology to produce Norwegian terms.

The LSP of economics is currently being investigated at the Norwegian School of Economics, mainly in a bilingual English–Norwegian perspective. In the field of terminology, this work is intimately linked to research on designing bilingual terminology resources for educational and other purposes. In Kristiansen (2010) an initiative to establish a Norwegian-English termbase of microeconomic terminology is described. The aim of this termbase is said to "build a means to enhance the conceptual understanding and parallel language competence among students". The resources developed in this research are part of the background for national initiatives to create terminology resources, of which Termportalen ("the terminology portal") is an important example. This portal is associated to the European CLARIN research program (i.e. CLARINO, cf. below).

In the domain of law it is not English which is the dominant source of terminology. To a lesser extent than in medicine Latin has been a source. But the main source of term formation has come from the Norwegian LGP (Fjeld 2005). When words are borrowed from general language they are given a precise definition which makes them different from their common use. Fuzzy words and phrases are needed in general language if language is supposed to fulfill its function as a flexible tool of communication.

In Moe (2010: 14–22) some experienced Norwegian lawyers have evaluated the use of sentences passed by Norwegian courts of law. Their general impression is that the quality of language use varies a great deal, but there seems to be a tendency that bad and complicated language is a sign of insufficient professional legal competence. But as Fjeld (2005) has pointed out, to some extent this can be explained by the different communicative environments of legal language. So many lawyers fear that a simplified language may remove important legal aspects and result in serious misunderstandings. Using clear and simple language is thus a challenge for many practitioners of law. But, as these experienced lawyers point out, it is a question of finding the right balance between ordinary language and legal language.

As in medicine considerable valuable contributions in terms of dictionaries have been provided: Lind (2009), Hansen and Lind (2010) Gjelsvik (1929), Gisle and Lind (2010) Norwegian legal terminology has also been translated into Polish (Filipek, Iwanow and Iwanow 2010), Russian (Senje 2010) and German (Simonnæs 1994).

In addition to this are of course many domain specific terms included in many general language dictionaries in Norwegian. An example is the Norwegian–Vietnamese dictionary for Vietnamese refugees in Norway (Khan and San 1983). Special groups in medicine and law both on the Norwegian and the Vietnamese side were established in order to give a systematic and exact translation of terms. In medicine the terms included typical Norwegian deceases like the flew, and a list of tropical deceases and the basic types of medicines associated with the different deceases. In the domain of law all the Norwegian instances of law were analyzed systematically before being translated into Vietnamese (for further information see Andersen 1995). This dictionary was made freely available online in 2010.

Dictionaries as a tool in second language teaching of immigrants have been provided by the LEXIN series, based on a Swedish project launched in the 1970-ies. The Norwegian LEXIN project was initiated by state funding in 1996 and consists of a set of dictionaries covering around 20 target languages and a database of 36 000 lexical items, in addition to digital resources. The aim of LEXIN is to provide a learning tool for minority language adults and children at all linguistic levels, thus adapting the selection of items to the needs of the users. In order to enable the orientation within the Norwegian society a set of 'social words' is added to the LGP words, thus adding an LSP aspect to the dictionaries.

In the natural sciences some very important terminological work is carried out by the Norwegian Biodiversity Information Centre (cf. reference list) according to strict nomenclature principles. Its goal is to serve as a national source of information on species and ecosystems in Norway, and to make up-to-date information on biodiversity widely available and easily accessible to the society. The centre is in charge of producing both red lists of species and ecosystems in Norway and it also provides a national risk assessment on alien and invasive species in Norway. Trivial names for given species are given in Norwegian in addition to their Latin scientific names.

4.3 Domains as main societal sectors

4.3.1. Universities and colleges; research and education

The § 1–7 of the University and High School Act states that universities and institutions of higher education have the responsibility for maintenance and further development of Norwegian LSPs. These paragraphs were enacted in 2009 and form the basis of local language strategies in the university sector. Titles often refer to the benefits of parallel language use by positive wordings such as "Både i pose og sekk (Having your cake and eating it)" (Sandøy et al. 2007).

Based on the two official reports and whitepapers mentioned in section 3 and encouraged by The Norwegian Association of Higher Education Institutions (UHR) all Norwegian universities issued their own language policy documents between, mainly, 2006 and 2011 (cf. overview in Jónsson et al. 2013, ch. 4). This was part of a major trend in the Nordic countries. The various strategy documents focus on the actual use of language in higher education and research and of the distribution of Norwegian and English in academic and LSP settings. The general tendency is that the use of English is increasing at the expense of Norwegian.

To counteract this development the national and local reports recommend that the universities develop a strategy of 'parallel language use' of Norwegian and English. This requires that domain experts develop a Norwegian LSP with a clear and consistent terminology based on LSP communication. Although English is necessary in international publications, functional and comprehensible Norwegian LSPs must be developed in education and popularization contexts. The basic goal is parallel language use, i.e. the simultaneous use of both languages. To achieve this goal practical work on terminology must be intensified and more systematically coordinated.

For LSPs in academia (i.e. at the universities and other institutions of higher education) it is maintained that Norwegian should be preferred wherever possible, especially at bachelor level. A good, practical LSP in the different domains would require the existence of high quality textbooks in Norwegian with a full-fledged functional Norwegian terminology. In many disciplines this is far from the case, as the use of English is still very strong.

The Government white paper 35 recommends development of parallel LSP in English and Norwegian for all academic domains and places the responsibility for implementing this on the Norwegian universities and official institutions of higher education. In August 2012 the Ministry of Education and Research issued a circular letter about terminology development , based on paragraphs 1–7. It was intended as a "moral" road map rather than as a directive.

This strategy also has some severe limitations. The increasing number of foreign students in academia necessitates instruction in English. Moreover, there is a general lack of textbooks in Norwegian in several disciplines. Still, the majority of the lecturers

are native Norwegians, and in some cases both the lecturers and the foreign students have an insufficient command of English.

Empirical research shows that the general tendency is that Norwegian is the dominant language on Bachelor level, whereas English is on the increase on Master level in most institutions. However, an investigation conducted by The Norwegian Language Council in 2011 revealed that the amount of curriculum literature in Norwegian had increased since 2000.

In recent years the situation of national LSPs in a bilingual context has been comparatively examined at Nordic level, resulting in two extensive volumes (Gregersen 2014, Hultgren et al. 2014). The national reports included in the latter work demonstrate the gap between political ideals and reality. Linn (2014) and Ljosland (2014) outline why Norway, on the basis of its century-long experience with language planning, is now avoiding a highly interventionist approach to the problem and seeks a situation of parallel language use where English and Norwegian may be used productively side-by-side.

It is, however, difficult to see how this ideal of parallel language use can be reached without measures of "interventionism". As demonstrated by Kristoffersen, Kristiansen and Røyneland (2014), little or nothing is said about language when universities develop their strategies of internationalization. This point is strongly supported by Johansen (2012) in his analysis of the Government white paper 35. Johansen suggests that the Government white paper 35 as well as the university policy documents are drafted in vague wordings in order to allow disregarding language whenever more important goals, i.e. internationalization, are at stake.

The Language Council has initiated and stimulated increased terminological awareness and practices at universities and colleges. Presently a project on optimal terminological practice is progressing and is being strengthened into a research program. The council wants the universities and colleges to proceed from a status level into a corpus level activity, but the institutions as a whole face problems when entering into the status level. The council has initiated a development of terminological consciousness and practices in the University and High School sector. In collaboration with specialists in the domain of chemistry a terminological model practice is being carried out and intensified through a research program until 2016. Based on the dichotomy status/corpus it can be claimed that the council is trying to induce the University and High School sector to enter a corpus oriented working phase. Still, the general impression is that the entire sector has problems with entering the status phase. The overall impression is that the language policies in the University and High School sector are at present not consolidated.

4.3.2 Private sector

It goes without saying that introducing language measures to protect the national language in the private sector is more difficult than in the public sectors. The various

reports and whitepapers have introduced the idea of language roadmaps but no sanctions if the roadmaps are not complied with. The difficulties of funding the work of the RTT until 2001 (cf. 2.2) demonstrate that terminology is basically market-dependent and that transition to English as the working language is the main trend in this sector.

The role of standardization as a mediator between language policy and private sector (as well as the public sector) is essential. The Language Council of Norway is given the task of coordinating the development and dissemination of terminology. The ongoing work on translating international standards to Norwegian is going to be intensified and the Norwegian Standardization Organization will have a central role in these activities.

In 2004 the organization released a report on activities in Norwegian LSP discourse communities in various companies, including their infrastructure and terminological attitudes (cf. Terminology survey 2004).

The report reveals that terminological activity is present in nearly all LSP domains, but that technology and science dominate. But the compiled terminology is not as a rule accessible outside the companies. In most cases terminology work is carried out without regard to terminological ISO standards and without documentation. Different formats and media prevent necessary dissemination and make use very difficult. Cooperation between the relevant institutions is not established.

The future of Norwegian LSPs is also dependent on the current development of language technology resources. The 2012 META-NET white paper, *The Norwegian Language in the Digital Age* (De Smedt et al. 2012), points out that for Norwegian only the most basic tools and resources are available. On the lexical level LGP lexicons are well covered but there are major gaps in the coverage of terminologies representing specialized domains.

Text corpora and especially parallel corpora have a very weak support. The development of parallel corpora is an essential basis for the development of machine translation. The major challenge here is ambiguity. An increased availability of parallel corpora of domain specific texts would not only facilitate machine translation, but would also be an excellent tool for building unambiguous and functional terms. But it is also pointed out that this will be expensive. It costs just as much to develop language resources for a small language like Norwegian as it does for a large language like English.

Moreover, so far it seems to be difficult to induce academic and industrial private enterprise to cooperate in a sufficiently efficient way, as Escartin (2012) has pointed out. Both researchers and industrial companies can be reluctant to let others use the result of their work. Her paper illustrates the difficulties which domain specific machine translation meets because the available dictionaries lack a relevant domain specific list of unambiguous terms in both the source language and the target language.

4.3.3 Public sector

Language regulation is a significant property of the Norwegian public sector, however, in the sense of regulating the use and distribution of the two standard varieties Bokmål and Nynorsk. One important set of measures that has been implemented since the 1970-ies concerns the public communication between the authorities and the general public – a trend known as Plain Language at the crossroad between LSP and LGP. The interaction of Plain Language ideals and domain-internal needs for clarity and precision has formed the basis for conscious and long-time efforts of language reform, especially in the drafting and writing of new laws. Several linguists also have made significant contributions. Today, this work is coordinated by a special service within the framework of the Language Council. Much emphasis is put on motivating and training civil servants to avoid the abuse of traditional legal style when communicating with the general public.

The reason why legal language is a difficult domain is as follows: the use of ordinary everyday language is a result of a tacit agreement of the language users, the agreement in professional legal language is a result of explicit negotiated definition making. Hence legal language may be a source of misunderstanding among laymen. A general impression is that legal language is archaic and complicated with long sentence periods and nominal style. Common words are given a stipulated definition in order to give them the necessary power to predict all possible legal scenarios (cf. Fjeld 2005: 17). In other words, it is of vital importance to avoid situations where it is impossible to decide whether the relevant law is applicable or not. To the layman this gives the impression of a very general and abstract way of formulating.

4.4 Domains as professional activities

There is a considerable interest in the medical LSP and communication in the Norwegian society in the context of health policy and social welfare. It is recognized that the medical profession has a dual sphere of communication: towards the general public and within the medical professional group of experts. A number of significant plurilingual dictionaries and other language resources have been published, such as Øyri 2011 (with spin-offs, cf. Øyri 2002) and Nylenna 2009. The issue of expert-to-layman communication has been given attention by e.g. Nylenna (2008). At the medical schools some textbooks are in Norwegian. A significant stronghold of Norwegian medical LSP is ensured by The Journal of the Norwegian Medical Association, a general medical journal that is published in Norwegian with English-language summaries on the Internet (www.legeforeningen.no).

The development of medical language resources takes into account the two main registers of medical discourse: Greek and Latin terms for international scientific

communication. On the other hand there is a rich repertoire of Norwegian designations with occasional dialectal terms. Sometimes registers are characterized by lexical interference and mixing. These facts give rise to adequate medical code-switching that doctors have to perform.

Globalization causes significant recruitment of health personnel from abroad, which stimulates general language interest.

The Norwegian Registration Authority for Health Personnel (SAK) is responsible for granting the professional authorization of foreign health personnel (cf. SAK). Applicants from outside the EU/EEA area have to pass a language program and a final test.

A special case of medical language was the revision of The Norwegian ICD-10. The only officially funded work on medical terminology is the Norwegian version of ICD-10, *International Classification of Diseases and Related Health Problems,* approved by the WHO in 1990. The Norwegian version was first published in 1996 by the Norwegian health Directorate. It was given a distinct terminological profile with respect to a) the normative approach to term selection, b) the inclusion of synonyms as a means of information retrieval, and c) the sociolinguistic approach to written variants and status assigned to the various medical registers. (For examples, cf. chapter 5).

Like in most other communities the discipline of law in Norway is rooted in the national culture as well as in the legal and philosophical traditions of European law. The language of law was largely inherited from the Danish language of law and administration used in Norway since the end of the Middle Ages. Thus it was largely marked by the Danish-German-Latin. Within the broad movement towards a general language reform in the twentieth century there has also been significant efforts to reform the language of law, bringing it closer to modern ideals of comprehensibility and easy access without conceding to domain-specific needs for clarity, exactness and precision. Norwegian LSP is the basis of research and academic studies and has also had a significant influence on the language of public administration. In 2014, following the 200th Constitution anniversary, the Norwegian Parliament approved a reformed version of the Constitution as well a newly written version in Nynorsk; giving rise to public turmoil and political complications.

The language of law has to a very large extent been developed by the efforts of individual writing, including questions of terminology. A number of lexicographical works have been published over the years; bilingual and translation-oriented dictionaries include languages such as English (e.g. Hansen and Lind 2010, Chaffey and Walford 1997), German (Simonnæs 1994), French (Fife 1991) and Russian (Senje 2010). The neology-oriented dictionaries and glossaries of Nynorsk: Olden (1985), Utgaard (2002) deserve special mention. These works is a continuation of the lexicographical and stylistic efforts of the important lawyer Nikolaus Gjelsvik (1866–1938) who had a significant influence on the LSP of law in Nynorsk and in Bokmål as well.

LSP work is not primarily characterized by terminological committees or standardizing work, but there is one important exception: The EEA/EU terminology base

(cf. Ovrum 2005, 2012, further below section 6). The secretariat is a part of the European section of the Ministry of Foreign Affairs. The term base is freely available on the internet for everybody. The data base provides an authoritative standard for all types of EU documents which are translated into Norwegian. The base is concept based and contains English, French and both standards of Norwegian. At present it contains more than 40 000 concepts comprising special EU terms, legal terms and many terms from several special domains from environmental protection to law and insurance. The purpose of the base is to develop and manage the terminology and texts of the collection of EU legal acts that are translated into Norwegian as a consequence of Norway's connection to the EU by the EEA agreement. Its 150 000 terms makes this term base one of Norway's most important terminological resources.

5 Tendencies of term formation in Norwegian LSPs

5.1 Primary and secondary term formation

The Government white paper 35 points to the fact that nearly all types of knowledge development is international. Consequently, new terms tend to be developed in English first. English is also the dominant language in the development of international standards of which only an insignificant number is translated into Norwegian (cf. also 4.3.2). This means that nearly all 'primary term formation' is in English. The basis for the Norwegian terminology is 'secondary term formation' as it has to be translated from English according to established principles.

5.2 Purism and selective purism

Patterns of term formation tend to be domain-specific, causing a considerable range of variation across subject fields. The principle that terms should correspond to the norms of the language in question (cf. ISO 704) necessitates secondary Norwegian term formation with (selective) purism as significant features. By 'selective purism' we refer to the fact that purism does not always affect loans from all languages. Latin or Greek terms are largely accepted with the necessary minimal adjustments of spelling, but there may often develop a sort of register distribution between Latin and a national register, e.g. in medicine (cf. 4.4.1). In Norwegian Nynorsk there is a specific purist attitude towards loans of German and Danish origin, and much effort has been invested in developing equivalents that are stylistically acceptable. As a result many Bokmål and Nynorsk equivalent pairs have different and non-cognate morphosemantic structures.

5.3 The issue of English

Much effort has been invested in developing principles of spelling of English import words across the border between LGP and LSP. A monograph by Helge Sandøy (2000) describes and establishes the main principles on the basis of evidence from a variety of domains: 1) the promotion of orthographic purism, in contrast to 2) the promotion of native replacement words (lexical purism). The two principles are seen as instances of the general promotion of assimilation of foreign words to the indigenous spelling system. These principles have to a great extent been adopted by the official general language cultivation that is managed by the Language Council of Norway and thus adapted to LGP as well as LSP. The category of 'lexical purism' more or less corresponds to the principle of morphological motivation and the principle of transparency, cf. below.

5.4 Motivation and transparency

The principle of morphological motivation has been extensively discussed in international terminology (cf. overview and further references in Andersen and Myking, ch. 28, this publication). In the Norwegian context this principle is associated with lexical purism and primarily applied on loans from English and not to the same extent to neo-classical loans that tend to be treated by ortographic purism.

In the Norwegian context the principle of motivation was largely applied and preferred in the work on oil terminology in the 1980s (cf. Andersen and Myking, ch. 28, this publication), probably due to the massive amount of terms to be transferred. Applying orthographic purism requires a large amount of linguistic expertise as well as compliance to procedures of language standardization. However, in the 1980s these guidelines were still applied rather unsystematically. When the use of terms in their original phonological and ortographic form is banned, the principle of lexical purism forming content-based neologisms offers solutions that at the same time are acceptable at three levels: a) linguistically, because the use of native elements excludes spelling problems; b) culturally, because the use of native elements displays respect for the native language; and c) cognitively, because important conceptual characteristics are reflected in the linguistic form, thus exhibiting the mnemonic and didactic quality of the term.

5.5 Domain-specific patterns of secondary term formation

Primary term formation in Norwegian has not been extensively investigated. Advanced industries operate by means of English as the working language and thus – at least in principle – contribute to the primary term formation richness of the English language.

This is illustrated by the term *subsea* in the field of oil technology (cf. Andersen and Myking, ch. 28, this publication).

Thus, a variety of domain-specific patterns of secondary term formation is to be expected:

As described in 4.2, in domains like medicine we see a clear register split between Latin and Norwegian where some Norwegian terms are not newly coined, and where dialectal and other sources from the vernacular are exploited. In the domain of technology we see a shift from German to English term formation from the period following the Second World War. The language of law in Norway has long traditions from Danish with German influence. The language has been Norwegianized in the twentieth century, and Nynorsk has had a positive influence in this process, especially through the ground breaking work of Nikolaus Gjelsvik. In 2014 the language of the Norwegian constitution was revised and the language was made simpler without loss of accuracy. A Nynorsk version was created for the first time.

We can illustrate some of this, using examples from the ICD 10-project in medicine. The inclusion of synonyms ensures information retrieval and is a feature of current terminological theory (cf. Temmerman 2000). The synonyms were divided in three distinct categories: Latin proper (right column), Latin Norwegianized (mid column) and Norwegian proper (left column) (cf. Breivega 1997, 2004):

magesekk	ventrikkel	ventriculus
lungebetennelse	pneumoni	pneumonia
spiserør	øsofag(us)	oesophagus

Cf. the following equivalents of the code G10, Huntington's disease:

Huntingtons sykdom	→	approved term, completely adapted
Huntingtons chorea	→	partly adapted
Setesdalsrykkja	→	genuine Norwegian of dialectal original (lit. "spasmic disease from the region of Setesdal")

6 LSP in teaching, training and scientific research

The average Norwegian citizen has traditionally been interested in questions relating to language use in society. Norway is an open society where freedom of speech and public discussion is highly valued. There is an increasing awareness of the fact that a continuation of this tradition is dependent on the fact that specialized knowledge is mediated in an understandable manner to the public. In academia increased acknowledgement are given to those scholars who succeed in mediating specialized knowledge to the public. Until recently, academics were not given credit for editing text books for students written in Norwegian. Even worse is the fact that the time consuming work of compiling dictionaries and terminological data bases for Norwegian terminology is not acknowledged to a sufficient extent.

There have been several attempts at establishing LSP and terminology courses and specially designed programs integrating LSP and translation at several Norwegian academic institutions. The overall tendency is that such courses do not seem to have a strong appeal at the bachelor level, but also, that aspects of LSP seem to fit well into research programs at higher levels.

Research on LSP and terminology in academia has basically been carried out within the classical Wüster tradition (Wüster 1991) Many Norwegian scholars and practitioners have participated in numerous LSP conferences over the years. A peak was reached in 1993 when the University of Bergen and Norwegian School of Economics (NHH, at the department now called the Department of Professional and Intercultural Communication) hosted the 9th European symposium on Language for special purposes (Brekke et al. 1994). NHH has later hosted several smaller LSP conferences, e.g. on LSP translation, LSP and language technology and in 2005 LSP and intercultural communication (Lassen 1997).

The close cooperation between NHH and the University of Bergen has resulted in many ground breaking projects, especially in the domain of economical language. The Department of Professional and Intercultural Communication at NHH has conducted research on LSP and terminology for several years. The project Knowledge Bank, Norway (KB-N) was financed by the Norwegian Research Council (Kristiansen 2005). The aim of the project was to develop domain specific conceptual systems with recommended terms by using domain specific experts and trained terminologists. The bank was also intended to be a pedagogical and research mediating tool. Moreover, the bank was meant to be a word sense disambiguation device for the automatic machine translation project LOGON. But the bank was also contextualized into the language technology research project KUNSTI.

The tendency in recent years has been to integrate research on LSP and terminology into a comprehensive road map for research infrastructure. Thus the Research Council of Norway granted 25 million Norwegian kroner to the establishment of CLARINO, a common infrastructure for Norwegian and European language data bases. The KB-N project was continued within this framework at NHH. The basic idea is to harmonize language resources across Europe. The aim is to develop language-independent methods and tools for constructing and consolidating multilingual term bases and ontologies, for corpus-based term extraction and for ontology-based domain recognition of LSP texts.

But terminological activities have also been carried out outside academia. Two projects should be mentioned here.

Firstly, also within the CLARINO framework in the infrastructure project META-SHARE a term base was established in 2012. It is owned by the Norwegian Association of Higher Education Institutions (UHR) in Oslo (cf. web page UHR term base). The base is reserved for academic use and is a collection of 2000 administrative terms within academia with English –Bokmål/Bokmål – English and English – Nynorsk/Nynorsk – English translations. The term base translates from Bokmål/Nynorsk to British English and the other way around.

Secondly, The Norwegian Language Council currently issues an internet journal containing practical advice addressed to governmental employees. It comes out four times each year. In the second issue in 2012 the EEA/EU terminological data base was presented, cf. 4.4. above.

The rapid development of language technology resources has opened the door to extensive use of sociocultural media. Databases on terminology and information retrieval are being developed for the use in specialized libraries.

7 LSP, corpora and terminological data bases

At present there is no available electronic text base for LSP texts in general. Since the 1980s an extensive terminology data base based on the Norwegian offshore oil industry was established (cf. Andersen and Myking, ch. 28, this publication), today forming the basis for renewed efforts of making terminology electronically accessible. Attempt at developing a Norwegian Term Portal are made in collaboration between the Norwegian School of Economics and the Norwegian Language Council (cf. Termportalen; Andersen and Kristiansen 2011).

8 Challenges and how to meet them

The Norwegian community, in spite of its advanced economical and social system, finds itself facing similar challenges as most other Western societies: The global and open economic system, welfare and health care, the shift towards a 'green' economy after the decline of the oil and gas exploitation. From a linguistic point of view it is noteworthy that English has consolidated its role of lingua franca to the extent that LSP competence in other languages becomes insignificant. Consequently, the authorities have launched the policy of parallel language use in all its variety, encompassing cultural as well as economic and educational aspects. The prospects of this language policy are of course affected by the general positive attitude towards English in almost all sectors of society, not least in popular culture and among the younger generations.

This is also the reason why Norwegian academia is assigned the primary responsibility of developing Norwegian LSP resources. Nothing will be gained unless a domain specific discourse community is convinced that development of Norwegian – English parallel term formation in their domain is not only a question of "the survival of Norwegian LSPs", but also an important tool for scientific research and progress as well as a prerequisite for better education and recruitment of researchers and new students, better mediation etc. If these discourse communities do not see the advantage of this, no progress will be made.

In other words, it is the language users themselves, their attitudes and convictions which are decisive in this matter. If scientific progress can be made more efficiently

using and developing Norwegian terms as a primary term formation process, and then afterwards translated into English rather than the other way around, much will be gained.

References

Andersen, Gisle and Marita Kristiansen. 2011. Towards a national infrastructure for terminology in the framework of the CLARA and CLARINO projects. *SYNAPS – Fagspråk, Kommunikasjon, Kulturkunnskap* 25/2010 [Festskrift for Åge Lind], 1–8.

Andersen, Øivin. 1995. Translation problems in some LSP sectors of a Norwegian-Vietnamese dictionary. In Gerhard Budin (ed.), Multilingualism in Specialist Communication, Proceedings of the 10th European LSP Symposium Vienna, 29 August–1 September 1995, 1245–1251. Vienna: Term Net.

Breivega, Kjersti Rongen. 1997. Den norske utgåva av ICD-10: SGML-koding som terminologisk arbeidsredskap. In Terminologi og kvalitet. NORDTERM symposium 1995, 61–70. Nordterm, 7. Reykjavík: Nordterm.

Breivega, Kjersti Rongen. 2004. Melding av Audun Øyri: Norsk medisinsk ordbok [Review of Øyri: Norwegian Medical Dictionary]. *LexicoNordica* 11. 203–209.

Brekke, Magnar, Øivin Andersen, Trine Dahl and Johan Myking. 1994. *Applications and Implications of Current LSP Research*. Bergen: Fagbokforlaget.

Chaffey, Patrick and Ronal Walford. 1997. Norsk-engelsk ordbok: strafferett, straffeprosess og andre juridiske termer [Norwegian-English Dictionary: Criminal Law and other legal terms]. Oslo: Universitetsforlaget.

De Smedt, Koenraad, Gunn Inger Lyse, Anje Müller Gjesdal and Gyri S. Losnegaard. 2012. *The Norwegian Language in the Digital Age* (META NET White paper series). Berlin and Heidelberg: Springer.

Drozd, Lubomir and Wilfred Seibicke. 1973. *Deutsche Fach- und Wissenschaftssprache*. Wiesbaden: Brandstetter.

Escartin, Cara Parra. 2012. *Building bridges between academic and industrial R & D in Natural Language Processing*. Bergen: University of Bergen unpublished paper.

Fife, Rolf Einar. 1991. *Fransk-norsk juridisk oppslagsbok* [French-Norwegian Legal Dictionary]. Oslo: Universitetsforlaget.

Filipek, Michal Jan, Maciej Iwanow and Ronuald Iwanow. 2010. *Norsk Polsk, Polsk-Norsk juridisk ordbok* [Norwegian-Polnish, Polnish-Norwegian Legal Dictionary]. Oslo: Cappelen.

Fjeld, Ruth Vatvedt. 2005. Å gjøre lovtekster klarere [Making law texts clearer]. In Jan Olav Fretland and Marit Hovdenak, *Forståelig språk for alle. Rapport frå ein nordisk konferanse om klarspråk,* 17–28 [Understandable language for everybody. Rapport from a Nordic conference on clear language]. Oslo: Antiquarian Net.

Fyhri, Aslak, Åshild Lappegard Hauge and Helena Nordh. 2012. *Miljøpsykologi på norsk*. [Environmental psychology in Norwegian]. Bergen: Sintef.

Gisle, Jon and Åge Lind. 2010. *Jusleksikon* [Legal Dictionary]. Oslo: Kunnskapsforlaget.

Gjelsvik, Nikolai. 1929. *Juridisk ordliste*. Oslo: Nikolaisen.

Government white paper 35. 2008. *Mål og meining. Ein heilskapleg norsk språkpolitikk. Stortingsmelding 35 2007–2008* [Goal/tongue and meaning. Towards an all-encompassing Norwegian language policy]. Oslo: Ministry of Culture.

Gregersen, Frans (ed.). 2014. *Hvor parallelt. Om parallelspråklighet på Nordens universitet* [How parallel. On parallel language use at the universities in the Nordic countries]. TemaNord 2014: 535. Copenhagen: Nordisk Ministerråd.

Gundersen, Georg and Bjørn Johannesen. 2004. *Apotekerlatin* [Pharmacy Latin]. Oslo: Fagbokforlaget.

Hansen, Einar and Åge Lind. 2010. *Norsk-engelsk økonomisk-juridisk ordbok* [Norwegian-English Ecdonomic-Legal Decitionary]. Oslo: Adlibris.

Hultgren, Anna Kristina, Frans Gregersen and Jacob Thøgersen (eds.). 2014. *English in Nordic Universities. Ideologies and practices.* University of Copenhagen: Department of Applied Linguistics and English Language, The Open University/The Lanchart Centre.

ISO 704. 1987 and later editions. *Principles and methods of terminology*. ISO.

ICD-10. 1992 and later editions. *International Classification of Diseases and Related Health Problems,* 10th edn. Geneva: WHO.

Johansen, Anders. 2012. *Språkmeldingen som handlingsplan: Retorikk og resultater. Rapport om oppfølging av St.meld. nr. 35 (2007–2008) Mål og meining, overlevert Språkrådet 15. mars 2012* (Språkrådets skrifter 2) [The Government white paper 35 as a Strategy Plan. Report to the Language Council]. Oslo: The Language Council.

Jónsson, Sigurður, Christer Laurén, Johan Myking and Heribert Picht. 2013. *Parallellspråk og domene. Nordisk språkplanlegging på 2000-tallet, med særlig vekt på utdannings- og forskningssektoren* [Parallel language and domain. Nordic language planning in the 2000s, with emphasis on reserach and higher education]. Oslo: Novus.

Kristiansen, Marita. 2005. Disciplinary autonomy and concept relations in electronic knowledge bases. A theoretical approach to KB-N – a knowledge base for economic-administrative domains, 1–7. SYNAPS – *Fagspråk, Kommunikasjon, Kulturkunnskap.*

Kristiansen, Marita. 2010. Language planning in higher education. The case of microeconomics. LSP 2009 Proceedings. Aarhus University: Department of business communication. http://bcom.au.dk/fileadmin/www.asb.dk/isek/kristiansen.pdf (accessed 06 July 2015).

Kristoffersen, Gjert, Marita Kristiansen and Unn Røyneland. 2014. Landrapport Norge: Internasjonalisering og parallellspråklighet ved norske universitet og høyskoler [Country report Norway: Internationalization and parallel language use at Norwegian universities and colleges]. In: Gregersen, Frans (ed.). *Hvor parallelt. Om parallelspråklighet på Nordens universitet* [How parallel. On parallel language use at the universities in the Nordic countries]. TemaNord 2014: 535. Copenhagen: Nordisk Ministerråd. 197–259.

Lassen, Inger (ed.). 1997. *Interactional perspectives on LSP. Language and Cultural Contact* 22. Aalborg: Aalborg University Press.

Laurén, Christer, and Marianne Nordman (eds.). 1996. *Fackspråk i olika kontexter. Forskning i Norden* [Language in Different Contexts. Nordic research]. 68–75. Vaasa: University of Vaasa.

Laurén, Christer, Johan Myking and Heribert Picht. 1998. *Terminologie unter der Lupe. Vom Grenzgebiet zum Wissenschaftszweig*. Vienna: TermNet.

Laurén, Christer, Johan Myking and Heribert Picht. 2002. Language and domains: a proposal for a domain dynamics taxonomy. *LSP & Professional Communication* 2(2). 23–30.

Laurén, Christer, Johan Myking and Heribert Picht. 2006. *Domain dynamics – reflections on language and terminology planning*. http://www.infoterm.info/pdf/activities/Picht_Domain-Dynamics.pdf (accessed 16 July 2017).

Laurén, Christer, Johan Myking and Heribert Picht. 2008. *Insikter om insikt. Nordiska teser om fackkommunikation* [Insights of insight. Nordic theses on terminology and special language communication]. Oslo: Novus forlag.

Lind, Åge. 2009. *Sivil og strafferett* [Civil law and criminal law]. Oslo: Cappelen Damm.

Linn, Andrew R. 2014. Parallel languages in the history of language ideology in Norway and the lesson for Nordic higher education. In Anna Kristina Hultgren, Frans Gregersen and Jacob Thøgersen (eds.), *English in Nordic Universities. Ideologies and practices*, 27–52. University of Copenhagen: Department of Applied Linguistics and English Language, The Open University/The Lanchart Centre.

Ljosland, Ragnhild. 2014. Language planning in practice in the Norwegian higher education sector. In Anna Kristina Hultgren, Frans Gregersen and Jacob Thøgersen (eds.), *English in Nordic Universities. Ideologies and practices*, 53–82. University of Copenhagen: Department of Applied Linguistics and English Language, The Open University/The Lanchart Centre.

Miller, George and Philip Johnson-Laird. 1976. *Language and Perception*. London: Harvard University Press.

Myking, Johan. 2011. Special language management – parameters and constraints. *Terminology science and research – Journal of the International Institute of Terminology Research* 22. 30–42.

Moe, Erling (ed.). 2010. *Rett på sak* [Straight to the point]. 3. Trondheim: Bryne Stavanger Offset.

Kristoffersen, Gjert, Marita Kristiansen and Unn Røyneland. 2005. *Norsk i hundre! Norsk som nasjonalspråk i globaliseringens tidsalder. Et forslag til strategi.* Oslo: Språkrådet [Norwegian at High speed. Norwegian as a national language in the era of globalization. Suggestions for a strategy]. Oslo: The Language Council.

Khanh, Nguyen Quoc and M. M. Tran Ly San. 1983. *Norsk-vietnamesisk ordbok* [Norwegian-Vietnamese Dictionary]. Bergen: Universitetsforlaget.

Nylenna, Magne. 2008. Publisere & presentere: medisinsk fagformidling i teori og praksis [Publishing and presenting: Medical mediation in theory and practice], 2nd edn. 2008, produced for Nycomed without ISBN.

Nylenna, Magne. 2009. *Engelsk medisinsk ordbok: Engelsk-norsk/norsk-engelsk* [English Medical Dictionary: English-Norwegian/Norwegian English]. Oslo. Kunnskapsforlaget.

Olden, Asgeir. 1985. *Juridisk ordliste: bokmål-nynorsk* [Legal word list: Bokmål-Nynorsk]. Oslo: Skuleboknemnda åt Studentmållaget i Oslo.

Olsvik, Egil H. 2011. *Eksistens og dialog. En kritisk innføring i psykologisk teori og praksis* [Existence and Dialogue, an introduction to psychological theory and practice]. Oslo: Scandinavian Academic Press.

Ovrum, Cecilie. 2005. Terminologiarbeid som del av oversettelsesprosessen [Terminology work as part of the translation process] (= Nordterm 12). Terminologiskt smorgasbord [The terminological smorgasbord]. Visby, Sweden, 11–14 June 2003. Stockholm: TNC.

Raaheim, Arild and Kjell Raaheim. 2011. *Psykologiske fagord* [Psychological terms]. Fagbokforlaget: Oslo.

Sandøy, Helge. 2000. Lånte fjører eller bunad? Om norsk skrivemåte av importord [Borrowed feathers or national costume? On Norwegian spelling of import words.]. Oslo: Landslaget for norskundervisning, Cappelen akademisk forl.

Sandøy, Helge, Lene Fløysand, Kristin Klock, Ole Didrik Lærum, Robert Murison and Helge Østbye. 2007. *Både i pose og sekk: Framlegg til språkpolitikk for Universitetet i Bergen* [Having your cake and eating it: Proposal for a language policy for the University of Bergen]. Bergen: University of Bergen.

Senje, Aud Anna. 2010. *Norsk-russisk juridisk ordbok* [Norwegian-Russian Legal Dictionary]. Oslo: Unipub.

Simonnæs, Ingrid. 1994. *Norsk-tysk juridisk ordbok* [Norwegian-German Legal Dictionary]. Oslo: Fagbokforlaget.

Temmerman, Rita. 2000. *Towards New Ways of Terminology Description; the Sociocognitive Approach*. Amsterdam and Philadelphia: John Benjamins.

Trudgill, Peter. 1995. *Norwegian as a normal language. Norwegian Language Council*. http://www.sprakradet.no/Vi-og-vart/Om-oss/English-and-other-languages/English/Norwegian_as_a_Normal_Language/ (accessed 15 July 2015).

Utgaard, Karl Arne. 2002. *Juridisk og administrativ ordliste* [Legal and administrative word list]. Oslo: Samlaget.

Wüster, Eugen. 1991. *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie*, 3rd edn. Bonn: Romanistischer Verlag.
Øyri, Audun. 2002. *Medisinsk lommeordbok* [Medical pocket dictionary]. Oslo: Samlaget.
Øyri, Audun. 2011. *Norsk medisinsk ordbok* [Norwegian Medical Dictionary], 9th edn. Oslo: Samlaget.

Web Sources

KUNSTI. https://www.ime.ntnu.no/infosam2020/oldpage/work_groups/wg_language_theory.html (accessed 16 July 2017).
LEXIN. Utdanningsdirektoratet [The Norwegian Directorate for Education and Training]. http://www. udir.no/lexin; http://www.dataforeningen.no/lexin-prosjektet.4599467-134005.html.
LOGON. http://www.emmtee.net/ (accessed 16 July 2017).
META-SHARE. http://metashare.nb.no/site_media/documentation.pdf.
IITF. http://lipas.uwasa.fi/hut/svenska/iitf/publications.php.
Norwegian Biodiversity Information Centre. http://www.biodiversity.no (accessed 16 July 2017).
Ovrum, Cecilie. 2012. http://www.sprakradet.no/nb-NO/Toppmeny/Publikasjoner/Statssprak/Statssprak-22012/.
SAK. Norwegian Registration Authority for Health Personnel (SAK). http://www.sak.no (accessed 16 July 2017).
Terminology survey. 2004. Norsk terminologi. Kartlegging av nasjonale fagmiljøer, infrastruktur og holdninger [Norwegian terminology. A survey of national domains, infrastructures and attitudes]. http://www.sprakradet.no/Sprakarbeid/Terminologi/nyttig-informasjon/Rapporter/ (accessed 16 July 2017).
Termportalen [The terminology portal]. http://www.terminologi.no/forside.xhtml (accessed 06 July 2015).
UHR term base. http://www.uhr.no/ressurser/temasider/terminologi (accessed 16 July 2017).

Christer Laurén and Sauli Takala

12 Dominance of ESP in various domains in the context of gobal English

Abstract: English has become a dominant global language in a relatively short period of time (about 50 years) and there are no precedents of a similar dramatic development. This makes it difficult to both explain what factors have contributed to what has happened and it is probably even more difficult to forecast developments with any confidence. Developments in the use of English are likely to vary considerably: forecasting is easier in some domains but much harder in some others. Contributing factors are interconnected and they may be contradictory. ESP is an aspect of the emergence of global English and in this chapter we situate it in this broader context. We discuss to what extent the distinction between English for special purposes and using it for "ordinary" purposes is relevant. We report on the use of English in various domains but focus mainly on publication and education. We suggest that there has not been sufficient attention given to the consequences of dominance of English. We conclude by presenting some reflections on ESP and suggesting some actions that might be appropriate in responding to the challenge of the dominating ESP paradigm.

Key words: ESP, English as a global language, English as a lingua franca

1 Emergence of English as a global language

The unprecedented advance of English in geographical and communicative terms has been discussed in a large number of publications. The approach by the Swedish linguist Svartvik (1998) is typical of most accounts: he traces the progress of English from an island language to a world language and a trend language, which approach is also adopted by the German linguist Leitner (2009). There is a broadly shared view that two main events have decisively affected the rise of English as a global language (also called English as international/world language, World English(es), English as a lingua franca): the British colonisation of vast territories around the world and the emergence of the United States as a world superpower in the twentieth century, as a leading economic powerhouse and as a leader in technology. Crystal suggests that "a language becomes an international language for one chief reason: the political power of its people – especially their military power". A review of the development of the rival international languages (French, German, Spanish, Russian and some other languages in a themed issue of Annual

Christer Laurén, Vaasa (Finland) and Sauli Takala †

https://doi.org/10.1515/9783110228014-012

Review of Applied Linguistics, 2006, 26, 2) lends support to the claim: conquest/annexation and colonialisation of territories have had a powerful influence on the spread of languages. Other, "softer", causes have had to do with economics, technological innovation, scientific progress, prominent role in the humanities which lent cultural prestige, and challenging philosophical and political thought. The role of English as a global language (lingua franca) has been described in detail by Graddol (1997, 2006), Seidlhofer, Breiteneder and Pitzl (2006) and Jenkins (2015) and in a recent more linguistically oriented exploration by Mauranen (2012). Critical viewpoints have been expressed, in particular, by Phillipson (1990) and Pennycook (1994, 2010).

The spread of English is often referred to as "diasporas", which according to Jenkins (2015: 6–9) have been three. The outcome of these diasporas is what Braj B. Kachru has described using the terms "inner circle, the "outer circle" and the "expanding circle". The *Inner Circle* represents the traditional (norm giving) bases of English: the United Kingdom and the first diaspora territories, including the United States, Australia, New Zealand, Ireland, anglophone Canada, and some of the Caribbean territories. The total number of such ENL (English as a native language) speakers in the inner circle is probably close to 400 million. The *Outer Circle* includes countries where English is not the native language (ESL, English as a second language speakers) but is important for historical reasons and plays a part in various institutions, either as an official or auxiliary language (norm following countries). This circle includes countries such as India and Nigeria. The total number of ESL speakers in the outer circle is probably approaching 500 million. The *Expanding Circle* encompasses third diaspora countries where English plays no historical or governmental role, but where it is nevertheless widely used as a foreign language or lingua franca (norm-dependent countries). This includes much of the rest of the world's population. The total in this expanding circle is the most difficult to estimate, especially because English may be employed for specific, limited purposes, usually business English. Therefore, the estimates of these users vary a lot for the EFL (English as a foreign language). There are probably around one billion of such users at present. These figures are based on Crystal who acknowledges that they are only approximate estimations.

In the early 1990s there ensued a well-known debate between Quirk and Kachru (1991), where Quirk suggested that non-native Englishes are deficient and that to claim institutional status for them is sociolinguistic euphemism. Kachru (1991) argued that this position was based on a number of fallacies. What Quirk considered deficient English can in the global context, in fact, "be a matter of difference which is based on vital sociolinguistic realities of identity, creativity and linguistic and cultural contact in another context" (Kachru, 1991: 11). Widdowson (1994) engaged in the debate discussing the "ownership of English" and arguing forcefully that native speakers of English (NESs) no longer owned English and had no say in how English develops. Kachru's model has been very influential but it has also been criticised

as not capturing the dynamic, rapid and very complex developments in different contexts, and some alternative models have been suggested (and modifications by Kachru himself). Graddoll (1997, 2006) has suggested that there is likely to be considerable shift from being an EFL speaker to become an L2 speaker and somewhat smaller shift from L2 to L1 speaker.

2 Languages for special purposes

2.1 Some notes on languages for special purposes

We begin this section by presenting a figure to frame our discussion on language immersion, which we use as an example of learning and using languages for special purposes.

Our view of early language acquisition is visualized in the figure below. The first point about the figure is to interpret the success of the immersion as a causal result, proceeding from the general to the special level. The second point is to show the connection between teaching and learning.

A
Constructivism = a radical theory
B
Language = Social interaction – World of concepts
C
Situation = Area of specific knowledge
D
Language usage

We have good reason to regard language as social interaction. We need all available knowledge about subject language(s). But how much, how and when should we use this knowledge in the psychologically complicated situations with the learners? This cannot be solved by language logicians. There are restrictions for using the explicit knowledge: a) use of explicit strategies demands cognitive level of development not usually possessed before the age of 15, b) also grown-ups may use strategies without conscious knowledge when learning language, and c) also learners with excellent grades in one formally acquired language may have difficulties in understanding a conversation, or even weaker skills for participating in a conversation.

When defining language as social interaction it is a natural choice to regard constructivism as the general theory of learning. The reciprocal exchange when entering the world and the talking about it are well aligned with with the concept of language as interaction. Radical constructivism has links with radical pedagogy.

The autenticity of interaction is the basic requirement for the success of immersion. Learners need natural semiotic, cognitive and semantic territories, in order to develop their concept of the world and their language usage. They will be socialised in cognitive and linguistic worlds through the subjects at school.

The levels are causally linked with each other in our conceptual approach: constructivism (general theory of learning), the definition of language (language is interaction), and the theme (subject areas and their language usage). Teaching and learning are in this way only two aspects of the same phenomenon.

Related to the illustration above, we ask the following question: Are different languages similar? Linguists generally regard it as an obvious "truth" that different languages are equally difficult to learn. Chinese, Swedish and Finnish do not in this respect differ from each other. Some reservations are, however, usually made. Languages that are historically close provide economies for the learner because of similarities of vocabulary, as is the case for a Swede who learns German or a Finn learning Estonian. A Finland-Swede learning Estonian can put to good use his/her Finnish skills and in addition he/she recognises a lot of European vocabulary in the loans in Estonian.

The differences of writing systems and language structure of L2 when comparing with the L1 of the learner presents a first threshold, which may be relatively high. Even the Cyrillic alphabet is a threshold for the first steps into Russian for many of us, even if it is a relative to our Latin alphabet.

Another "truth" held by linguists is that everything that can be expressed by one language can be expressed by any other language. Yet some linguists may be inclined to believe that the Hopi language is the most efficient means of expressing concepts of modern physics. There is, at present, little agreement about the influence of linguistic variety on thought or on the proper approach to studying the issue.

Within the frames of its linguistic structures a language may be more or less well equipped for modern society and its expresssion needs. Even if Finnish missionairies more than one hundred years ago created a written language for the Ndonga of Amboland in South-West Africa, there is a great lack of linguistic resources for many special areas of thinking. We belive that it is, however, basically well equipped for such uses.

On our view, no language is a primitive language A language so labelled would not have terms and traditions in the style of modern sciences. The school would need new coined terms for many subject areas.

Because of decisions to use English only at schools of Namibia, some problems with lack of linguistic knowledge and of mastering languages can be expected. The text books may focus unduly much on Western European societies, big cities with paved streets and high buildings. On the Namibian countryside schools, by contrast, could be located under the shadow of the biggest three of the village. The text books were not often adequately adapted to fit their needs.

Using the modern Scandinavian welfare system as a point of contrast, it came into being by making equal access to knowledge via a school in the first language of the population. With education, language developed and with language the level of

education. The language has to grow with and for its usage in a modern society. In this respect a language may either function or not.

2.2 Some notes on terminology

Most language groups of Europe are keenly aware of the necessity of developing the special vocabularies of their languages. Hence, they have founded organisations for creating lexicographical resources especially for specialised vocabulary. Experts in these languages assist in such language planning tasks by producing vocabularies of special language domains for use by experts and laymen. The professional responsibility for the lexicographical work is the proper concern of specialists on language planning who, nevertheless, need access to subject specialists. Often the terminology organisations (state-supported or private) have a staff of language and content specialists. Their contributions are of great value for terminological data banks delivering reliable data on concepts and conceptual systems. When exchanging information about products and processes, for instance, when selling and buying technology, markets need to know exactly what is bought and what is sold. Only a high-quality terminology work enables markets to negotiate successfully in their national and international special areas.

Terminological organisations are normally founded by enterprises in countries involved in international business. However, ordinary citizens also need to be informed. There is no clear borderline between special language communication and ordinary, layman's communication. Products used in modern societities such as mobile phones, kitchen equipment, mountain bikes, may not be easy to understand and use. Customers as well as trading companies need definitions, advice (how the "gadget" works), and illustrations.

There are terminology organisations working in the international fields where university researchers play a key role. One such body is the scientific commission of AILA (International Association of Applied Linguistics), which every second year organises a conference on LSP and terminology. The proceedings are regularly published by the organisers of the symposium. Such international working groups manage the activities and normally members of scientific commissions actively promote the commissions' missions and research traditions. Provided that the commissions function as their missions require, there is also continous cooperation between the European level and the world-wide context, e.g., by exchanging term banks and by arranging terminological and LSP courses in areas where they are needed. It may be stressed that the organisers take the measures needed, independently and in cooperation.

In the Scandinavian/Nordic countries these conferences give valuable opportunities for practical and theoretical training. The terminologists of the respective bureaus (for instance, in Finland dealing with Finnish, Swedish, English, Russian and Sami) have been properly trained for their tasks.

3 Use of English in some domains

3.1 Scientific publication

The scope of scientific publications has grown steadily. Several studies have been published during the last decade dealing with the scope and trends in scientific publishing. They provide impressive figures: each year considerably over one million articles are published in close to 30,000 peer-reviewed journals. Ammon (2001) estimated that 75–85% of scientific publications were written in English. Crystal (2003) noted that it was commonly estimated that about 80 per cent of the world's electronically stored information was in English. Archambault et al. (2005) studied the impact of linguistic coverage of databases used by bibliometricians to effectively benchmark the work of social scientists and humanities researchers in various countries. The team used the ISI (Institute for Scientific Information) database and compared it to the more comprehensive Ulrich global serials directory data base (over 210,000 serials). The authors discovered that there was 20–25% overrepresentation of English-language journals in ISI's databases compared to Ulrich's database.

It was found out that especially the editors of social sciences and humanities journals were mostly from English-speaking countries (about 80 % vs. about 60 % in the case of natural sciences and engineering). The language of the articles was also dominantly English but the ISI database overestimated the indexed articles by 20 % (ISI – about 90 %, Ulrich about 75 %). While there is no doubt about the dominance of English both in "hard" and "softer" sciences it is obvious that especially in social sciences and humanities such international databases are to some extent biased in favour of English. A further reason for underestimating the role of other languages than English in scientific publishing is that journal articles play a much larger role in natural sciences and engineering than in social sciences and humanities, in which books may account for as much as half of scientific publications, often addressing topics of more local and regional relevance.

Ylönen (1999) provides an interesting (and probably quite a typical) account of how scientific publishing has undergone a change where English has played a clear role. She analyses the texttype conventions in the German medical journal "Deutsche Medizinische Wochenschrift" which started publication in 1875. Among more recent developments, abstracts in German and English were introduced in the 1980s and around 2000 studies could also be reported in English.

The dominance of English in scientific publication is likely to continue as science is fundamentally a shared endeavour and the scientific community is an international "community of practice" where English can serve a useful role as its lingua franca. However, as it is evident that, for good reasons, important research is published in several languages, it would be highly desirable that at least researchers in the humanities and social sciences were able to read literature beyond the lingua franca.

National *science policies* can also play an important role in the practices of scientific publication. International ranking of universities is likely to affect their publication policies aiming to increase their chances of being included in the international databases. Finland provides a good example of developments along these lines. Finland is an officially bilingual country with Finnish and Swedish as national languages. Both have a limited use: the use of Finnish is limited to Finland (5.5 million people) and for Swedish to the Scandinavian region (about 25 million people). We will use Finland as a case study of typical trends in scientific publication.

The Academy of Finland has reviewed the state of scientific research in Finland regularly since the late 1990s. In a period covering 1994–2002, the ratio of publications in the national languages as opposed to publication in international peer-reviewed journals went down from 0.6 to 0.4 in natural sciences and engineering and from 4.2 to 2.8 in social sciences and humanities. The most recent assessment is from 2014. It surveyed the universities and government research institutes in terms of a number of indicators. Based on citations indicators (Thomson-Reuters Web of Science database) and using bibliometric methods, it was concluded that the level of scientific research in Finland was stable and above the world average but during this millennium Finland had clearly fallen behind many other OECD countries. The countries that were ahead of Finland in the first years of the millennium had maintained or increased their lead (Switzerland, Netherlands, United States, Denmark, United Kingdom, Sweden and Canada). Furthermore, several other countries had overtaken Finland (Belgium, Australia, Germany, Ireland, Austria, Norway and France).

Another major conclusion was that publications produced in the framework of international cooperation had a greater scientific impact than those written in Finland alone. Internationalisation was, accordingly, seen to clearly pay off and the enhancement of international collaboration was strongly recommended.

Despite advances made in developing databases for scientific publications, it is generally acknowledged in published reviews that they have several limitations. The scope of the material in international databases, the procedures in dealing with the material and the methods used in the computing of citation indicators are sources that lower their validity. Comparison between disciplines is hampered to some extent since publication policies and practices are known to vary to some extent. In addition, international citation databases do not cover the various disciplines in the same way. Scientific articles appearing in edited books and monographs are excluded. Peer-reviewed conference proceedings are not systematically covered, either. All of these limitations restrict the validity of citation databases, and thus recommend caution in how to interpret them and take action based on them.

3.2 English in Education

English is the most widely studied foreign language in the European Union and in the rest of the world as well. French and German used to be frequently studied in lower

and secondary education in Europe. In many European countries German lost its leading position in secondary education in the aftermath of World War II. Finland (as well as the other Nordic countries) had had close links to Germany since the middle ages and the German influence on the educational system and pedagogy continued strong over several centuries. In Finland English replaced German in the early 1960s as the most frequent foreign language in the matriculation examination. In Finland, unlike her Nordic neighbours and several other countries, English was not made a compulsory first language when the comprehensive school was introduced in the 1970s and the whole age group started studying two languages besides the mother tongue. English is still not compulsory in Finland as several languages can start in the early grades. Despite this consistent policy during fifty years in favour of a wide choice of languages, more than 95 % choose English as the first L2. There are several reasons for this state of affairs but the Finnish case shows how difficult it is to promote the study of other languages than English in the school system.

As most pupils often reach level B1 and relatively many may attain low B2 proficiency in English (according to the Common European Framework of Reference for Languages, published in 2001) at the end of the compulsory education, teaching some subjects or sections of some subjects using English as the medium of instruction in secondary education has emerged as an attractive option, requiring attention to factors related to ESP. Graddol (2006: 86) reports that Content and Language Integrated Learning (CLILL) arose as a curriculum innovation in Finland, in the mid 1990s, and that it has been adopted in many European countries, mostly in connection with English. In fact, this development started earlier in Finland when a team of experts proposed in 1989 that CILL study should be possible, initially at least in university towns. Statutes allowing CLILL were passed quickly and CLILL-type teaching was implemented in several places. The University of Jyväskylä started in-service education (1992–1993) for subject teachers to help teachers to prepare for the new type of teaching. Early enthusiasm was not, however, sustained very well, illustrating how educational innovations require considerable and extended effort to be sustainable. In comparison, English-medium higher education has increased dramatically all over the world as growing numbers of courses and whole degree programs are frequently offered in non-English speaking countries. English-medium education has contributed to a rapid internationalisation of education and has made several countries attractive for study abroad. It may also contribute to an increased shift from ESL speakers to ENL speakers.

3.3 English in some other domains

We will present only a brief and selective account of the use of English in other domains. We will not cover the use of English in technology, trade, knowledge industry, sport, advertising, media, international tourism, etc. where English obviously occupies a prominent position.

International institutions

English is one of the five official languages of the United Nations (set up in 1945) and it plays a key role in its many organs and programmes. The official languages of the International Court of Justice (located in The Hague) are English and French. Together with French, English is the official language of the Council of Europe (founded in 1949, currently 28 member states). The European Union (its origins go back to the early 1950s) currently has 28 members. There are 24 official languages. English, German and French occupy in practice a special place in that they are the working languages of the Commission. In interpretation and translation, English is one of the main "relay" languages. English also has a strong position in international banking. Crystal estimated that 85 % of international organisations used English as one of the working languages.

Aviation

International Civil Aviation Organization has issued recommendations and resolutions concerning the use of language to promote safety. In practice, this has meant, in particular, taking steps to ensure that air traffic and flight crews involved in flight operations in airspace are proficient in conducting communications in English. Similar efforts have been undertaken for sea and rail traffic.

Internet communication

The Internet presents an interesting case (Graddol 1997, 2006). When it emerged in the 1990s, English reigned supreme. At the turn of the millennium its role had been cut to half of the users, around 2005 to one third. So, rather than strengthening the role of English, the Internet offers, in principle, all languages a powerful medium for making material available.

4 Conclusion: reflections and suggestions

Contrary to the fairly triumphalist tone in the past of predicting a continued advance of English, it is evident in the recent surveys published by the British Council stress that the future developments of English as a global language might be less straightforward than was assumed earlier. It could be speculated that occasionally a strong criticism addressing cultural, political and ethical issues might have played some role in raising awareness that patterns of language use are not only a matter of pragmatism and convenience but also raise serious questions about consequences in terms of equality/inequality and fairness. Paradoxically, if English were truly to become a universal language it may cease to deliver any particular advantage. Instead, bilingual and multilingual language users may be clearly more competitive than monolingual

English speakers. However, it seems highly probable that English will continue to play a prominent role in scientific publication and education and this role may even be strengthened in the near future.

This raises the question of what countries and organisations should and could do to guarantee that that up-to-date information and international cultural developments are accessible also in the national language(s).

In our opinion, the national governments should recognise that while strongly promoting and supporting international cooperation in scientific activity (which usually requires using English as a lingua franca) they also should take concrete steps to promote measures that encourage researchers to publish also in the national language(s). There could be scholarships to compensate for the "extra" work to be done, either on top of the regular working schedule or on a leave of absence. Disseminating this kind of information could be considered a merit to be included in CVs. Governments could also support the publication of magazines/journals that "popularise" new advances in science and culture. Such magazines could also include articles translated from other languages. Similarly, there could be radio and TV channels that mostly or to some extent specialise to broadcast in the national language(s) programs that disseminate up-to-date scientific and other cultural contributions.

In our view, there is a need for active organisations for promoting the economic and cultural interests of populations that lie outside the areas where their language(s) could function as regional or international lingua franca(s). We will use Scandinavia as an example of how this might work in a multilingual region.

In Scandinavia, there could be regional cooperation in promoting such activities as

- founding a citation index for publications published in Nordic/Scandinavian languages in the region as well as outside of it
- material that contain literary extracts for secondary school students, and competitions in which displaying good knowledge of Scandinavian literature would open access to studies in literature departments in a Scandinavian university of choice
- Scandinavian language material for secondary school students, and competitions in which displaying good knowledge of other Scandinavian languages would open access to studies in departments of Nordic languages and literatures
- publishing a cultural magazine in Scandinavian languages, sponsored by Scandinavian governments
- easier access to studies at other universities in Scandinavia
- Scandinavian scholarship system that, based on a writing competition, awards a grant of one or more years to students who study Scandinavian languages in non-Scandinavian countries

In conclusion, we foresee that there will be changes in the role of English both in the domain of ESP and in other domains. What these changes will be is predictable

only to a certain extent. Changes will probably also vary in extent and depth between domains. It is, however, unlikely that the global reach of English is only a transitory phenomenon. Our personal response is that we would welcome a somewhat tougher competition by other language communities.

References

Ammon, Ulrich. 2000. Towards more fairness in international English: linguistic rights of non-native speakers. In Robert Phillipson (ed.), *Rights to Language, Equity, Power, and Education*, 111–116. Mahwah, NJ: Lawrence Erlbaum.

Ammon, Ulrich (ed.). 2001. *The dominance of English as a language of science*. Berlin and New York: de Gruyter.

Ammon, Ulrich. 2006. Language planning for international scientific communication: an overview of questions and possible solutions. *Current Issues in Language Planning* 7(1). 1–30.

Annual Review of Applied Linguistics. 2006, 6. Mary McGroarty (ed.).

Archambault, É., É. T. Gagné, G. Coté, V. Lariviére and Y. Gingras. 2005. Welcome to the linguistic warp zone: Benchmarking scientific output in the social sciences and humanities. In P. Ingwersen and B. Larsen (eds.), *Proceedings of the ISSI 2005 Conference* (Vol. 1), 149–158. 24–28 July 2005. Stockholm.

Crystal, David. 2003. *English as a global language*. Oxford: Oxford University Press.

Crystal, David. 2003. *The Cambridge Encyclopedia of the English language*. 2nd edn. Cambridge: Cambridge University Press.

Graddol, David. 1997/2000. *The future of English? A guide to forecasting the popularity of the English language in the 21st century*. British Council.

Graddol, David. 2006. *English Next*. British Council.

Graddol, David. 2010. *English Next – India*. British Council.

Jenkins, Jennifer. 2015. *Global Englishes. A resource book for students*. London: Routledge.

Kachru, Braj. B. 1985. Standards, codification, and sociolinguistic realism: The English language in the Outer Circle. In Randolp Quirk and Henry Widdowson (eds.), *English in the world: Teaching and learning the language and literatures*, 11–30. Cambridge: Cambridge University Press.

Kachru, Braj B. 1991. Liberation linguistics and the Quirk concern. *English Today* 2. 3–13.

Kachru, Braj, B., Yamuna Kachru and Cecil L. Nelson. (eds.). 2006. *The Handbook of world Englishes*. Malden, MA: Blackwell Publishing.

Leitner, Gerhard. 2009. *Weltsprache English. Vom angelsächsischen Dialekt zur globalen Lingua franca* [World language English: From an Anglo-Saxon dialect to global lingua franca]. München:Verlag C. H. Beck.

Mauranen, Anna. 2012. *Exploring ELF. Academic English shaped by non-native speakers.* Cambridge: Cambridge University Press.

Nuutinen, Anu and Anna-Maija Leino (eds.). 2014. *The state of scientific research in Finland. Summary.* Helsinki: Academy of Finland.

Pennycook, Alistair. 1994. *The Cultural Politics of English as an International Language.* London: Routledge.

Pennycook, Alistair. 2010. The future of English: One, many or none? In A. Kirkpatrick (ed.), *The Routledge Handbook of World Englishes*, 673–687. London and New York: Routledge.

Phillipson, Robert. 1990. *Linguistic imperialism*. London: Oxford University Press.

Svartvik, Jan. 1997/2005. *Engelska: Öspråk, världspråk, trendspråk* [Island language, world language, trend language]. Stockholm: Pan.

Seidlhofer, Barbara, Angelika Breiteneder and Marie-Louise Pitzl. 2006. English as a lingua franca in Europe: Challenges for applied linguistics. *Annual Review of Applied Linguistics* 26. 3–34.

Widdowson, Henry G. 1994. The ownership of English. *TESOL Quarterly* 28(2). 377–389.

Ylönen, Sabine. 1999. *Entwicklung von Textsortenkonventionen am Beispiel von Originalarbeiten der Deutschen Medizinischen Wochenschrift* [Development of text type conventions using the original studies of Deutsche Medizinische Wochenschrift as a case study]. Jyväskyla: University of Jyväskylä, Finland doctoral dissertation (published also by Peter Lang Publishing Company).

Christer Laurén and Marianne Nordman

13 Gender and LSP

Abstract: It is evident that men and women mostly have had different roles in LSP communication. These conditions are still valid.

During the medieval centuries the societal role of the women was weak. Only in the field of theology and in the convents they had possibilities of advancing in their professional life. Many saints succeeded through their revelations to influence their surroundings, even in the political life.

Also today women have restricted possibilities for advancement in professional life and at universities and in research.

There are few studies made in the LSP usage of women. However, it has been shown that women can be characterized through their professional idiolects.

1 Renaissance and Middle Ages

During the Renaissance and the Middle Ages, LSP texts were written and copied mainly within the church and the convents. Those texts came especially from the field of theology and it was mainly men who were capable of writing and copying them. Depending on the convent, there could be women learned enough to produce documents and books.

Female sisters dominated the Brigittine order. This may have been a consequence of Bridget's dominating role in her family: the leading role in the convents of St. Bridget was held by the abbess, and some of the sisters mastered Latin and were able to write. Bridget herself was member of a powerful Swedish family. Her ancestors until her father and her husband were chief judges with the role of maintaining the laws.

The women had some possibilities through theology and the church, though with restrictions. The convents produced theological texts, sermons and revelations but also other LSP texts on natural sciences, agriculture, astrology and texts on many other fields. Those orders, which had these traditions of learning, developed large libraries. The one of Vadstena convent in Sweden had in the middle and end of the fifteenth century about 30 000 volumes (cf. Tore Nyberg's calculation based on the existing classification notes of books from the convent). It was always regarded as important to make copies and translations of central literature for the library. Normally the convent sent some of the priests to make copies or in other ways to arrange copies of their own.

St. Bridget of Sweden, the two Mathildas (von Hackeborn and von Magdeburg) and Hildegard von Bingen and other learned mystics at the convents had an influ-

Christer Laurén and Marianne Nordman, Vaasa (Finland)

https://doi.org/10.1515/9783110228014-013

ence on theology and generally on thinking as a result of their learning and their status within their order. Hildegard also specialized in medicine. Later scholars have specially been interested in the theological thinking of these learned women, even if they also are known for other LSP texts as well. Among the Nordic Brigittines pater Jons Budde occupied a central role due to his translations and adaptations of theological texts in Latin, which he wrote for the unlearned sisters of his convent in the Brigittine convent in Nadendal in Finland. Cf. Lamberg on Jons Budde's attitudes to women; cf. also with the younger Peder Mansson the Brigittine pater, later bishop who translated a number of LSP texts into Swedish during a long stay in Rome where his task was to recover Bridget's belongings for her convent in Vadstena. His themes included agriculture, mineralogy, glassmaking, warfare etc. Similar interests were represented by e.g. Leonardo da Vinci who also wrote about warfare and more theoretical matters. In any case the men dominated theoretical fields like these.

In urban contexts women were professionally active as butchers, barbers, gilders, bakers, goldsmiths, tanners, smiths etc. The juridical term for such professionals was feminas solas. It was especially widows who found their living by taking up the profession of their men. These were the most independent women. In many professions they had to master mathematics, reading was not equally important (Burton 2006: 26). Nevertheless the women had an influence on the development of their LSP.

2 Seventeenth century and onwards

During the seventeenth century the universities were developed from the earlier ecclesiastic schools only for men (Burton 2006: 34). Latin of the church remained for a long time the language of science with access only for men. With the time women also received access to knowledge in informal contexts.

Mary Somerville (1780–1872) is a female pioneer working within the natural sciences (astronomy, mechanics, optics, climatology, geography, biology, magnetism etc.) and she influenced the status of research and knowledge. When a review was written the reviewer tried to find a common term for the sciences, which Somerville combined in her books. The term scientist was then used for learned people working in such a field. Even if the universities used her books neither she nor her daughters were allowed to study at universities. Research simply was regarded to belong to men. (Burton 2006: 228–229)

The philosopher Charles Peirce (1839–1914) is one example of how difficult it could be even for a man to develop new thinking. He never had a post at a university and he lectured only once during his lifetime. Today he is known as a leading name in philosophy and in the philosophy of science.

In modern times the roles of women were gradually changing in Europe, but the development was slow. Marie Curie (1867–1934) elaborated her dissertation in a breakthrough, at the end of the nineteenth century. It was regarded as a bigger advance

than any single research project before her time. In spite of this we have to advance into the early part of the twentieth century in order to find female researchers taking up central roles in their fields, and hence as being able to influence the language usage of the arts and sciences.

3 Rhetoric aspects on gender and LSP

In European cultures women had and still have very different roles compared with men. Their opportunities in the fields of professional life and research are even today very restricted. They have difficulties in advancing to the highest tasks and, hence, also in scientific and specialist discourse. There is a need for cultural anthropology and ethnology research to find an interesting contrastive picture of female roles.

Men as well as women can evaluate each other with strong emotions even as to the quality of their voices. Kramarae writes: "One of the reasons men give for not wanting women to hold jobs in mass media, government, armed forces, law and religion is that women cannot speak in appropriate ways." According to men, women do not have authoritative voices. (Kramarae 1981: 98)

A low voice is one of the characteristics of men leading society. As a consequence many women lower their voices when they have seen the importance of speaking like successful men. Men usually do not appreciate this. As one female sociolinguist formulates it herself: Everybody who is tall, physically big and has a strong voice is from the start endowed with identifiable characteristics of power, while a small person with a weak physical presence has a much more unfavourable position. (Tannen 1996: 151) Ivanic underlines in contrast in *Writing and identity* (1997), that gender is a social, not a genetic construct.

4 Laws and equality of gender

In the Nordic countries there is political pressure to give women places on the boards of enterprises and in the organisations of business life. The goal usually is for men and women to be equally well represented, and similar laws exist today in most West European countries. Women should be on a par with men. Finland was the last Nordic country to pass a law on the matter. According to the Finnish law, offices, schools and other organisations with responsibilities in fields of education and teaching within the profession, and their teaching, research and didactic material, support the goal of this law. The right to vote was given to the women in Finland already in 1906. This very early right to vote was given to women as a consequence of the necessity to mobilize all the resources for the future of the country.

If language and gender exist on a biological level the lawgiving and the management of the society do not play any role; but if language and gender exist on a social level the LSPs will undergo changes with time (cf. Tomasello 2003). Many researchers today stress that genetic changes take a tremendous amount of time; hence, social and psychological development must be behind a rather fast evolution like this one. Language usage is the most important and fastest resource of human beings. (Tomasello 2003)

5 Female representation in research in some domains

Very few women study physics, chemistry and medicine at the highest levels. The least acceptable distribution is the field of physics, a field mentioned in the will of Alfred Nobel. Only two women out of 204 winners of the Nobel Prize had received the prize of physics by 2016.

The skewed gender representation is seen very obviously in the distribution of Nobel prizes generally. The most recent distribution of prizes, in 2016, had no female researcher recipients at all. In the period 2000–2016 Nobel prizes were given to 19 females and to 196 men (*Wikipedia* 2017). Women have had the best chances in literature (11.2%) and in peace prizes (12.2%) (Peter Zander at the Nobel Museum in Stockholm 2010).

In order to get a view of gender distribution among linguists today we made a sample-test in the journal *Fachsprache/International Journal of LSP* for the years 1998–2007. The sample shows that men have written the articles in 58% of the cases, 42% were women; every person was counted, also when articles had many authors. Another sample, of the new journal *LSP & Professional Communication* 2001–2007, published in Denmark, has a female predominance: 62.3% of the articles were written by women, 37.7% by men. Are the women about to conquer a domain? Or is their dominance a consequence of a young journal? Was the market too narrow before this new journal was founded?

6 Language usage and LSP

Do we not know how female researchers write? The domain has simply not been under study. Have they found the right place or one suited for their interests or way of writing? Or have they adapted themselves to conventions to be followed?

Until now we have seen that the opportunities for women to appear in fields of LSP is a result of how they are represented in different social contexts. It is expected

that their presence influences on the language usage of domains where they have succeeded in being accepted. Have they really influenced the LSP or have they themselves been formed by it? Is their language usage a consequence of social or genetic variables? This is typically a Scandinavian or a North-European way of looking at the domain. How do they influence thinking and acting?

The Swedish sociologist Johan Asplund takes great liberties in his thinking and acting, and hence in his language usage, while his female colleague Rita Liljeström has a traditional sociological language usage. But also between male sociologists the differences may be great. Asplund and Bourdieu are very different in their scientific idiolects. Asplund tries his best to avoid the language usage of sociology while Bourdieu tried to develop and refine the LSP of sociology even at the expense of comprehension. He is very careful with the precision of his sociological texts. But at the same time he deplores the fact that those for whom he writes his scientific texts will have more problems with understanding his sociological reports. Also the British sociologist Mulkay (1985) has an LSP reminiscent of styles of literature. He can, for example, include dialogues in his LSP texts and in texts simulating speeches at Nobel Prize dinners.

Well-established male researchers may in this way dare to use a very personal LSP idiolect. (Cf. Chesterman's opinion on researchers in general in Chesterman 1995: 209.) However, most sociologists, women as well as men, prefer to use a standardised LSP of sociology.

The LSPs of men and women are not normally compared with each other in linguistic research if not in details only. In *Academic Voices* (2006: 23–24) Kjersti Fløttum, Trine Dahl and Torodd Kinn formulate their interpretation: "We will, however, briefly consider the gender factor, and in that context the notion of writer authority is of interest. Studies focusing on gender issues have indicated that women and men may differ in their discourse strategies with regard to, e.g. assertiveness and politeness [Lakoff 1975; O'Barr and Atkins 1980]." Their empirical studies have concerned articles in English, French and Norwegian in the fields of economics, linguistics and medicine (KIAP-corpus = Cultural Identity in Academic Prose: national versus discipline-specific www.uib.no/kiap/). They have not seen significant differences in the use of the pronouns *I* and *We*. The relative frequency of bibliographical references does not identify any differences either. This also concerns negations. This is the situation in the whole of the corpus as well as in parts of the material. The usage of adversative expressions, however, shows significant differences between men and women in the Norwegian articles.

In some parts of the corpus men tend to use more metatexts than women. The differences are significant in Norwegian and French texts of economics. The notified differences are few and seem to occur by chance. The researchers do not find reasons to go further.

Studies show that women generally seem to use more hedges while men express themselves with greater self-confidence (Preisler 1986: 288; Markkanen and Schröder

1997: 3–18). Women seem to read texts with other goals than men. They have a greater interest in harmony, congruence and personal relations (interpersonal relationships) (cf. the discussion in Crismore and Vande Kopple 1997: 33–114).

At the end of the 1970s there were differences between female and male researchers as to the occurrence of long words per sentence; this concerned dissertations in Scandinavian languages. The women had in all cases fewer examples than men, of words per sentence, share of long words, and index of reading. For the period 2003–2004 the women had more words per sentence than the men. On other points of comparison the differences are minimal (M. Thelander 2006: 297).

In a study of the gender and language usage of politicians (K. Thelander 1986) interviews have been made with politicians focusing on their activity and rhetoric in the parliament. It was shown that women were not orally as active as men, and men and women seem to have preferences in the choice of words. In this material women have a more complex language than men.

A study of the conversation strategies of women and men shows that women thoroughly discuss points at issue, e.g. age and professional questions. These themes are often treated in long discussions, indicating that the roles of women have changed, and that there are smaller differences between them and men than earlier (Nordenstam 1998: 161–162).

In a lexicographical study (Pilke and Puskala 2012) of bilingual lexica and material from the Internet, the researchers found that some terms (*forska*, *förvärva*, i.e. *research*, *acquire*) are connected with masculine pronouns. The woman takes care of home and children in the lexicographical material while the man is the efficient director. In more recent material from daily journals the woman more often is connected with the verb *forska*; dailies more often have reports on women in the world of research. When differences between genders are connected with power and dominance, there is a hierarchy expressed as social difference from the point of view of women (cf. a similar discussion in Martyna 2006 and Epple 2000). Women and men can be said to come from different but equal cultures. (Cf. Edlund, Erson, and Milles 2007.)

Because of the dominance of men in fields of research and in most leading tasks in society and business life, they also influence language usage and communication in all sectors of life.

7 Sociologists and their idiolects

One example on the minor role of women in some scientific domains and the major role of men can be taken from sociology. The Swedish sociologists Johan Asplund and Rita Liljeström have been contrasted in a broad comparative study (Laurén and Nordman 2003) and we can say that their linguistic and content choices are what they

would be supposed to make according to traditions. Both of them are contemporary distinguished sociologists who write in Swedish. They both have a long career within Swedish universities and they have published research reports with Swedish publishing companies. They are, however, very different as researchers. They also each have their scientific idiolect within sociology, even if one might suppose that similarities in education and research training could have an equalizing effect (cf. Sigurd 1991: 135). Asplund is a theoretician, Liljeström an empiricist. Hence, they correspond to our ideas about men and women and their way of doing research.

Asplund says in his installation speech that he never had any bigger empirical project. This, however, does not mean that he disregards empirical research. Here one can refer as well to Aristotle as to the French Encyclopedists, who disregard empirical work. So, this approach is a very old one.

Liljeström's research especially concerns women, family, children and work. She maintains that researchers write for different receiver groups, some for so-called intragroups, some may contribute with background knowledge for decision-making in difficult situations. There are, says Liljeström, those who want to inform those who have been investigated and who have a personal interest in knowing the results. (Liljeström 1985: 103). Liljeström herself is such a researcher. Being a researcher, she wants to publish research results, which make people understand their situation in a larger context, and she develops a critical alternative for changing unsatisfactory situations (Liljeström 1985: 106).

These two sociologists differ from each other through many linguistic variables. Their texts are different in the number of terms, which is a result of Asplund giving priority mainly to discussing basic theoretical questions. That is why he can write LSP texts without the heavy burden of a large number of terms, and his texts can become appreciated by a large audience. There is a layering in his texts resulting from his way of playing with many strings at the same time, as we do it. Literary texts may have layering (i.e. playing on many different levels at the same time). (Clark 1996)

Liljeström sticks to less levels/layering and her texts are accordingly tighter than Asplund's. In this way she writes traditional sociological prose, which is important for her as a female researcher in a male dominated context.

Asplund's metaphors concern the whole text in an artistic manner. Liljeström writes with a smaller range in her usage of metaphors. Her metaphors are the result of convention.

The complicated relation between expression, content and individual is evident, especially in the use of verbs. Individual priorities are evident, and we realize individual trends of the sociologists. They seem to express their individual interests in the use of verbs. As a theoretician Asplund prefers more often to choose static verbs than Liljeström, who can be characterized by many verbs for activeness. The empiricist Liljeström puts her main pressure on writing an LSP with her main interest in conventional LSP. The two sociologists encounter one another in a verb usage of the

semantic fields of psychology and sociology, which informs the reader more about the sociologists than about the individuals.

The female sociologist Liljeström is traditional in her usage of text genres even if she also has had expert public tasks. The male sociologist is the isolated theoretician who has experiments in his LSP forms. In a male dominated society Asplund is more ready to take risks with the genres. The case with these two sociologists supports the idea of women using standards more than men do (cf. Romaine 1996: 169–178).

8 Summary

The general communication of men and women has to some degree been subject to research, but there has been a very small interest in their LSP communication. It is, however, evident that men and women have different roles in LSP communication. Men were always dominating. During the medieval centuries and even later there were some active women. Today women are more active than before in research. But equality is no self-evident phenomenon. There should even be laws for promoting the possibilities of women to do research.

It is an interesting observation that we, even today, need a Swedish handbook to promote linguistic equality between men and women, even in LSP texts. (Cf. Milles 2008: 12.) Language mirrors reality and when reality often has been and still is unequal it is only to be expected that language expresses such a worldview.

References

Burton, Nina. 2006. *Den nya kvinnostaden. Pionjärer och glömda kvinnor under tvåtusen år* [The new women's city. Pioneers and forgotten women during two thousand years]. Stockholm: Bonniers.

Chesterman, Andrew. 1995. Norm-breaking in academic discourse. In Brita Wårvik, Sanna-Kaisa Tanskanen and Risto Hiltunen (eds.), *Organization in discourse. Proceedings from the Turku conference*.Turku: University of Turku. 201–212.

Clark, Herbert. 1996. *Using language*. Cambridge: Cambridge University Press.

Crismore, Avon and William J. Vande Kopple. 1997. Hedges and readers: Effects on attitudes and learning. In Raija Markkanen and Hartmut Schröder (eds.), *Hedging and discource. Approaches to the analysis of a pragmatic phenomenon in academic texts*. Berlin and New York: de Gruyter. 83–114.

Edlund, Ann-Catrine, Eva Erson and Karin Milles. 2007. *Språk och kön* [Language and gender]. Falun: Norstedts.

Epple, Barbara. 2000. Sexismus in Wörterbüchern. In *Proceedings of Euralex 2000*. Stuttgart: Universität Stuttgart.

Flöttum, Kjersti, Trine Dahl and Torodd Kinn. 2006. *Academic voices*. Amsterdam and Philadelphia: John Benjamins.
Ivanic, Roz. 1997. *Writing and identity*. Amsterdam and Philadelphia: John Benjamins.
Kramarae, Cheris. 1981. *Women and men speaking. Frameworks for analysis*. Rowley, MA: Newbury House.
Lakoff, Robin. 1975. *Language and woman's place*. New York: Harper and Row.
Lamberg, Marko. 2007. *Jöns Budde. Birgittalaisveli ja hänen teoksensa* [Jons Budde. The Brigittine pater and his production]. Helsinki: Suomalaisen kirjallisuuden seura.
Laurén, Christer and Marianne Nordman. 2003. *Två sociologer och två idiolekter* [Two sociologists and two idiolects]. Vasa: Vasa universitet.
Liljeström, Rita. 1985. Forskning och vardagsförståelse [Research and everyday understanding]. In Ingela Josefson (ed.), *Språk och erfarenhet* [Language and experience], 95–106. Stockholm: Carlssons.
Markkanen, Raija and Hartmut Schröder. 1997. Hedging: A challenge for pragmatics and discourse analysis. In Raija Markkanen and Hartmut Schröder, *Hedging and discourse. Approaches to the analysis of a pragmatic phenomenon in academic texts*, 3–18. Berlin and New York: Mouton de Gruyter.
Martyna, Wendy. 2006. What does 'he' mean? Use of the generic masculine. *Journal of Communication* 28. 131–138.
Milles, Karin. 2008. *Jämställt språk. En handbok i att skriva och tala jämställt* [Equal language. A handbook in how to write and talk equally]. Stockholm: Norstedts.
Mulkay, Michael. 1985. *The word and the world. Explorations in the form of sociological analysis*. London: Allen and Unw.
Nordenstam, Kerstin. 1998. *Skvaller. Om samtalsstrategier hos kvinnor och män* [Gossip. On women's and men's conversation strategies]. Uppsala: Hallgren and Fallgren.
Nyberg, Tore (ed.). 1991. *Birgitta, hendes værk og hendes klostre i Norden* [Birgitta, her works, and her five abbeys in the Nordic countries]. Odense: Odense universitetsforlag.
O'Barr, William and Bowman Atkins. 1980. 'Women's language' or 'powerless language'? In Sally McConnell-Ginet, Ruth Borker and Nelly Furman, *Women and language in literature and society*, 93–110. New York: Praeger.
Pilke, Nina and Jaana Puskala. 2012. Vem förvärvar, vem forskar, vem liknar Greta Garbo? Om fackspråklighet och könsbundna beteckningar i betydelsebeskrivningar [Who acquires, who makes research, who is like Greta Garbo? On LSP and terms related to gender in semantic descriptions]. *LexicoNordica* 19. 141–162.
Preisler, Brent. 1986. *Linguistic sex roles in conversation: Social variation in the expression of tentativeness in English*. Berlin and New York: Mouton de Gruyter.
Romaine, Suzanne. 1996. Clothes makes the man, but language makes the woman. Socio-historical reflections on women and standard speech. *Språk & Stil* [Language and style] 6. 169–178.
Sigurd, Bengt. 1991. *Språk och språkforskning* [Language and linguistic research]. Lund: Studentlitteratur.
Tannen, Deborah. 1996. *Prat från 9 till 5. Om kvinnors och mäns samtalsstilar på jobbet* [Talking from 9 to 5. Women and men at work]. Stockholm: Wahlström and Widstrand.
Thelander, Kerstin. 1986. *Politikerspråk i könsperspektiv* [The language of politicians from a gender point of view]. Malmö: Liber Förlag.
Thelander, Mats. 2006. En avhandlingsstil finner sin form [The style of thesis finds its form]. In Ann-Marie Ivars, Mikael Reuter, Pia Westerberg and Ulla Ådahl-Sundgren, *Vårt bästa arv. Festskrift till Marika Tandefelt* [The best share of our inheritance. A volume dedicated to Marika Tandefelt], 293–303. Helsingfors: Svenska Handelshögskolan.

Tomasello, Michael. 2003. *Constructing a language. A usage-based theory of language acquisition*. Cambridge, MA: Harvard University Press.
Wikipedia. 2017. List of Nobel laureates. http://www.en.wikipedia.org (accessed 16 July 2017).
Zander, Peter. 2010. Noll kvinnliga Nobelpris [No women getting Nobel Prize]. https://www.svt.se/nyheter/inrikes/noll-kvinnliga-nobelpris-igen (accessed 8 June 2018).

Part III: **Corporate and controlled communication**

Dardo de Vecchi

14 Company-speak, organisation-speak

Abstract: Companies and organisations shape their everyday language to express their own needs and reality, and also to be distinguished from one another. The result is a particular LSP (the *company-speak* or *organisation-speak*) that characterises them as a community through its terms, and having its impact in every sector: human resources, communication, knowledge management, mergers, etc. Such a particular situation requires a specific terminological approach (pragmaterminology) to be described and oriented to the community's life.

1 Introduction

In companies and organisations language plays a major role. The particular expressions used are sometimes pejoratively called *jargon*. But the situation needs closer analysis than this simple and quick label because its terminological nature marks it out as the keystone of a LSP.

In reference to language and environment Sapir wrote:

> It is the vocabulary of a language that most clearly reflects the physical and social environment of its speakers. The complete vocabulary of a language may indeed be looked upon as a complex inventory of all the ideas, interests, and occupations that take up the attention of the community, and were such a complete thesaurus of a language of a given tribe at our disposal, we might to a large extent infer the character of the physical environment and the characteristics of the culture of the people making use of it (Sapir 1912: 228).

This point of view can be also applied to companies and organizations (in general) because they need specific vocabularies. More recently Schein has pointed out some of the consequences:

> If several members of a group are using different category systems, not only they do not agree on what they do, they will not even agree on their definition of what is real, what is a fact, when something is true or false, what is important, what needs attention, and so on. [...] In summary, a common language and common conceptual categories are clearly necessary for any other kind of consensus to be established and for any communication to occur at all. (Schein 2004: 112)

These difficulties point not only to a problem of communication but also to knowledge required to carry out an activity.

Dardo de Vecchi, Kedge Business School, Marseille (France)

https://doi.org/10.1515/9783110228014-014

It is possible to characterise an organisation from the linguistic point of view in three different ways. The first is to consider people in the same company as a linguistic community. The second, close to the first, focuses on the designations this community uses to name products and services, stemming from a common background. The third is that the company tailors specialises language to express their needs and reality thereby shaping the language in such a specific way as to set the organisation off as a community. These three points of view converge to form a sociolect called company-speak (or organisational-speak), characterised by the terminology it uses (de Vecchi 1999). It cannot be substituted for another used in a similar organisation, it evolves over time carrying cultural and behavioural aspects and constructs the group's knowledge. A company-speak can be partially visible to the public from outside the company. But not all is visible from outside because only staff working in the company actually use it and it may also be confidential. In addition, outside the working environment it may have no function at all.

2 Companies as linguistic communities

Sociolinguistics shows that a change in society corresponds to a change in the use of language. In society not everybody has the same activity nor works for the same institution. It is legitimate then to ask what kind of linguistic units are used by people belonging to the same company. In other words: what is linguistically specific to the community of people gathered in a company? It can be also be asked if two companies in the same sector of activity share the same linguistic units. The answers to these questions all converge: a company as a community produces its own linguistic units because it needs to be differentiated from its competitors by its customers. More generally and in the same line of thought, an organisation (NGO, administration, association, etc.) can also be distinguished by the linguistic units its members use.

For example, in the case of a commercial company, sociolinguistic variables appear when a single object can be named differently by different companies for instance:

"disposable razor" is named by Company A → a
"disposable razor" is named by Company B → b

Producers, buyers and sellers know that *a* and *b* are "disposable razors" but use expressions *a* and *b* to refer to that specific type of objects produced by Company A and by Company B, because the generic name is not specific enough. Companies produce many linguistic units such as these that allow not only customers to recognize them, but also consumers to be recognised as customers of a company. For instance Apple's computer operating system even had a dictionary to allow a "translation" from PC to Apple. For example, Apple has *applications* and PCs *programs*. Users of each operating system use specific linguistic units making of them members of two

different linguistic communities. Apple Inc. and its faithful band of enthusiastic users recognise themselves in the use of those expressions.

The linguistic community made up of people using the same linguistic units is nevertheless not fully identified as a company because, as seen above, customers do not belong to the company but they may also use these expressions. In any case these units exist because a company created them (*iPod*, *iPad*, *iPhone*, i-*X*, etc.). The linguistic community is to be considered then in this double dimension. One is the company itself bringing together all those persons who are part of the company, mainly through a contract, that is to say those who are inside. The other dimension is that of all those outside the company but who know enough about it to use those characteristic expressions in an appropriate way (users, families, stakeholders and even competitors). But even in these cases, company-speak as the sociolect characteristic of a company – or organisational speak in a larger perspective – has to be learned and understood inside the bounds of the institution by those who work for it. From the sociolinguistic point of view, the company-speak of Company A is composed of expressions whose origin or specific value is to be found in Company A and that cannot be produced in an equivalent company or competitor with this same value except if it is done to refer to Company A that regulates the use of its expressions. The company creates and deletes them, and even when they disappear, they remain in the heritage of the company's history. The identity of a company is very much linked to its expressions. It is not possible to exchange them with those used by an equivalent company: *that* company produces *that* product and *they* do it in *their* way.

Not only linguistic units are concerned by this identity aspect. Signs of many types produced identify the institution that uses them. Logos or graphic charters help to identify their provenience and contribute to putting them in context (corporate style guide (see Chapter 16: Technical communication and technical documentation). As a consequence, it is easy to recognise for example an airline's boarding card, its web pages, its annual report, internal manuals and so on. Companies are then not only linguistic communities but also semiotic communities. Users recognise the correct use of their signs. As far as these signs are named in a natural language, their names become part of the linguistic repertoire of the community: for example the *swoosh* of Nike, the *Bibendum* of Michelin in France, the *nest* of Nestlé, etc.

Staff have an important role because they produce the company's discourse with these units shaping with them what they know. Barriers then appear between people when these expressions are understood and not understood. This very often makes people consider that company-speak is a jargon, and even when it is recognised as a professional need it is often looked down on. Yet these specific units are essential to the activity of organisations and companies because without them no meaning can be transmitted nor any communication happen. The following step is to analyse these expressions as designations produced by the community before considering them as terms embodying specific knowledge.

3 Designations by the community

Companies and organisations use language to express their everyday activities. In doing so, they give names to their everyday objects and concepts they work with, distinguishing general naming needs in society from the specific way they have to name them. This means that everyday words take on a specific meaning: the one given by the company. For example, *objective*, *call rates, face care*, etc. used in different commercial contexts. Even though their meaning is clear to the layman, in companies, these words may refer to what that company means when it uses them. This situation shows that not only names given by companies to their products and services are most important in identifying the company, but also in the categorisations the company makes. That is to say how the company classifies its own departments, names of staff positions and so on. E.g. *équipier* is an expression we can understand (member of a team), crew, but what does that person exactly do in a fast-food restaurant where many tasks are to be performed? The expression itself does not convey this information and the definition must be given by the company itself. Moreover they change over time.

For example the mobile telephone British company O_2 had three types of call rates in January 2012: *Pay Monthly*, *Pay&Go* and *Business Tariffs*. The first group encompassed the following types: *50 mins, 100mins, 200mins, 300mins, 600mins, 900mins, 1200mins and Unlimited mins*. These expressions mean "types of tariff" only in this company. In the same period another mobile telephone company, Three, named call rates in a very different way (*Broadband10GB, Broadband1GB, Pay as You Go – All-in-One£15, Pay as You Go – All-in-One£10, SIM 100 1 month, SIM 300- 1 month All-you-can-eat data*, etc.) and an expression such as *SIM 100 1 month* carried the meaning given only by Three. By May 2017, the situation had changed for both companies. In 2017 O_2 names the tariffs depending on the volume of data (*2GB, 5GB, 15GB, 25GB*, and *40GB*). These units have a specific meaning, linked those tariffs, but only in this particular company. Regarding Three, the tariffs evolved too, and the names changed according to current selling strategy.

Names are important in company-speak, they may at the same time function as categories and as hypernyms. In the United Kingdom in 2012, Nivea had a category of products named *face care* and at the same time, Nivea's *face care* is the hypernym of 10 different products: *Sensitive Moisturiser, Sensitive Hydro Gel, Cool Kick, Revitalising Moisturiser, Revitalising Eye Roll-on, Revitalising Gel, Anti-Age Moisturiser, Active Care, Rehydrating Moisturiser, Intensive Moisturiser Cream*, that are its hyponyms. This naming system had also changed by 2017. Outside this company, the expression *face care* itself means 'care of the face' but does not say much about Nivea's products, as the same phrase appears in the discourse of other equivalent companies (Blistex, Atopalm, Cetaphil®). For Nivea, it means: category of products. This means that to acknowledge what is known about Nivea's *face care* products for men, as a category of products, it is necessary to know i) Nivea's sales ploy about them, ii) to distinguish

them from the products of its competitors, and finally iii) to know that *Nivea's face care* becomes a holonym. It follows that the company's discourse about its face care products needs these expressions. Expressions like *call rate* or *face care* are of general use but each company shapes and derives them for its specific needs and purposes making of them in each case part of the linguistic repertoire of the one single company.

In the case of organisations other than companies (administrations, non-governmental organisations, etc.) names used to designate their structure, staff, activities, services or functions are very closely linked to the organisation's culture and needs. Even in the same language, different cultures do not necessarily name objects in the same way. If this can be interpreted as geographical varieties (*maire* and *conseiller municipal* in France, *bourgmestre* and *échevin* in Belgium) both countries can be recognised by the use speakers make of these expressions. This situation shows that all the designations used by organisations behave in the same way as in commercial companies, even if the amount of expressions concerned is not so great. Applied to organisations company-speak becomes an organisational speak but in both cases it is not sufficient to state that there is linguistic variation due to different countries or different social groups. It is important to understand that each group as a whole gives a specific value to the linguistic units it uses, and that these units have their own relations creating a network. Therefore, what is most characteristic of a company-speak (in the business area) or organisation-speak (in more general cases) are these expressions put in discourse, and that cannot be substituted for those of an equivalent community (e.g. it is not possible to work in a company using the expressions of a competitor or in a French town hall with the expressions of a Belgian municipality, and vice versa).

4 Towards LSP

Depending on the specific department for which a staff member works it may be necessary to have knowledge of chemistry, mobile telephone technology and so on. Companies apply in *their* way knowledge learned in most cases outside the company itself. An engineer learns technology or a chemist, chemistry. There is no such discipline as *Three's mobile telephones science* or *Nivea's face care chemistry*. The question then arises: if the shared knowledge for instance about chemistry is necessary to work in the cosmetic industry why do companies in the sector use different linguistic units?

In their activity companies apply many types of knowledge: management, finance, human resources, marketing, supply-chain, etc. added to those of their core competencies (Hamel and Prahalad 1990). A company-speak gathers all the company's designations and discourse for every sector, the whole of these designations or discourse being necessary for business to be done. Every type of organisation is in a similar situation regards to its own needs. Then how far is it adequate to considerate that a company has a *business language*? Does a business language systematically gather every terminology

of every discipline inside the business world? This would seem hard to credit. But the sociolect used by a company is a place where the linguistic needs of a company meet.

A sector of human experience where a language has been specialised to express all its experiences and needs is known as a field of knowledge. This is the reason for which the field has a terminology. The notion of field of knowledge is as it is not sufficiently closely adapted to an organisation's situation and it is necessary to frame it differently.

A field of knowledge, its LSP and its terminology can be of varying size. How relevant is it to consider the LSP of medicine where so many sub-disciplines each one with its own terminology can exist? The LSP can roughly be similar but the terminologies of cardiology, urology or dermatology are even more specific. In the same way, companies having the same activities within a major field find themselves in a similar situation. If we can think of communication as a field, mobile telephone communication is a sub-field of communication. However, yet another field can be distinguished for sociolinguistic reasons because two companies going in for the same activity do not share the same linguistic units. Within the field of mobile telephone communication *e.g.* in 2012 at the present day in the UK the following companies have their own characteristic linguistic units: Everywhere, Vodafone, O_2, Three, etc. Why does this happen if companies are supposed to have the "same business English"? Furthermore why are products named with such different expressions?

A terminological point of view can provide a solution to this puzzle if the notion of field is extended (de Vecchi 2004). We consider that a *field of knowledge* contains *fields of activities* and these contain *fields of exploitation* where each firm has its own company-speak. And finally that inside a single company each product or service has its specific expressions making up a *field of product or service*. Designations are active and apply to every stage distinguishing them. Then we can consider that the comparison between two similar products belonging to two competitors are not produced nor described with the same linguistic units but with those belonging to each company-speak, even if the actual number of terms is limited. Consciously or not, the consumers know them because, like the company, they need them to refer to their reality when identifying, buying or using the product. The point is how to consider the expressions used by companies in their company-speaks as terms.

5 Terms and company-speak

Organisations and firms exist because they have an activity. This activity can be carried out because they have the knowledge necessary to do their activity. A medical doctor can treat illnesses because he knows medicine, and this medicine relies on concepts represented linguistically by terms. An organisation such as a hospital combines many types of knowledge (medicine, management, human resources, etc.), all of them based on concepts expressed by terms. Firms are in the same situation.

One can consider the concepts needed to make a product or a service and the designations used by the company to do it. In order to make creams Nivea needs to use simultaneously chemistry, management, advertising, etc. In other words, linguistically the product is the result of many types of knowledge and each one uses terms shaped by the company in a specific form thereby making a difference from its competitors' use. This discourse and the terms as seen by the customer, for example, are the result of all these type of knowledge, not of a single one. In an onomasiological perspective it is possible to find the right term in the right company: Three or O2. As has been seen, in 2012, the name of the call rate that allowed 100 minutes was called *All in One 10* by Three but *100mins* by 02. This happened even if other conditions were required for specific rates. At the same time, the condition applying to call rates are a good example of the semantic composition of a designation that shows what people in charge of giving a name have taken in account to create it (*e.g.* time allowances, price to pay, way to pay/means of payment, possibilities offered and so on). These same semantic features also allow price comparisons on the web as is often done by shopping robots or by benchmarking analysis.

But the most important factor which enables us to consider them essential terms to express knowledge is made clear if we take into account what is necessary to know at the linguistic level to be able to produce or sell a product. And in this case terms appear to be essential. Even graphically terms may be shown to belong to the same "family" of products, call rates, etc. (font, colours, size). If all the terms that convey the knowledge required by a company to make its activity are put together and their relations established, the result is a network of terms. For each one of them it is possible to give a definition and to situate them in a specific field of knowledge inside the company according to the different social group that uses it: a technician may not need the same information as commercial staff. *E.g.* when an airline passenger needs a wheelchair, commercial staff will use the expression *wheelchair* but different codes can be used inside the airline (*WCHR*, *WCHS* or *WCHC*) depending on the type of wheelchair used according to the passenger's mobility (possible to walk, impossible to walk, full assistance).

In this way terms can be seen to be at the centre of different perspectives. On one hand and in a general way its linguistic aspect may concern terminologists, technical writers, translators, linguists or engineers and on the other hand the use that different sectors of the company make of these units: corporate culture, communication, socialisation in human resources, knowledge management (conceived as the capacity of an individual to manage what he knows (for a critical perspective see: Wilson 2002). For the last group the linguistic aspect is not fundamental. In the case of mergers, different companies bring together two different company-speaks, each one with its own terms. In such situations, meanings and actions reflecting the knowledge and behaviour of each group may collide and communication conflicts may occur.

6 Perspectives of a sociolect

The importance of a term of a company-speak becomes even more evident if they are withdrawn, a text loses its sense. People need to learn it to work and in doing so they acquire the way the group uses it. In consequence and as a raw material a company-speak can be used in many directions.

From the marketing perspective, users, customers and stakeholders need to identify a product or a service. Names given are the most important element in making this possible and are not only characteristic of the sociolect but they are also a way to create new forms. Its form can be derived from some initial form (Nestlé → *Nespresso, Nesquik, Nescau*, etc.). Even slogans are sequences whose use characterises? the sociolect. *E. g.* Mercedes Benz: *The best or nothing*. These type of linguistic units are often protected with the ® or ™ signs.

In Human Resources, it is necessary to acquire the company-speak to socialize in the company when the staff member becomes part of it and with these terms the staff are trained, and even evaluated. A reciprocal socialising process takes place in mergers and acquisitions (de Vecchi 2003, 2012). Internal and external communication make greater use of terms for every communication need. Knowledge management, language policies, technologies and internal harmonization are very much concerned by it. Terms need to have an internal reference in the company because it is undesirable that different parts of the company should make different interpretations of these terms if core competencies are to be protected. Standardisation outside the company is another matter.

These perspectives make it clear that there is a case for what could be called applied linguistics for business, with terminology at its core. Yet this terminology needs a specific approach named pragmaterminology (de Vecchi 2011), that considers the terms of a company-speak simultaneously from four complementary angles. The first is a linguistic and cognitive aspect that puts forward the usual considerations about terms. The second is a social angle, close to what is understood by socioterminology (see Chapter 24), because it is most important to identify the communities using a term. The third is the time factor, as seen above, because even if a terminology is studied synchronically, from the historical perspective of the community it is not possible to separate it from its history and its constant evolution, so it is necessary then to keep track of terminology and how it is used over time (de Vecchi 2007). Finally a pragmatic aspect is required to observe how the linguistic use of the term reflects the behaviour and actions of the group. All of these aspects are necessary for staff to share knowledge, to communicate and to share activities. If just one of aspect fails, communication may well break down.

7 Conclusion

Studying how organisations and more specifically companies and corporations as linguistic communities share terms offers new perspectives in LSP if a company or

organisation-speak is seen as a new sort of linguistic *raw material* and a real asset at the crossroads of the material and immaterial. To be studied in its constant evolution it needs a participatory observation because the construction of meaning and its encoding in language needs the knowledge of staff at each level and the terminological capacity to observe the way people express what they conceive. This is the major step that distinguishes the traditional jargon of a profession from a company-speak where terms are central. But as is suggested, terms are not only a question of natural language but also a semiotic one because the identity of the community and the expression of its conceptual needs can take other forms than the visual used in graphic charts (de Vecchi, 2015). Other perception channels in special activities may be needed. Many areas are still to be explored in this sense: *e.g.* smell in chemistry or the cosmetic industry, touch in textile industries, hearing in transportation, etc. The term then has to be defined otherwise: it is the semiotic result of a conceptualisation process for a community of knowledge and practice and not just the designation of a concept, even if this definition makes our reasoning possible. It is the group which knows and makes the organisation that is at the centre of the LSP because it shapes every LSP which is necessary for the community to exist.

References

Hamel, Gary and Prahalad, C. K. 1990. The Core Competence of the Corporation. *Harvard Business Review* 68(3). 79–93.

Sapir, Edward. 1912. Language and environment. *American Anthropologist*, New Series 14(2). Published by Blackwell Publishing on behalf of the American Anthropological Association. Stable. 226–242. http://www.jstor.org/stable/659930 (accessed May 2017).

Schein, Edgar. 1985. *Organizational culture and leadership*. San Francisco: Jossey-Bass.

(de) Vecchi, Dardo. 1999. *La terminologie en entreprise. Formes d'une singularité lexicale*. Centre de terminologie et de néologie, Université Paris Nord PhD dissertation. http://www.sudoc.fr/048498653 (accessed 16 July 2017).

(de) Vecchi, Dardo. 2003. L'aspect linguistique des fusions-acquisitions d'entreprises. *Cuadernos de lenguas modernas* 4(4). 157–169. La Plata, Universidad nacional de La Plata.

(de) Vecchi, Dardo. 2004. La terminologie dans la communication de l'entreprise, approche pragmaterminologique. *Cahiers du CIEL*. Université Paris 7 EILA, March 2005. http://www.eila.univ-paris-diderot.fr/_media/recherche/clillac/ciel/cahiers/2004/de_vecchi.pdf (accessed 15 May 2017).

(de) Vecchi, Dardo. 2007. La nomination et son suivi: Entreprises et pragmaterminologie. *Neologica* 1. 49–63.

(de) Vecchi, Dardo. 2012. What do "They" Mean by That? The (Hidden) Role of Language in a Merger. *LSP Journal*, Vol.3, No.2. https://rauli.cbs.dk/index.php/lspcog/article/download/4010/4351 (accessed 16 April 2018).

(de) Vecchi, Dardo. 2016. Perceptual Cognitive Systems of Knowledge Representation and Communication in Organisations: The New Frontiers of Terminology. In Susanne Lervad, Peder Flemestad, Lotte Weilgaard Christensen. *Verbal and Nonverbal Representation in Terminology. Proceedings of the TOTh Workshop 2013, Copenhagen / 8 November 2013, Actes*

de la Journée d'étude TOTh 2013 – Copenhague – 8 novembre 2013. Institut Porphyre, Savoir et Connaissance. 51–63.
Wilson, Tom D. 2002. The nonsense of 'knowledge management'. *Information research* 8(1). http://informationr.net/ir/8-1/paper144.html (accessed 16 July 2017).

Web sources

O_2, Tariffs. http://www.o2.co.uk/tariffs/paymonthly (accessed January 2012).
O_2, Tariffs. https://www.o2.co.uk/shop/all-tariffs/ (accessed May 2017).
Three, Price Plan, http://store.three.co.uk/view/searchTariff?deviceType=SIM_ONLY (accessed January 2012).
Three, Tariffs. http://store.three.co.uk/view/searchTariff?deviceType=SIM_ONLY&expand=includedInternetAllowanceInMB (accessed May 2017).

Richard Ryan

15 Controlled language

Abstract: Controlled languages are subsets of natural languages restricted by explicit rules governing lexicon, grammar and style. They are essentially used to reduce ambiguity and complexity in written procedural or descriptive technical documents, and so can be viewed as extending good authoring practice. Their main declared purpose is to achieve cost savings through the simplification and standardization of document production, and through improved document usability. Human-machine interaction and the translation of documents, in particular by machines, are additional related aims. Controlled natural languages may be either empirical or logic-based. Many empirical controlled languages have been successfully developed in industry starting from existing in-house drafting practice and text corpora, the emphasis being placed on improving human readability. Logic-based controlled languages, by contrast, have been devised to form strictly unambiguous natural language subsets: these may have poor human readability, but unlike the less rigorously formalized empirical controlled languages, they can be used as processable machine input for knowledge representation. Language control raises some formal linguistic issues, particularly the question of whether sweeping restrictions on expression for the sake of simplicity and concision may unintentionally impede communication.

1 Introduction

Natural languages have evolved spontaneously to deal with all situations of human communication. However, they can be deliberately controlled to varying extents, in different ways, and for ranging purposes, by additional prescriptive rules. Natural languages thus controlled do not become strictly artificial or constructed languages so long as these prescriptive rules avoid conflict with their constitutive rules. Even so, any control is liable to introduce some perceived artificiality, and constitutive rules are often "bent" at high degrees of control.

Controlled natural languages (CNLs) are commonly defined as subsets of natural languages constrained by written restrictive rules governing aspects that can include lexicon, syntactic, discursive and textual structures, pragmatics, and semantic interpretation. Their primary function is to reduce ambiguity and complexity in written technical communication, typically expert-to-expert (*e.g.* workshop manuals and specifications) or in support documentation for commercialized products (*e.g.* user handbooks) or, increasingly, in natural language processing applications

Richard Ryan, Clermont-Ferrand (France)

https://doi.org/10.1515/9783110228014-015

(*e.g.* information retrieval). Their ultimate purpose is to reduce the costs of technical communication, both direct (incurred in the production and management of documentation) and indirect (resulting from failure to communicate information effectively). The text types concerned are thus chiefly procedural or descriptive, rather than argumentative or narrative (although Voice of America broadcasts news reports in Special English, a slowly-enunciated simplified English of 1500 words). Small-subset CNLs are used marginally for oral communication in recorded messages or commands, *e.g.* for air traffic control (ICAO standardized phraseology), maritime navigation (Seaspeak) and by military forces (*e.g.* Moore *et al.* 1997) and police (Policespeak: Johnson 1993).

We note that CNLs by definition obey all the constitutive rules of the natural languages of which they are subsets: in this respect they differ from constructed languages, whether engineered *a priori*, like S. E. Kisa's Toki Pona or J. Quijada's Ilaksh, or *a posteriori*, like Esperanto, Interlingua, or the more recent but lesser-known Universal Translation Language (Franco Sabaris *et al.* 2001). Some engineered languages, though essentially constructed *a priori*, take lexical items *a posteriori* from natural languages for convenience (*e.g.* Loglan/Lojban). The fact that CNLs are subsets of natural languages further implies that they can be used partially, loosely, piecemeal or in combination, and still meet natural language standards. This "miscibility" in itself makes CNLs difficult to formalize soundly and succinctly (because the constitutive rules of natural languages are complex and elusive), to evaluate (because of subjective interpretation) and to enforce (because of interference with uncontrolled language or with other controlled languages), and so sets limits to the degree of control that can be realistically expected in practical use.

CNLs can be broadly viewed as instances of compulsory prescriptive language control lying near one extreme of a language planning continuum, the opposite extreme being general standard usage, as embodied (or enshrined) in everyday style manuals. Between lies a gamut of domain-related, context-related or purpose-related loose subsets or sublanguages.

The lead in CNL development has been taken by English-speaking users. This advance is at least in part due to the historical place of the English-speaking world, but may also reflect specific traits of the English language itself and its patterns of use; for example, the recurrent promotion of "plain writing" as a corrective to "Latinate" prose style, disparaged as "wordy", may stem in part from sociolinguistic features of English that derive from its mixed parentage (Blamires 2000: 103–107, Cutts 2009: 26–31). CNLs may not always be perceived as acutely necessary in other languages.

Many of the problems addressed by English CNLs and the solutions they offer may therefore not be universal: restrictions on sentence and word length may not be appropriate for languages with different segmentation rules or habits, or of different prosodic type; even a concept such as concision, which is fundamental to good technical usage in English, may not have a direct correspondence in other languages. Nevertheless, the status of English as an international auxiliary or pivotal language, and the

concomitant issues of readability and authoring by non-native speakers, explains and justifies the large place given here to English CNLs and their design features. Most of the estimated 40 or so CNLs currently used for practical purposes in the world are varieties of controlled English, and the thinking behind them has been in English. In what follows we shall therefore be dealing essentially with CNLs that are subsets of English.

English in use (for general British usage, see Lamb 2010 echoing Fowler 1908 and succeeding editions; for US English, see Strunk Jr. 1918 and succeeding editions) includes variously restricted and standardized levels of "plain language" used or promoted in, for example, public administration (in the UK: Gowers 2004; in the US: Gillespie Myers, 2008), legal drafting (*e.g.* Butt and Castle 2006), in-house business communication, global communication (Kohl 2007; Weiss 2005), and more recently Web content (*e.g.* the Simple English Wikipedia). The press has its own style guides (*e.g.* Austin 2003), the stated objectives of which may not always be plain language as generally understood (Bell 1991, McKane 2006).

Plain language in English has a long literary pedigree: for Quiller-Couch (2007: 33) lecturing in 1913, "good writing" should be "accurate, perspicuous, persuasive and appropriate". Fowler (1908: 1), commented by Gowers (2004: 47–48), enjoins authors to be "direct, simple, brief, vigorous and lucid." The defence of "plain English" has inspired innumerable style guides (*e.g.* Blamires 2000, Cutts 2009); the Plain English Campaign, launched in the UK in 1979, even offers editing services.

Numerous current CNLs have grown out of loosely-defined intermediate levels of language planning simply through the upgrading of good authoring practice to improve precision, concision, clarity, consistency, focus, etc. Many of the writing rules now incorporated into CNLs were already usual in previous generations of style guides. In turn, good authoring practice is being influenced by CNLs: for example, Ryan (2011) has enlisted ergonomics to argue for more frequent discretionary use of controlled languages by technical translators to improve target document quality.

2 From plain language to controlled language

Although many CNLs were built directly on general plain language guidelines (Mazur 2000), technical CNLs differ from plain language in some fundamental ways. In CNLs, lexical items are treated as purely denotative, and rhetorical devices are avoided (although conative discourse such as imperatives and warnings may be allowed). However, this is not the case for plain language, which according to Gowers (2004: 10–23) should not only be clear, simple and brief, accurate and complete, but also "polite and human" (and timely). Gowers (2004: 6–9), explicitly excludes legal English, expert-to-expert communication ("*we are not concerned with this type of writing*"), "departmental shorthand" and the spoken word from the concerns of plain language.

The following often-quoted recommendations compiled by Dayananda (1986), quoted in Crystal (1997: 379) set the general standard for plain written English:

1. Prefer the shorter word to the longer.
2. Prefer verbs to nouns and adjectives.
3. Prefer everyday words to fancy ones.
4. Prefer the specific word to the general.
5. Use no more than 20 words per sentence.
6. Write short paragraphs.
7. Use the active voice rather than the passive.
8. Write with your ear. Write nothing you cannot comfortably say.
9. Write for the eye as well as the mind – use layout for emphasis and visual comfort.

Of these, 1, 4 and 7 were already advocated for literary prose writing 70 years earlier by Quiller-Couch (2007: 113); 1 and 7 were promoted by George Orwell (1946), who also advised: "*if it is possible to cut a word out, always cut it out*". All nine recommendations, except for 3 and 8, which conflict with the technical register of expert content, are consistent with the rules of many CNLs. However, Gowers' emphasis on the "human" dimension of plain language lends more space to persuasive, empathetic or monitory discourse, and so to connotation, rhetorical devices (of which the use of "everyday" words is one) and phatic language, than would be admissible in most CNLs. In turn, most CNLs include rules that set them apart from plain language, *e.g.* the banning of synonyms, leading to awkward repetition, or syntactic strictures that favour unusual constructions (albeit simple ones) that practitioners of plain language would reject.

3 Classification of controlled languages

A convenient distinction may be made between empirical and logic-based CNLs. This distinction reflects how, in what context and for what purposes these CNLs were developed, and the degree of control they require. Logic-based CNLs are generally more tightly controlled than empirical CNLs and so are found in one end segment of the continuum described above. This distinction is also diachronic, as the bulk of the development work on empirical CNLs mostly predates that expended on logic-based CNLs. Indeed, in practice, empirical CNLs can be viewed (crudely) as first generation, and logic-based CNLs as second generation CNLs; being more highly controlled and so more difficult to implement, logic-based CNLs were to find broad practical applications only when computer-assisted authoring and machine translation systems became sufficiently advanced. However, it remains to be seen whether logic-based CNLs will one day supersede empirical CNLs.

Empirical CNLs were developed, often iteratively, in response to technical authoring problems in industry that were first highlighted by quality assurance imperatives,

such as the need for consistency and measurable document quality. Empirical (also called naturalistic) CNLs can in turn be grouped into human-oriented CNLs (for improved readability) and machine-oriented CNLs (for improved processability, especially translatability) (see Allen 2003; Arnold *et al.* 1993; Huijsen 1998). The feasibility of designing a "two-in-one" CNL has also been explored (Reuther 2003); existing readability rules were found to form a subset of translatability rules, *i.e.* translatability ensured readability, but the reverse was not necessarily true.

By contrast, logic-based, or formalistic CNLs were first developed with human-machine communication in mind. Unlike empirical CNLs, which were developed in a "top-down" manner, *i.e.* starting with uncontrolled or at most weakly controlled natural language, formalistic CNLs have been typically developed in a "bottom-up" approach, starting from mathematical logic. These two approaches, and the resulting CNLs, can meet and sometimes overlap: a formalistic CNL will have high translatability, but may have low readability and be difficult to write; an empirical CNL will be less processable than a logic-based CNL, but may be more readable and more flexible. Formalistic CNLs have gained in importance as the processability objective has tended to eclipse the readability objective. This shift in emphasis reflects the increased value of language localization and the increased power of processing software. Hence empirical and logic-based CNLs have to some degree converged in machine translation applications.

A cross-distinction is sometimes made between CNLs intended for general, or at least implicitly unrestricted application, and those that were historically designed for or developed in specific domains such as aircraft maintenance or computer programming, or even deliberately and explicitly restricted to specific functions like drafting procedures or specifications. However, in practice, would-be universal CNLs have proved unsuitable for some situations of communication, while restricted CNLs have found use in applications well outside the domains or functions for which they were originally intended. Again, the fact that all CNLs are (often overlapping) natural language subsets means that they can be extended, retracted, pooled or sampled (*e.g.* in O'Brien 2003) and still conform to a consistent general language standard.

3.1 Empirical controlled natural languages

Empirical CNLs were developed with the declared aim of improving the efficacy of written communication, especially of technical information in industry. Historically, the authoring problems that these CNLs were required to solve were both quantitative (need to rationalize the production of ever-greater amounts of documentation generated by advances in technology and globalization), and qualitative (need to ensure better quality assurance management). CNLs were firstly a response to a demand for written documents of better "technological quality", *i.e.* that were more accurate, concise, consistent, exhaustive, usable (internationally), standardizable and authoritative,

and less costly to produce and manage. In parallel with the consolidation of English as an international technical language, new awareness of the business value of language localization made the translation of technical documents increasingly important (see O'Hagan and Ashworth 2002). Processability for machine translation, computer-assisted translation, authoring and updating (maintainability) thus became a further CNL objective (see Nyberg, Mitamura and Huijsen 2003).

The first approach to these goals sought to give priority to the informative and directive functions of language over its expressive function, and to achieve simplicity, although what exactly is meant by "simple", as in "simple" English, has been a subject of debate (*e.g.* Hinson 1991). Central to empirical CNLs was the concept of *readability*, or the ease with which written information could be accessed and processed by a user, including a user who was not a native speaker of the source language. Readability is distinct from *legibility,* a measure of how easy it is physically to read a text; this is also taken into account in document design. Readability of English has been crudely quantified by means of various "readability indices", based on the general relation: Readability = $ax + by + c$, where x is a variable expressing sentence length, y is a variable expressing word length and a, b and c are coefficients set to weight x and y and obtain a convenient scale. Much research has been done on readability (for reviews, see DuBay 2007a, b) and its extension to machine processability, *e.g.* syntactic and semantic parsability: efforts were made to integrate research findings into CNLs (for a critique, see Schriver 2000). The concepts of readability and legibility have latterly become absorbed by the more general concept of usability in document design (see Alamargot, Terrier and Cellier 2007).

In practice, the development and formalization of CNLs were mostly driven by private enterprise to address practical issues. They were devised above all by technical authors and information design engineers as cost-effective solutions to practical problems or sources of added value, rather than by linguists or mathematicians for academic research. They are often proprietary, and the use of CNLs to draft support documents is in many corporations a contractual requirement. However, the fact that CNLs are, again, subsets of natural language (and that many of them largely overlap), makes it difficult to protect intellectual property rights of CNL use, which are therefore essentially limited to copyright for authoring manuals and glossaries. Certain CNLs have become *de facto* industrial standards in specific domains.

Most empirical CNLs have thus been developed by a process of "paring down" and "tightening up", often starting from corpora and conventional good authoring practice. Care has usually been taken not to challenge earlier practice too suddenly or too radically, to advance stepwise, and to leave some slack in the interpretation of rules. The result of this practical approach is that the empirical CNLs are not always strictly or explicitly formalized, may contain inconsistencies and can sometimes prove intractable. Adriaens and Schreurs (1992: 597), in work on a controlled English grammar checker, wrote of three CNL authoring manuals (AECMA Simplified English, Ericsson English and IBM English, all three ultimately derived from ILSAM): " [...] *the linguistic*

foundation of these manuals is at times very weak: oversimplification often leads to linguistic inaccuracies; frequently linguistic structures are not covered, the instructions are at times vague and ambiguous, and often the rules disregard linguistic reality". Yet these empirical CNLs are relatively easy to learn and use, have a manageable number of rules (Reuther, 2003), are flexible, and despite their formal shortcomings have proved their worth in many areas of industrial documentation, judging by the quantity of documentation produced (although increased efficacy attributable to CNLs is in itself hard to quantify) (see Chervak, Drury and Ouellette 1996; Farrington 1996; Pym 1993; Shubert *et al*. 1995; Werfelman 2007; Wojcik and Hoard 1998). Using controlled English as a pre-processing language for multilingual computer-assisted or machine translation is now commonplace. Computer-assisted authoring tools such as conformance checkers have been developed and successfully commercialized to support technical writers using CNLs (see for example Bernth 1996; Douglas and Hurst 1996; Hurst 1995).

Table 1 lists some well-known empirical CNLs, with their scope and applicability. All of them are used to draft procedural or descriptive texts: some are designed for improved readability and ease of drafting by non-native speakers, others for pre-processing before multilingual translation, especially machine translation. We note that these empirical CNLs are mostly associated with the corporations in which they were developed.

Table 1: Scope and applicability of some recent empirical controlled natural languages.

Empirical CNL	Scope and applicability
Caterpillar Fundamental English (CFE) (1972)	Improved readability of support documents (mechanical engineering). Forerunner of many subsequent CNLs
Caterpillar Technical English (CTE) (1990s)	Multilingual translation of support documents (machinery).
White's International Language for Service and Maintenance (ILSAM) (derived from CFE)	Improved readability and multilingual translation of support documents (mechanical engineering). Procedural documents.
Perkins Approved Clear English (PACE) (1980) (derived from ILSAM)	Improved international readability of support documents (mechanical engineering: user's handbooks, workshop manuals). Multilingual translation. Broad applicability.
Aerospace and Defense Simplified Technical English (ASD-STE100), formerly AECMA [a] Simplified English (SE) (1986) (derived from CFE *via* Boeing in-house controlled English)	Improved international readability of support documents (aerospace engineering). ASD S1000D international standard and ATA iSpec2200 specification. [c] Initially of restricted applicability, but readily adaptable to support documents in other industries. Defence procurement. The most widely used CNL in the world today.

(continued)

Table 1: (continued)

Empirical CNL	Scope and applicability
GIFAS [b] Rationalized French (1990) (Barthe 1998; Barthe *et al.* 1999).	French language equivalent of AECMA SE. Improved readability of support documents. Easy translation into AECMA SE. Restricted applicability.
Kodak International Service Language (KISL)	International readability of technical documents (photography and digital technology).
Bull Global English (BGE) (1993)	Multilingual translation (software localization).
SMART Controlled English (derived from ASD-STE100) (Smart 2006).	Enhanced usability of general technical documentation. Broad scope.
General Motors Controlled Automotive Service Language (CASL)	Multilingual translation of service manuals. Restricted applicability (automobile sector).
Xerox Multinational Customized English (derived from ILSAM)	Multilingual translation for localization (printers and peripherals). Restricted use.
Nortel Standard English (developed from SMART CE)	Multilingual translation (telecommunications).
Knowledge-based Accurate Natural Language Machine Translation (KANT) (Mitamura and Nyberg 1995)	Multilingual machine translation. Broad industrial applications).
Airbus Warning Language (Spaggiari 2003).	Aerospace operating safety. Narrow scope
Controlled Language Optimized for Uniform Translation (CLOUT™) (Muegge 2007).	Pre-processing for multilingual machine translation. Broad applicability
Siemens Dokumentationsdeutsch (SDD) (Lehrndorfer and Schachtl 1998). See also Rascu (2006).	Pre-processing for machine translation from German. Restricted scope.

[a] AECMA: The European Association of Aerospace Industries, [b] GIFAS: Groupement des Industries Françaises Aeronautiques et Spatiales, [c] ATA: Air Transport Association of America.

3.2 Logic-based controlled natural languages

Alongside these empirical CNLs, others have been created "from scratch" as strictly controlled knowledge-representation languages. These context-free languages can, for example, be mapped to first-order logic. They are of interest to natural language-processing research and knowledge engineering, *e.g.* in information retrieval, which requires a degree of formalization that is lacking in empirical CNLs. However, logic-based CNLs, though elegant and powerful, were not designed to meet the daily needs of technical writers seeking primarily to improve readability. Their practical utility was that they were easier to learn than formal languages like Prolog and so,

for example, would enable "casual" users to interface easily with databases and automated inference engines, or to draft complex system specifications. However, the increasingly important objective of translatability was to bring logic-based CNLs into the ambit of empirical CNLs. Here also, computer-based tools to help authors have been developed (*e.g.* Kuhn and Schwitter 2008). The development of a practical Web-scale controlled language has been examined (*e.g.* Pool 2006; Schwitter and Tilbrook, 2004).

Table 2 lists some recent logic-based CNLs, with their scope and applicability. They were all designed with automatic processing in mind, *i.e.* automatic text generation, information extraction, machine translation, etc. These CNLs are often associated with computer science research groups, rather than with document design or technical authoring teams, as is the case for empirical CNLs.

Table 2: Scope and applicability of some recent logic-based controlled natural languages.

Logic-based CNL	Scope and applicability
COGRAM/ALCOGRAM (Adriaens and Schreurs 1992)	Natural language processing research. Multilingual machine translation Used by Alcatel (telecommunications).
Computer Processable English (Pulman 1996)	Knowledge representation.
Attempto Controlled English (ACE) (*Fuchs* & Schwitter, 1996; Fuchs, Schwertel and Schwitter 1998).	Drafting software specifications. Broadly applicable to writing specifications and other pure descriptions. Knowledge representation (Fuchs, Kaljurand and Kuhn 2008). Semantic Web (De Coi *et al*. 2009).
E2V (Pratt-Hartmann 2003),	General-purpose. Research tool.
Controlled English to Logic Translation (CELT). Inspired by ACE. (Pease and Murray 2003)	Ontology authoring. Domain-independent
Common Logic Controlled English (CLCE). Sowa (2004), cited in Fuchs, Kaljurand and Schneider (2006)	Software specifications, mathematical textbooks. Supports automated translation to first-order logic.
Processable English (PENG). Designed by Schwitter *et al.*, cited in Trentelman (2009)	Controlled authoring tool to draft specifications mappable to first-order logic
Semantics of Business Vocabulary and Business Rules (SBVR). Object Management Group consortium (2008). See Bajwa (2011).	Formal, detailed natural language declarative description of a complex entity, such as a business.

4 Design of controlled natural languages

The rules that distinguish a controlled natural language from the general language standard can be classified in different ways. Reuther (2003) collected and classified acknowledged writing rules and principles, producing a set of 70 rules falling into seven categories (Table 3). Based on findings in cognitive science and the content of style guides and training literature, 42 of these rules were deemed essential for improving readability.

Table 3: Controlled natural language rule categories by number.

Rule category	Total number of rules (n = 70)	Number of rules essential for improved readability (n = 42)
Typographical rules	7	2
Rules avoiding ambiguity	3	2
Lexical rules	16	12
Rules avoiding ellipsis	3	1
Rules avoiding complex structures	17	11
Rules for word order and constituent order	10	6
Stylistic rules	14	8

Adapted from Reuther (2003).

Using lexical, syntactic, textual and pragmatic rule categories (logic-based CNLs can also include rules of interpretation), O'Brien (2003) proposes a useful detailed classification (Table 4) for a set of English CNLs used by corporate and academic organizations. The CLs examined were: AECMA Simplified Technical English, Attempto Controlled English, COGRAM (Alcatel), Easy English (IBM), Controlled Automotive Service Language (GM), Océ Controlled English, Sun Controlled English and Avaya Controlled English.

The rules of CNLs can be lexical, syntactic, text-structural or pragmatic, and can govern any of a large number of language features (more than 60 in O'Brien's classification). However, the features controlled in specific CNLs vary widely: the only rule that was shared by all the CNLs in O'Brien's set concerned restriction of sentence length, and even this rule varied widely in the degree of control specified. Frequently found rules included not omitting articles for brevity, using the active voice instead of the passive, using a restricted word list (closed lexicon) and avoiding synonyms and polysemy. Interestingly, though perhaps unsurprisingly, the only fully logic-based CNL in O'Brien's sample (Attempto Controlled English) showed a pattern of rules that was markedly different from the other, empirical, CNLs. The author was unable to define a core set of rules for controlled English based on the set of CNLs examined, but proposed a set of 22 rules empirically selected from these CNLs to improve machine translatability.

Table 4: Pooled rule-bound items in controlled natural languages by category.

Lexical	Syntactic	Text-structural	Pragmatic
– Vocabulary	– Modifiers	– Sentence length	– Register
– Abbreviations and acronyms	– Adjective functionality	– Information load	– Specificity of information
– Prefixes and suffixes	– Adverb functionality	– Paragraph length	– Verb forms for discourse types
– Comparatives and superlatives	– Noun clusters	– Parentheses	– Text type structures
– Verb forms	– Pronoun usage	– Breakdown and layout	– Text type labelling
– Pronouns	– Preposition usage	– Information structure	– Text purpose
– Anaphores	– Participle usage	– Paragraph structure	– Figures of speech
– Quantifiers	– Tense	– Keyword usage	– Rhetorical devices
– Conjunctions	– Person	– Word counting	
– Negation	– Voice	– Capitalization	
– Word combination	– Mood		
– Spelling	– Modals		
– Clarity	– Case		
– Numbering	– Interrogatives		
– Date format	– Apposition		
– Dictionary	– Coordination		
– Word division	– Punctuation		
– Synonymy	– Repetition		
– Polysemy	– Concord		
	– Article usage		
	– Number		
	– Lists		
	– Segment independence		
	– Parallelism		
	– Ellipsis		

Adapted from O'Brien (2003).

5 Two major controlled languages: ASD-STE100 and ACE

Table 5 sets out and compares the principal writing rules of two of the most important CNLs, one empirical and naturalistic (ASD-STE100), the other logic-based and formalistic (ACE). We note in passing that, characteristically, the rules of ASD-STE100 are phrased as imperatives in the authoring manual, whereas the rules of ACE are mostly stated as descriptions of a specification. Both have reference status: ASD-STE100 is the international standard for the aerospace sector and its customers and suppliers; ACE is an important landmark in logic-based CNL research.

We see from the table that ACE has fewer lexical constraints than ASD-STE100: lexical items, including noun clusters, can be added to a word list provided a full

Table 5: Principal rules of two controlled natural languages.

Rule type	ASD-STE100 rules [a] (empirical)	ACE rules [b] (logic-based)
Lexical	– No synonymy – No polysemy – Closed, corpus-derived general lexicon – Regulated open special lexicon (technical names and manufacturing processes) – No phrasal verbs	– Open user-defined content word list with full classificatory information; part of speech, grammatical behaviour, semantics, interpretation, etc. – No modal verbs, no intentional verbs – No modal, negative, disjunct or linking adverbs, no adverbs of degree or of reason – Closed function word list
Syntactic	– No ellipsis – Regulation of noun clusters – No omission of articles – Indicative, infinitive, imperative mood only – Simple tenses only (no *–ing* verb forms – Present, future, preterite only – Punctuation: full stop, comma and parentheses in running text, colons and dashes for tabular layouts. – Numbered lists for instructions	– No ellipsis – All common nouns to be used with a determiner – Third person only – Simple present tense only – Active voice only – Indicative, interrogative mood only [c] – No *–ing* verb forms – Phrasal verb particles not to be separated from verb – Adverbs cannot be graded, cannot take complements, modify only verb phrases – Punctuation: full stop, question mark, comma only to override default binding hierarchy NEG>CONJ>DISJ>INFER – No prepositions other than *of* in noun-modifying prepositional phrases – Conditional *if* always followed by *then*
Textual	– Limited sentence length – One topic per sentence – Limited paragraph length – One topic per paragraph – ATA-100 tabular layout – Warning/Caution texts in capitals	– Complete, declarative or interrogative sentences, preferably short and simple [c] – Textual order = temporal order
Pragmatic	– Separation and ordering of descriptions, warnings and instructions – Standardized headings	– All domain knowledge to be explicitly defined in sentences

[a]ASD Simplified Technical English, Specification ASD-STE100, EC Trade Mark No. 004901195 International specification for the preparation of maintenance documentation in a controlled language. Aerospace and Defence Industries Association of Europe, Avenue de Tervuren 270, B-1150 Brussels, Belgium.
[b]Attempto Controlled English Language Manual 3.0 (1999), Dept. of Computer Science, University of Zurich, Switzerland.
[c]Query sentences may be used to form questions to examine the contents of an ACE text *via* a logic interface.

classificatory description of their properties is entered. Synonyms are not expressly forbidden. The syntactic restrictions of ACE are more severe, while in ASD-STE100 greater emphasis is placed on textual and pragmatic rules. Overall we see, not unexpectedly, that ACE, like other logic-based CNLs, is mainly concerned with syntactic control. Apart from words implying extratextual information (*e.g.* epistemic or deontic), lexicon is not limited, provided items are well described, and layout and macrotypography is irrelevant. It is thus possible to write a text in ACE that has very low readability, yet is unambiguous and computer-processable. Instructions and warnings can be written in ASD-STE100 but not in ACE. On the other hand, queries can be written in ACE, but not in ASD-STE100.

6 Future controlled natural languages

Any new controlled natural language must clearly draw heavily on earlier ones. A heritage pattern can already be seen in the successive development of the major CNLs listed here. Whether the objective is better readability, translatability or human-machine interaction, most of the groundwork has already been done (at least in English), and so any new CNL will probably select elements of pre-existing ones according to specific practical criteria. These criteria will include cost-effectiveness (expected gains in productivity or quality, costs of customization, training and equipment), acceptability (objections and resistance to change among authors, users and management), the types of texts to be written (procedures, specifications, non-chronological reports, etc.) and the user target (in-house experts, business customers, end consumers, etc.). Future prospects of controlled languages were recently reviewed by Wyner *et al.* (2010).

Finally, despite its success in use, language control still raises a number of formal questions that may have practical implications, and so might be profitably researched. One concerns the criticality of control: beyond what degree of control does a CNL cease to be a subset of a natural language (assuming the concept of natural language can be adequately defined), so becoming an *a posteriori* constructed language? A second question, linked to the first, concerns the reality of control: are CNLs truly controlled, or do the restrictive rules applied have uncontrolled secondary adverse (or perverse) effects on information transmission? Adverse effects could arise either from the design of the CNL, *i.e.* the choice and wording of rules, or from the way "natural" users interface with it, *i.e.* its ergonomic performance. Any of the following attested failings, for example, could be expected to impair communication:

Faulty CNL design:
- Inconsistent or badly worded rules;
- Linguistically unsound rules that might be impossible to apply in certain cases;

- Misranking of information in sentences owing to reduced use of subordination;
- Unjustified and misleading theme-rheme inversion;
- Elimination of pragmatically useful redundancy;
- Arbitrariness in the choice of closed lexicons selected from corpora, and of those corpora;
- Loss of authority of texts due to oversimplified or laboured wording;
- Failure to engage authors and readers.

Faulty CNL use:

- Discomfort or boredom due to repetition, predictable syntactic structures and unnatural prosody, although an ASD-STE100 rule 6.2 does specify: "*try to vary sentence lengths and constructions to keep the text interesting*";
- Indifference of authors towards work perceived to be purely mechanical and deskilled;
- Pressure from authors and users to loosen constraints;
- Scepticism and reservations, favouring avoidance or casual non-compliance;
- CNL-compatible native language interference in international use, leading to local preferences;
- Overzealous or perverse application of rules leading to bizarre (though permitted) wording;
- Poor feedback on practical gains in cost, safety, productivity, etc.

More generally, do controlled languages, by virtue of their restrictiveness, confine thought and communication, cause misunderstanding or impair a user's reasoning ability and judgement? Should written language, even in technical documentation, ignore rhetorical qualities such as persuasiveness, hortatory power and mnemonicity? The measurement of syntactic and semantic expressiveness in CNLs is briefly addressed by Boyd, Zowghi and Gervasi (2005), However, the effects of language control on human communication remain under-researched. Finer usability studies and the concepts of text linguistics (coherence, relevance, connexity, etc.) could provide new insights.

7 Conclusion

Controlled natural languages seem to have largely achieved their initial objectives, which were to improve the cost-effectiveness of technical documentation in industry through simplification and standardization, and later to draft technical documents that would be easy and cheap to translate into one or more other natural languages for localization purposes. The development of CNLs has also involved research into knowledge representation and natural language processing for information retrieval, automatic text generation and computer-assisted authoring.

Advances in processing software design may go on to produce new approaches in which more carefully formalized controlled languages will be coupled with powerful authoring tools. However, there remain a number of issues concerning the efficacy of controlled languages in actual use and the quantitative evaluation of the practical gains they convey.

References

Adriaens, Geert and Dirk Schreurs. 1992. From COGRAM to ALCOGRAM: Toward a controlled English grammar checker. In *Proceedings of the 14th International Conference on Computational Linguistics (COLING 92)*, 595–601. 23–28 August 1992, Nantes, France.

Alamargot, Denis, Patrice Terrier and Jean-Marie Cellier (eds.). 2007. *Written Documents in the Workplace* (Studies in Writing). Oxford and Amsterdam: Elsevier Science.

Allen, Jeffrey. 2003. Controlled translation issues: Implementing controlled language and machine translation. In *Proceedings of the Joint Conference combining the 8th International Workshop of the European Association for Machine Translation and the 4th Controlled Language Application Workshop (EAMT/CLAW03)*. 15–17 May 2003, Dublin City University, Ireland.

Arnold, Doug, Lorna Balkan, Siety Meijer, R. Lee Humphreys and Louisa Sadler. 1993. *Machine Translation: An Introductory Guide* (Cleary Business Studies). Cambridge MA: Blackwell Publishers.

Austin, Tim (ed.). 2003. *The Times Style and Usage Guide*. London: Times Books.

Bajwa, Imran, Lee Mark and Bordbar Behzad. 2011. SBVR Business Rules Generation from Natural Language Specification. *Papers from the 2011 AAAI Spring Symposium, Technical Report*, SS-11-03.

Barthe, Kathy. 1998. GIFAS rationalised French: designing one controlled language to match another. *Proceedings of the Second International Workshop on Controlled Language Applications (CLAW98)*, 87–102. 21–22 May 1998, Pittsburgh, Pennsylvania: Language Technologies Institute, Carnegie Mellon University.

Barthe, Kathy, Claire Juaneda, Dominique Leseigneur, Jean-Claude Loquet, Claude Morin, Jean Escande and Annick Vayrette. 1999. GIFAS rationalized French: A controlled language for aerospace documentation in French. *Technical Communication* 46. 220–229.

Bell, Allan. 1991. *The Language of News Media* (Language in Society). Cambridge MA: Blackwell Publishers.

Bernth, Arendse. 1997. EasyEnglish: A tool for improving document quality. In *Proceedings of the 5th Conference on Applied Natural Language Processing*, 159–165. Washington DC.

Blamires, Harry. 2000. *The Penguin Guide to Plain English*. London: Penguin Books.

Boyd, Stephen, Didar Zowghi and Vincenzo Gervasi. 2005. Measuring the expressiveness of a constrained natural language: An empirical study. In *Proceedings of the 13th IEEE International Conference on Requirements Engineering*, 339–352. 29 August–2 September 2005, Paris, France. Berlin and Heidelberg: Springer.

Butt, Peter and Richard Castle. 2006. *Modern Legal Drafting. A Guide to Using Clearer Language*, 2nd edn. Cambridge: Cambridge University Press.

Chervak, Steven, Colin G. Drury and J. P. Ouellette. 1996. Field evaluation of simplified English for aircraft workcards. In *Proceedings of the 10th FAA/AAM Meeting on Human Factors in Aviation Maintenance and Inspection*, 12 January 1996, Alexandria, VA.

Crystal, David. 1997. Language for special purposes. In *The Cambridge Encyclopedia of Language*, 2nd edn. Cambridge: Cambridge University Press.
Cutts, Martin. 2009. *Oxford Guide to Plain English*, 3rd edn. Oxford: Oxford University Press.
Dayananda, James T. 1986. Plain English in the United States. *English Today* 2(1). 13–16.
De Coi, Juri L., Norbert E. Fuchs, Kaarel Kaljurand and Tobias Kuhn. 2009. Controlled English for reasoning on the semantic web. In Francois Bry and Jan Maluszynski (eds.), *Semantic Techniques for the Web* (The REWERSE Perspective, Lecture Notes in Computer Science Vol. 5500), 276–308. Berlin and Heidelberg: Springer.
Douglas, Shona and Matthew Hurst. 1996. Controlled language support for Perkins Approved Clear English (PACE). In *Proceedings of the First International Workshop on Controlled Language Applications (CLAW96),* 93–105. March 1996, Katholieke Universitet Leuven, Belgium.
DuBay, William. H. (ed.). 2007a. *Unlocking Language: The Classic Studies in Readability*. Seattle WA: BookSurge Publishing.
DuBay, William. H. 2007b. *Smart language: Readers, Readability, and the Grading of Text*. 23 February 2007, Seattle WA: BookSurge Publishing.
Farrington, Gordon. 1996. AECMA Simplified English: An overview of the international aircraft maintenance language. In *Proceedings of the First International Workshop on Controlled Language Applications (CLAW96),* 1–21. March 1996, Katholieke Universitet Leuven, Belgium.
Fowler, Henry W. and Francis George Fowler. 1908. *The King's English*. Oxford: Clarendon Press.
Franco Sabaris, M., J. L. Rojas Alonso, C. Dafonte and B. Arcay. 2001. Multilingual authoring through an artificial language. In *Machine Translation in the Information Age*, 99–102. MT summit No. 8, 18 September 2001, Santiago de Compostela, Spain. Geneva: European Association for Machine Translation.
Fuchs, Norbert E. and Rolf Schwitter. 1996. Attempto Controlled English (ACE). In *Proceedings of the First International Workshop on Controlled Language Applications (CLAW96)*, 26–27 March 1996, Katholieke Universitet Leuven, Belgium.
Fuchs, Norbert E., Uta Schwertel and Rolf Schwitter. 1998. Attempto Controlled English: Not just another logic specification language. In P. Flener (ed.), *Proceedings of the 8th International Workshop on Logic Programming Synthesis and Transformation, LOPSTR'98*, 1–20. 15–19 June 1998, Manchester, UK.
Fuchs, Norbert E., Kaarel Kaljurand and Gerold Schneider. 2006. Attempto Controlled English meets the challenges of knowledge representation, reasoning, interoperability and user interfaces. In *The 19th International FLAIRS Conference* (FLAIRS2006). 11–13 May 2006, Melbourne Beach, FL.
Fuchs, Norbert E., Kaarel Kaljurand and Tobias Kuhn. 2008. Attempto Controlled English for knowledge representation. In Cristina Baroglio, Piero A. Bonatti, Jan Małuszyński, Massimo Marchiori, Axel Polleres and Sebastian Schaffert (eds.), *Reasoning Web, Fourth International Summer School 2008* (Lecture Notes in Computer Science Vol. 5224), 104–124. Berlin and Heidelberg: Springer.
Gillespie Myers, Judith. 2008. Plain Language in Government Writing: A Step-by-Step Guide. Management Concepts. Vienna, VA: Management Concepts.
Gowers, Ernest. 2004. *The Complete Plain Words*, revised by Sidney Greenbaum and Janet Whitcut, 3rd revised edn. London: Penguin.
Hinson, Don E. 1991. Simplified English – Is it really simple? In *Proceedings of the 38th International Technical Communication Conference*, 33–35. Washington DC.
Huijsen, Willem-Olaf. 1998. Controlled language: An introduction. In *Proceedings of the Second International Workshop on Controlled Language Applications* (CLAW 98), 1–15. Language Technologies Institute, Carnegie Mellon University, Pittsburgh, PA.
Hurst, Matthew F. 1995. Parsing for targeted errors in controlled languages. In R. Mitkov and N. Nicolov (eds.), *Recent Advances in Natural Language Processing, Selected Papers from*

RANLP '95 (Current Issues in Linguistic Theory 136), 59–70. University of Wolverhampton and University of Edinburgh.
Johnson, Edward. 1993. *PoliceSpeak: Police Communications and Language and the Channel Tunnel – Report.* Cambridge, UK: PoliceSpeak Publications, Cambridge Research Laboratories.
Kohl, John. 2007. *The Global English Style Guide: Writing Clear, Translatable Documentation for a Global Market*. Cary, NC: SAS Publishing.
Kuhn, Tobias and Rolf Schwitter. 2008. Writing support for controlled natural languages. In *Australasian Language Technology Workshop 2008 (ALTW2008): Proceedings of the Workshop*, 46–54. 8–10 December 2008, CSIRO ICT Centre, Hobart TAS, Australia.
Lamb, Bernard C. 2010. *The Queen's English, and How to Use It.* London: Michael O'Mara Books.
Lehrndorfer, Anne and Stephanie Schachtl. 1998. Controlled Siemens documentary German and TopTrans. *Technical Communicators' Forum* 3. 8–10.
Mazur, Beth. 2000. Revisiting plain language. *Technical Communication, the Journal of the Society for Technical Communication* 47(2). 205–211.
McKane, Anna. 2006. *News Writing*. London: Sage Publications.
Mitamura, Teruko and Eric Nyberg. 1995. Controlled English for knowledge-based MT: Experience with the KANT system. In *Proceedings of the 6th International Conference on Theoretical and Methodological Issues in Machine Translation* (TMI-95), 158–172. 5–7 July 1995, Katholieke Universiteit Leuven, Belgium: Elsevier 1997.
Moore, R. C., J. Dowding, H. Bratt, J. M. Gawron, Y. Gorfu and A. Cheyer. 1997. CommandTalk: A spoken-language interface for battlefield simulations. In *Proceedings of the 5th Conference on Applied Natural Language Processing,* 1–7. Washington DC.
Muegge, Uwe. 2007. Controlled language: the next big thing in translation? *ClientSide News Magazine*. Denver, CO: ClientSide Publications 7(7). 21–24.
Nyberg, Eric, Teruko Mitamura and Willem-Olaf Huijsen. 2003. Controlled language for authoring and translation. In Harold Somers (ed.), *Computers and translation. A translator's guide* (Benjamins Translation Library 35), 245–281, Chapter 14. Amsterdam and Philadelphia: John Benjamins.
O'Brien, Sharon. 2003. Controlling controlled English – an analysis of several controlled language rule sets. In *Controlled Translation – Proceedings of the Joint Conference combining the 8th International Workshop of the European Association for Machine Translation and the 4th Controlled Language Application Workshop* (EAMT-CLAW03), 105–114. Dublin City University, Ireland.
O'Hagan, Minako and David Ashworth. 2002. *Translation-mediated Communication in a Digital World: Facing the Challenges of Globalization and Localization* (Topics in Translation). Bristol, UK: Multilingual Matters.
Orwell, George. 1946. Politics and the English Language. *Horizon* 13(76). 252–265.
Pease, Adam and William R. Murray. 2003. An English to logic translator for ontology-based knowledge representation languages. In *Proceedings of the 2003 IEEE International Conference on Natural Language Processing and Knowledge Engineering*, 777–783. Beijing, China.
Pool, Jonathan. 2006. Can Controlled Languages Scale to the Web? In *Proceedings of the 5th International Workshop on Controlled Language Applications (CLAW 2006), Association for Machine Translation in the Americas* (AMTA 2006). 12 August 2006, Cambridge, MA.
Pratt-Hartmann, Ian. 2003. A Two-Variable Fragment of English. *Journal of Logic, Language and Information* 12(1). 113–45.
Pulman, Steven G. 1996. Controlled Language for Knowledge Representation. In *Proceedings of the First International Workshop on Controlled Language Applications* (CLAW96), 233–242. March 1996, Katholieke Universitet Leuven, Belgium.
Pym, Peter. 1993. Perkins Engines and publications. In *Proceedings of Technology and Language in Europe 2000: The UK Perspective*. January 1993, London.

Quiller-Couch, Arthur T. 2007. *On the Art of Writing: Lectures delivered in the University of Cambridge 1913–1914*. Charleston, SC: BiblioBazaar, Nabu Press.

Rascu, Ecaterina. 2006. A Controlled Language Approach to Text Optimisation in Technical Documentation. In Miriam Butt (ed.), *Proceedings of KONVENS 2006* (Konferenz zur Verarbeitung natürlicher Sprache), 107–114. Universität Konstanz, Germany.

Reuther, Ursula. 2003. Two in one – Can it work? Readability and translatability by means of controlled language. In *Proceedings of the Joint Conference combining the 8th International Workshop of the European Association for Machine Translation and the 4th Controlled Language Application Workshop (EAMT-CLAW03)*, 124–132. 15–17 May 2003, Dublin City University, Ireland.

Ryan, Richard. 2011. Traduction technique: les langues contrôlées au service de l'ergonomie documentaire [Technical translating: How Controlled Natural Languages can Improve Document Ergonomics]. *Revue de l'Institut des langues et cultures d'Europe et d'Amérique* 14. Grenoble, France: Editions littéraires et linguistiques de l'Université de Grenoble.

Schriver, Karen. 2000. Readability formulas in the new millennium: What's the use? *ACM Journal of Computer Documentation* 24(3). 138–140.

Schwitter, Rolf and Mark Tilbrook. 2004. Controlled natural language meets the semantic web. In A. Asudeh, C. Paris and S. Wan (eds.), *Proceedings of the Australasian Language Technology Workshop,* 55–62. Macquarie University, Sydney NSW Australia.

Shubert, Serene K., Jan H. Spyridakis, Heather K. Holmback and Mary B. Coney. 1995. The comprehensibility of Simplified English in procedures. *Journal of Technical Writing and Communication* 25. 347–369.

Smart, John. M. 2006. SMART Controlled English. In *Proceedings of the 5th International Workshop on Controlled Language Applications (CLAW 2006)*, Association for Machine Translation in the Americas (AMTA 2006). 12 August 2006, Cambridge, MA.

Spaggiari, Laurent, Florence Beaujard and Emmanuelle Cannesson. 2003. A Controlled Language at Airbus. In *Proceedings of the Joint Conference combining the 8th International Workshop of the European Association for Machine Translation and the 4th Controlled Language Application Workshop (EAMT/CLAW03)*, 151–159. 15–17 May 2003, Dublin City University, Ireland.

Strunk, William. 1918. *The Elements of Style.* Geneva, N.Y: Press of W.P. Humphrey.

Trentelman, Kerry. 2009. *Processable English: The Theory Behind the PENG System*. Edinburgh, SA: Command, Control, Communications and Intelligence Division DSTO-TR-2301. Defence Science and Technology Organisation.

Weiss, Edmond H. 2005. *The Elements of International English Style: A Guide to Writing Letters, Reports, Technical Documents, and Internet Pages for a Global Audience*. Armonk NY: M. E. Sharpe.

Werfelman, Linda. 2007. Simplifying the technicalities. *AeroSafety World. The Journal of Flight Safety Foundation* August 2007. 17–21. Alexandria, VA.

Wojcik, Richard H. and James E. Hoard. 1998. Controlled Languages in Industry. In Robert A. Cole, Joseph Mariani, Hans Uszkoreit, Annie Zaenen and Victor Zue (eds.), *Survey of the State of the Art in Human Language Technology* (Studies in Natural Language Processing), 223–228. Cambridge: Cambridge University Press.

Wyner, Adam, Krasimir Angelov, Guntis Barzdins, Danica Damljanovic, Brian Davis, Norbert Fuchs, Stefan Hoefler, Ken Jones, Kaarel Kaljurand, Tobias Kuhn, Martin Luts, Jonathan Pool, Mike Rosner, Rolf Schwitter and John Sowa. 2010. On controlled natural languages: Properties and prospects. In Norbert Fuchs (ed.), *Workshop on Controlled Natural Languages, CNL 2009*, *Lecture Notes in Computer Science* 5972, 281–289. Berlin and Heidelberg: Springer.

Yvonne Cleary and Darina M. Slattery

16 Technical communication and technical documentation

Abstract: Although for centuries people have been writing instructions to explain technological advancements, technical communication only developed as a recognised occupational field in the twentieth century. The expansion of software industries in the 1980s, driven by the exponential increase in business computing and home computer ownership, led to a need for people who could explain technology to lay users. Thus, technical communication became a more recognised occupation. This chapter outlines the features and functions of contemporary technical communication and technical documentation contexts. Although technical communication is a field characterised by diversity, and therefore evades easy definition, our chapter delineates central concepts. In addition to explaining documentation types and writing processes, we also outline traditional skillsets and competencies, including writing, information design, and interviewing. We then explore evolving competencies of technical communicators, such as structured authoring, usability, and knowledge of web 2.0 technologies. The chapter concludes that, despite constant technological shifts, the ability to communicate clearly is central to this field.

1 Introduction to the field

Technical communication is a field that has grown in response to the need for documentation to describe technology to users. Connors (1982: 329), writing about the history of writing instruction in the United States, observes that "[f]or as long as men have used tools and have needed to communicate about them, technical discourse has existed." Although technical communication existed in support of science and industry for centuries, it developed into a mainstream occupation in the twentieth century (Connors 1982). Possibly the most significant decade for the expansion of technical communication was the 1980s, due to the development of the desktop computer. Carroll (1998: 2) describes the development of early mass-produced desktop computers as a "revolution in technology to support human activity." This technology "revolution" required technical communicators to explain new technologies to lay users. Since this time, technical communication has become a recognised occupation. However, it has evaded easy definition or characterisation. Definitions from professional societies help to frame the field:

The Society for Technical Communication (STC), the largest technical communication professional society, states that technical communicators share "a

Yvonne Cleary and Darina M. Slattery, Limerick (Ireland)

https://doi.org/10.1515/9783110228014-016

user-centered approach to providing the right information, in the right way, at the right time to make someone's life easier and more productive" (Society for Technical Communication 2018).

The Institute of Electrical and Electronics Engineers Professional Communication Society (IEEE, PCS) states that the "field of interest includes the study, development, improvement, and promotion of effective techniques for preparing, organizing, processing, editing, collecting, conserving, teaching, and disseminating any form of technical information by and to individuals and groups by any method of communication" (IEEE Professional Communication Society, 2018).

The British Institute for Scientific and Technical Communicators (ISTC) states that technical communication is pervasive and includes "help pages, user guides, manuals, installation instructions, operating and safety procedures, business processes, training materials, chatbots, and even the text embedded into the product itself." The ISTC argues that "successful technical documentation is that which allows a person to use the subject almost intuitively." This organisation lists job titles, including: content strategists, information designers, documentation managers, technical authors/ writers/ communicators, desktop publishers, web masters, information designers, publication managers, indexers, translators, trainers, and illustrators (among many others) (Institute of Scientific and Technical Communicators 2018).

These definitions show that the common denominator is **writing about technical subjects**, and they highlight the importance of **new media**, **instructional design**, **audience awareness**, and **usability** in the technical communicator's work. These professional society definitions demonstrate that technical communicators are a **knowledge-based group**, and, as developers of content, are **key operators in the information society**.

Technical communicators use an array of job titles, including 'technical author', 'technical writer', 'professional writer', and 'information developer'. New job titles, such as 'digital content specialist' and 'content curator' indicate the increasing ICT focus of the role. In this chapter, we use the term 'technical communicator' to encompass the broad array of skills of the function.

This chapter seeks to explain the field of technical communication. Section 2 outlines the documentation process. It begins with an overview of types of documentation, then discusses the composition of writing teams, and concludes by examining various aspects of the documentation process. Section 3 discusses the skillset and competencies of the contemporary technical communicator. Finally, Section 4 draws conclusions, and indicates future directions for the field.

2 The documentation process

Technical communicators create several types of documentation, using many output media, and for various audiences, including technicians, managers, and end-users of products. This section examines the documentation processes of technical

communicators. It begins by outlining types of documentation, then explores writing teams, and concludes with a discussion of the writing process.

2.1 Types of documentation

Rubens (2001) lists the following output media for science and technical documentation: articles, booklets, brochures, newsletters, correspondence, manuals, reports, help systems, wizards, and web sites. In addition, the exponential growth in web 2.0 technologies has led to a corresponding increase in the use of new media to disseminate technical documentation. This section examines technical communication outputs developed using traditional and new media.

2.1.1 Manuals

Manuals are the traditional medium for providing procedural information, which is a large part of the technical communicator's work. Most technical communication textbooks include sections on how to write and design content for instruction manuals (see, for example, Markel 2012). Rubens (2001) distinguishes among several types of manual, including tutorials, user guides, job aids and user reference manuals. Manuals, like many types of technical documentation, are likely to be used for reference rather than sequential reading. A study by Schriver (1997) showed that, contrary to popular belief, more than 80 % of consumers use the manuals that accompany consumer products, demonstrating the importance of these documents to users. Increasingly, many technical manuals are produced for online delivery and take the form of web-based online help (as discussed in Section 2.1.2). Microlearning is an approach whereby users are presented with "small chunks of information... [that] can be used for learning in between and on-demand" (Buchem and Hamelmann 2010: 4).

2.1.2 Online help

Since the 1980s, online help has become a common medium for supporting computer software. William Horton (1995: 2) defined online documentation as "using the computer as a communication medium...from one-word messages to project Xanadu." Online help is usually presented in web-based format, and provides quick access to specific information needed to operate a product function. Simple topics provide only the information the user needs to complete the task. Types of online help include:

- Links to web help resources or online forums
- Context sensitive help (displays topics related to current task)

- Help menu
- Screen labels
- "Tips of the day"
- Frequently Asked Questions (FAQs)

2.1.3 Web sites

The internet has replaced other media for many types of information dissemination. Redish (2007) lists the array of tasks users now complete, almost exclusively, online, including: finding reference information, accessing files, reading reviews, and contacting colleagues. Spilka (2010: 2) describes how the web has transformed the work processes of technical communicators: "[i]t has altered every aspect of our jobs, including how we gather information, think, develop and share ideas, collaborate, analyze, plan, and make decisions; find, use, manipulate, manage, and store information; and develop, evaluate, revise, and complete information products." Technical communicators must be able to create and interact with web systems to function in the contemporary workplace. Redish (2007) cautions, however, that writing for web technologies is different to writing for paper-based media. Readers have less patience, and are not prepared to read; rather they "skim and scan" (Redish 2007: 2). New reading patterns require technical communicators to be skilled information designers for different types of online media (as discussed in Section 3.4).

2.1.4 Web 2.0 media

Publishing phenomena such as the internet and, more recently, web 2.0 technologies such as blogs and other collaborative authoring tools, podcasts, discussion forums, and live chat, have utterly changed content production processes (Gentle 2010). Technical communicators now write content for web 2.0 media often in 'agile' teams, with rapid development cycles. Moreover, some content is now developed by the 'crowd' or community of online users for free (Keen 2007; Rushkoff 2009), leading to the term 'crowd-sourcing.' Technical communicators are increasingly charged with 'curating' or managing free content developed by the community of online users (Gentle 2010) in social media.

2.2 The writing process

New technologies have an impact on the writing process as well as on output media. Nevertheless, many core activities, such as working in teams, analysing the audience,

and the editing and review cycle, remain central to the technical communicator's role. This section explores common writing team formations and essential tasks.

2.2.1 Writing teams

Technical communicators usually work in teams to produce documentation. Alred, Oliu and Brusaw (1992) identified three types of writing team:

- The functional (or cross-functional) writing team, where the writer works in a team with other professionals, such as subject matter experts, graphic designers and editors.
- The peer writing team, where several writers work together on a shared document.
- The supervised writing team, where a hierarchy exists across projects, with one manager, a small number of project leaders, and several writers.

These team formations continue to be the most common structures within which technical communicators work (Spilka 2010). However, technology and globalisation have impacted on the communication structures of teams. "Virtual" teams, where members are situated in different geographical locations, are increasingly commonplace in large global corporations (Flammia, Cleary and Slattery 2016). Most technical communicators communicate virtually with some of their colleagues to produce documentation. Virtual teams rely on strong management and trust among team members (Coppola, Hiltz and Rotter 2004) to function effectively.

In addition, writers work increasingly in 'agile' development environments. The structure of an agile team is similar to a traditional cross-functional team, comprising software developers, a writer, a graphic designer, a project manager, and possibly other professionals. Within this model, products and associated documentation are developed incrementally, rapidly and collaboratively in "scrums" (daily team meetings) (Pope-Ruark 2015). The agile model represents a new writing paradigm for writers.

2.2.2 Typical tasks

While much of the previous discussion has demonstrated how technological change has altered the work of technical communicators, many of the daily tasks required to execute the role remain constant.

Audience analysis

Audience analysis is a cornerstone of technical communication. Schriver (1997) identified three types of audience analysis:

- Classification-driven, where writers attempt to list characteristics of typical audience members.
- Intuition-driven, where writers invoke their own experiences, or imagine an ideal reader for whom they write.
- Feedback-driven, where writers test their documents with end users, mirroring the process of usability testing.

Schriver argued, and increasingly researchers agree, that the feedback-driven model is most appropriate and aligns with approaches to usability and the user experience (see, for example, Redish 2010).

Project management

To ensure that the writing teams produce quality documentation, Hackos (1994) provided a model for managing the documentation process, which consists of several phases, including information planning, project planning, writing, and a comprehensive review process. When writing teams are very well managed, quality documentation is an outcome. Hackos argued that good project managers evaluate the writing team and the process, as well as the project. Successful managers also prepare the team to move on to the next project. Dicks (2004) highlights the importance of time management, and observes that technical communicators must be able to manage themselves, as well as manage projects. Pope-Ruark (2015) shows how agile development methodologies applied to writing teams can improve project management and collaboration.

Localisation

Localisation "refers to the **adaptation** of a product, application or document content to meet the language, cultural and other requirements of a specific target market (a *locale*)" (World Wide Web Consortium 2015, original emphases). The process for localisation typically involves translating the interface, online help and manual. Technical communicators are often involved in the localisation process in a number of ways. One of the steps in the localisation process, known as internationalisation, is the preparation of content that can be easily translated (Esselink 2006). Technical communicators may be hired to "internationalise" text, graphics, and increasingly multimedia content. There is some crossover in skills between the two sectors; for example, working with graphics in structured authoring and especially XML environments, attention to culture-neutral writing and graphics, and the associated need for plain English (see Sections 3.2 to 3.4).

Review processes

Technical communicators can use a number of tools to ensure that documentation is consistent and matches the needs of the end user. One common tool is a corporate

style guide, which provides guidance for writers about the writing conventions and style choices to which they should adhere. For example, IBM (DeRespines et al. 2012) has a corporate style guide to ensure that the writing style within IBM technical documents is consistent. In smaller organisations, the writing team may use a set of style standards for text and graphics.

A second tool that promotes consistency is the documentation review process. Several types of review may take place, ranging from peer reviews where colleagues read one another's work, to formal reviews where managers and other stakeholders read a hard copy of the document, page by page in a team meeting. In addition, usability testing (see Section 3.5) during a review can contribute significantly to quality by ensuring that user feedback is incorporated into the documentation.

Within the agile development model, review processes are less defined due to the rapid and incremental nature of development. Reviews can, however, be scheduled into the agile model (Heimgartner and Locke 2006). The next section examines the skills and competencies that technical communicators need to function effectively.

3 Skills and competencies of technical communicators

Technical communicators are required to possess an ever-growing number of skills. This section outlines their typical skillsets, followed by an overview of some writing considerations that need to be borne in mind, including readability, writing style, and emerging standards. It is then followed by a discussion of the role of the writer in information design and usability and concludes with a brief overview of legal, cultural, and ethical considerations.

3.1 Typical skillsets

Until the 1980s, technical communicators typically possessed a handful of skill-sets: good writing and editing skills as well as subject-matter knowledge. They were usually experts in the fields in which they wrote and typically technical writing was taught in English departments established within Engineering schools (Connors, 1982). At the time, skills in Information Technology (IT) were not required. However, in more recent years, technical communicators have had to increase their skill-sets, adding technical proficiency and a wider knowledge-base. They must now be proficient in using a range of industry-standard authoring tools and they often need to be proficient in web development, graphics and animation tools also. With the advent of the internet, technical communicators have also had to learn how to communicate with colleagues who are located in geographically-dispersed locations, because virtual

teams are now commonplace (Flammia, Cleary and Slattery 2016). As discussed in Section 2.1.4, web 2.0 technologies have greatly facilitated this kind of collaboration but they also require technical communicators to know *how to write* for diverse media (Redish 2007).

Technical communicators often need instructional design skills, as instruction manuals and e-learning courses are typically designed – in a written and visual sense – by technical communicators, although these professionals are often called 'instructional designers', 'course designers', or 'content developers'. Instruction can be defined as a set of events that facilitate learning (Gagné et al. 2004). These events can be internal or external to the learner. Internal events are carried out by the learner – sometimes unknowingly – and include focusing attention and reflecting on the instructional content. Ideally, external events should be systematically designed by an instructional designer, who applies his/her knowledge of learning theories to the design of the external events. It is these external events we call instruction (Gagné et al. 2004). Instructional design involves performing a number of activities, some of which are central to the writing process, including a needs assessment for the proposed training solution and an audience analysis to determine the characteristics, interests and biases of the target audience (see Section 2.2.2). Other activities undertaken by instructional designers include performing a task and objective analysis to determine what exactly will be taught and how; a media analysis to determine which media will be used and how; and finally course design which involves writing the instructional content and assessing the course objectives using relevant assessment mechanisms (e.g. multiple choice quizzes, simulations, and/ or problem-based learning activities) (Gagné et al. 2004; Dick, Carey and Carey 2005; Clark and Mayer 2011).

Technical communicators need excellent interviewing skills. If a technical communicator is not a subject-matter expert (SME), he/she needs to be able to ask the right person the right questions. Typically, larger companies have a panel of SMEs who are available to technical communicators when they need them. Technical communicators also need to be capable project managers (see Section 2.2.2). They need to be able to use software to create Gantt charts and schedules and they also need to be able to manage human, financial, and technological resources. Quite often, senior technical communicators move to project management roles where they manage a team of writers.

3.2 Writing considerations

There are a number of writing considerations that must be borne in mind by technical communicators. Firstly, because a reader-centred approach is usually recommended (Schriver 1997), readability levels should be carefully considered. Various measures can be used to determine readability levels, including the Flesch Reading Ease Scale and the Gunning Fog Index. The Flesch Reading Ease Scale awards a score to a

document using a formula based on the number of words, number of syllables per word, and number of sentences (Redish 2000). Documents with high Flesch scores are considered easier to read; documents with low scores are considered more difficult. The Gunning Fog index examines the average sentence length and the percentage of "hard" words. Using this formula, short sentences written in plain English tend to achieve a better (lower) score than complicated lengthy sentences. There has been considerable debate about the usefulness of readability formulae as a document is not automatically readable if it contains few words, each with a small number of syllables; other factors such as writing style and relevance to the target audience must also be taken into account. See Redish (2000) for a discussion of some limitations of readability formulae.

Technical communicators can take a number of different approaches to writing style. For example, if the document is a manual for a generic software application, the writing style should be written in a way that is appropriate for lay users of that application and it should quickly answer the questions that end-users may have. However, if the document is a manual for an aircraft, the writing style should be appropriate and sufficiently technical for experienced aircraft personnel. As discussed in Section 2.2.2, corporations often develop style guides for the writers involved in documentation projects. Strunk and White's *The Elements of Style* is a staple text in most writers' libraries and summarises rules that will ensure "cleanliness, accuracy, and brevity in the use of English" (Strunk and White 2000: xiii). Another writing skill that is valued greatly is the ability to write Global English – "written English that an author has optimized for a global audience by following guidelines that go beyond what is found in conventional style guides" (Kohl 2008: 2). Documentation is frequently translated into multiple languages so adoption of a Global English style helps facilitate translation later on. Global English is suitable for all types of documentation (Kohl 2008).

3.3 Structured authoring

Technical communicators must keep abreast of emerging programming languages and standards such as the HyperText Markup Language (HTML), eXtensible Markup Language (XML), Darwin Information Typing Architecture (DITA), and Cascading Style Sheets (CSS). HTML and XML are programming languages used by web browsers to render documents; for example, the HTML language is the standard language behind most web pages and comprises HTML tags that delineate different parts of a page (e.g. headings, body text, and graphics). XML is a more advanced version of HTML that enables web developers and writers to create customised tags with appropriate names (e.g. 'customer-name', 'company-address', and 'telephone-number'). DITA is an XML-based architecture that facilitates the creation of task, concept, and reference topics for all types of documentation (Bellamy Carey and Schlotfeldt 2011). CSS is a language that can be used to ensure consistency in overall presentation of a

document (Andrew 2007). For example, CSS can facilitate the creation of consistent heading styles and placement of images on a web site.

3.4 Information design

Increasingly technical communicators have to work on document or information design (Schriver 1997). This related field covers the use of colour and graphics, typographical decisions, and use of chunking, formatting, and other presentation techniques, all with a view to meeting the needs of the target audience. Technical communicators have to consider not only the aesthetic features but also the appropriateness of colour and graphic choices. Typographical decisions can include deciding whether to use a serif or sans serif typeface (e.g. Times New Roman or Arial), whether to use traditional or modern (e.g. Courier New or Comic Sans), whether to use single or double line spacing (also known as leading), and whether to use regular or italics. Schriver discusses two different approaches to typography – one based on the legibility of the typeface and the other based on the rhetorical appropriateness of the typeface. She suggests considering legibility and rhetorical context together, because a legible typeface may not be particularly appropriate for the document type. For example, the Comic Sans typeface would not be appropriate for a tax form, even though most readers would consider it legible.

Chunking refers to the grouping of related text or objects using formatting techniques such as boxes, highlighting, and underlining, to stress certain text or objects. As mentioned previously, standards such as CSS can also assist in consistent formatting and positioning of document objects. Technical communicators need to be cognisant of how their documents will appear in multiple media formats; for instance, a web page may appear as intended on a standard PC browser but it may not be responsively designed for a smartphone with a smaller screen. Many authoring tools now facilitate responsive content development for different devices (e.g. tablet devices, mobile devices, and desktop PCs).

3.5 Usability

Another field that is frequently of relevance to technical communicators is usability. In general terms, "usability applies to all aspects of a system with which a human might interact, including installation and maintenance procedures" (Nielsen 1993: 25). Usability can refer to any object, not just documentation, but technical communicators are typically concerned with the usability of their documentation or user interfaces. Nielsen highlights the importance of five usability attributes:

- Learnability: is the system easy to learn and can the user perform some task without too much delay?
- Efficiency: does the system facilitate a high level of productivity, once the user has learned how to use the system?
- Memorability: is the system easy to remember, even if the user has not used it in a while?
- Errors: does the system minimise the number of errors made by users and is it easy to recover from errors if/when they do occur?
- Satisfaction: is the system pleasant to use?

For example, if a technical communicator is involved in the design and development of a web-based e-learning course, he/she would bear a number of considerations in mind, including:

- Usefulness of the navigation system: are the hyperlinks and menu items appropriately named and do they function as intended?
- Location of navigation controls: are they suitably located? For example, are the page forward and backward buttons located in the bottom-right corner of the screen where most users would expect to find them?
- Usefulness of the interface design: is the interface designed for the target audience, with features that will help users orientate themselves around the interface? For example, is there a sitemap with clickable links and is there a search option?
- Writing style and content: are these appropriate for the target audience?
- Colour schemes and graphics: are these appropriate and aesthetically pleasing for the target audience?

Technical communicators are often involved in usability studies, whereby a small sample of users from the target audience are asked to perform a number of tasks using the documentation or interface (the product). A commonly-used usability testing method is known as the 'think-aloud' method (Nielsen 1993), which requires a sample user to discuss how and why he/she is interacting with the product, as he/she performs various tasks. In addition to measuring performance levels with the task (e.g. the number of tasks completed and the time taken to complete the tasks), the qualitative data can give usability testers valuable information about what the users *expect* the product to do, why they think it should do that, and what they think about the overall design. More recently, eye tracking research has been used to record where users look when they are interacting with an interface (see Nielsen and Pernice 2010, for studies on eye tracking web usability).

3.6 Other considerations

In addition to the skill-sets outlined above, technical communicators also have to bear legal, ethical, and cultural considerations in mind. Legal considerations are ever evolving and require technical communicators to have sufficient knowledge of intellectual property (IP) law. This is becoming an increasingly important topic, as content can appear simultaneously on- and off-line and companies are therefore at a greater risk of litigation. Technical communicators need to get permission if they wish to use others' images and content in their documentation. They must, furthermore, make sure they behave in an ethical manner when collecting data and when writing documentation; for example, they must seek ethical approval prior to asking potential users to participate in a usability study and they must consider how their content could have serious (potentially fatal) implications for the end-user, if it is not written correctly. Strother, Fazal and Millsap (2009) discuss the legal and ethical issues of corporate blogging and highlight that blog comments can have non-legal as well as legal risks. Also, they note that bloggers should not assume they can say what they like, as some countries have censorship standards. Dombrowski (2007) discusses communicators' increasing concerns about ethics and values in terms of their desire to "limit liability exposure" but also to strengthen their "sense of shared humanity" (ibid.: 316). Technical communicators are also consumers of communications.

As discussed in Section 2.2.2, text, graphics, and multimedia often need to be internationalised, to facilitate localisation into different languages later on (Esselink 2000). Cultural considerations can relate to appropriate use of colour and graphics, as well as writing style; an interface design or writing style that is appropriate in one culture might be deemed inappropriate or even offensive in another culture.

4 Conclusions

Technical communication is an evolving field. The range of skills required to carry out the role is broad, and technological developments such as agile development models, new media, social networking and user-generated content make the skillset increasingly expansive. However, essential requirements of the role, such as collaboration and strong writing skills, remain constant.

Perhaps the most important skill is communication, since technical communicators must communicate technical content to lay users. They must also constantly interact with other professionals, such as SMEs, project managers, and developers. Furthermore, a large part of the role involves working within teams, often in new team structures such as agile and virtual teams. While the field will continue to evolve and the skill-set may become *even more* complex, the communication requirement will remain paramount.

References

Alred, G. J., W. E. Oliu and C. T. Brusaw. 1992. *The Professional Writer: A Guide for Advanced Technical Writing*. New York: St. Martin's Press.

Andrew, R. 2007. *The CSS Anthology: 101 Essential Tips, Tricks and Hacks*, 2nd edn. Melbourne: Sitepoint.

Bellamy, L., M. Carey and J. Schlotfeldt. 2011. *DITA Best Practices: A Roadmap for Writing, Editing, and Architecting in DITA*. Indianapolis: IBM Press.

Buchem, I. and H. Hamelmann. 2010. Microlearning: A strategy for ongoing professional development. *eLearning Papers* 21. 1–15.

Carroll, J.M. 1998. *Minimalism Beyond the Nurnberg Funnel*. Cambridge, MASS: MIT Press.

Clark, R. C. and R. E. Mayer. 2011. *E-Learning and the Science of Instruction*, 3rd edn. San Francisco, CA: Pfeiffer.

Connors, R. J. 1982. The rise of technical writing instruction in America, *Journal of Technical Writing and Communication* 12(4). 329–352.

Coppola, N. W., S. R. Hiltz and N.G. Rotter. 2004. Building trust in virtual teams, *IEEE Transactions on Professional Communication* 47(2). 95–104.

DeRespines, F., P. Hayward, J. Jenkins, A. Laird, L. McDonald and E. Radzinski. 2012. *The IBM Style Guide: Conventions for Writers and Editors*. Indianapolis: IBM Press.

Dick, W., L. Carey and J. O. Carey. 2005. *The Systematic Design of Instruction,* 6th edn. Boston, MA: Pearson, Allyn and Bacon.

Dicks, R.S. 2004. *Management Principles and Practices for Technical Communicators*. Boston, MA: Allyn and Bacon.

Dombrowski, P. M. 2007. The evolving face of ethics in technical and professional communication: Challenger to Columbia. *IEEE Transactions on Professional Communication* 50(4). 306–319.

Esselink, B. 2000. *A Practical Guide to Localization*. Amsterdam and Philadelphia: John Benjamins.

Esselink, B. 2006. The evolution of localization. In A. Pym, A. Perekstenko and B. Starink (eds.), *Translation technology and its teaching,* 21–30. Tarragona: Intercultural Studies Group.

Flammia, M., Y. Cleary and D. Slattery. 2016. *Virtual Teams in Higher Education: A Handbook for Students and Teachers*. Charlotte, NC: Information Age Publishing Inc.

Gagné, R. M., W. W. Wager, K. C. Golas and J. M. Keller. 2004. *Principles of Instructional Design*, 5th edn. Belmont, CA: Thomson Wadsworth.

Gentle, A. 2010. *Conversations and Community: The Social Web for Documentation*. Laguna Hills, CA: XML Press.

Hackos, J. T. 1994. *Managing Your Documentation Projects*. Hoboken: Wiley.

Heimgartner, S. and M. Locke. 2006. A tale of two writing teams. In *Proceedings of AGILE 2006*, 295–304. Minneapolis, MN, USA, 23–28 July 2006. Minneapolis: Institute of Electrical and Electronics Engineers (IEEE).

Horton, W. 1995. *Designing and Writing Online Documentation: Hypermedia for Self-supporting Products. Hoboken: Wiley.*

IEEE Professional Communication Society. 2018. Constitution [online]. http://sites.ieee.org/pcs/constitution/#article2 (accessed 18 April 2018).

Institute of Scientific and Technical Communicators. 2018. Value of technical communication [online]. http://www.istc.org.uk/value-of-technical-communication/ (accessed 18 April 2018).

Keen, A. 2007. *The Cult of the Amateur: How Blogs, MySpace, YouTube, and the Rest of Today's User-generated Media are Destroying Our Economy, Our Culture, and Our Values*. New York: Doubleday.

Kohl, J. R. 2008. *The Global English Style Guide: Writing Clear, Translatable Documentation for a Global Market*. Cary, NC: SAS Institute Inc.

Markel, M. 2012. *Technical Communication*, 10th edn. Boston, MA: Bedford, St. Martin's.
Nielsen, J. 1993. *Usability Engineering*. Burlington, MAS: Morgan Kaufman.
Nielsen, J. and K. Pernice. 2010. *Eyetracking Web Usability*. San Francisco: New Riders.
Pope-Ruark, R. 2015. Introducing Agile project management strategies in technical and professional communication courses. *Journal of Business and Technical Communication* 29(1). 112–133.
Redish, J. 2000. Readability formulas have even more limitations than Klare discusses. *ACM Journal of Computer Documentation* 24(3). 132–137.
Redish, J. 2007. *Letting Go of the Words: Writing Web Content the Works*. Burlington, MAS: Morgan Kaufmann.
Redish, J. 2010. Technical communication and usability: intertwined strands and mutual influences. *IEEE Transactions on Professional Communication* 53(3). 191–201.
Robey, D., H. M. Khoo and C. Powers. 2000. Situated learning in cross-functional virtual teams. *Technical Communication* 47(1). 51–66.
Rubens, P. 2001. *Science and Technical Writing: A Manual of Style*. London: Routledge.
Rushkoff, D. 2009. *Life Inc.: How the World Became a Corporation and How to Take it Back*. London: Bodley Head.
Schriver, K. A. 1997. *Dynamics in Document Design*. *Hoboken*: Wiley.
Society for Technical Communication. 2018. Defining technical communication [online]. https://www.stc.org/about-stc/defining-technical-communication/ (accessed 18 April 2018).
Spilka, R. 2010. *Digital Literacy for Technical Communication: 21st Century Theory and Practice*. London: Routledge.
Strother, J. B., Z. Fazal and M. Millsap. 2009. Legal and ethical issues of the corporate blogosphere. *IEEE Transactions on Professional Communication* 52(3). 243–253.
Strunk Jr., W. and E. B. White. 2000. *The Elements of Style,* 4th edn. London: Longman Publishers.
World Wide Web Consortium. 2015. Localization vs. internationalization [online]. https://www.w3.org/International/questions/qa-i18n (accessed 18 April 2018).

Markus Nickl

17 Instructional texts – learn how to get things done

Abstract: Instructional texts are often equated with school textbooks and academic teaching material. This chapter argues that a) not all texts for teaching purposes are instructional and b) instructional text has a scope far beyond a mere educational context. It shows that instructional texts are an important segment of text production in everyday life as well as in professional settings.

Instructional texts are characterized as a genre of texts dominated by directive speech acts and by a textual aim that tries to achieve knowledge transfer on a practical level (as opposed to theoretical knowledge). The predominance of directive speech acts and their textual aim lead to common traits governing instructional texts regardless of their overall topic.

This chapter also demonstrates the importance of comprehensibility as a factor for evaluating instructional texts as well as how such comprehensibility may be assessed. Finally, it attempts to take a look into the future of instructional text by considering current trends and extrapolating from them the potential consequences for professional writing.

Modern times are complex. We live in a world where each expert remains by necessity a layperson in many fields. Consequently everyone requires instruction at some point in order to get things done. Instruction might appear to be a big word implying a convoluted process, a formal setting or even an educational setting. But if we consider the concept of instruction more carefully, we will discover that instructional texts are everywhere. A few examples:

- How do you bake a cake? Find a recipe!
- How do you repair a broken pdf file? Search the internet for a relevant faq!
- How do you fill in this application form? Turn the page and refer to the guideline.

These cases and numerous others fall under the rubric of instructional text. All of the above texts supply people with assistance, enabling them to perform tasks: People need instruction in order to accomplish tasks. Moreover, instructions increase reader competence, that is to say: they serve as a form of empowerment, providing the expertise required for them to perform a greater number of tasks. As you can see, the realm of instructional texts extends far beyond a strictly educational setting; indeed, school textbooks constitute a relatively minor subset of the whole class of instructional texts. We will take a deeper look into the different genres of instructional texts in the next chapter.

Markus Nickl, Fürth (Germany)

https://doi.org/10.1515/9783110228014-017

Instructional texts are virtually ubiquitous, yet they are still little understood. Research into the area began only a few decades ago. Meanwhile, those decades have seen increased rigor in scholarly research on the subject as well as the establishment of related professional vocations (e.g., technical writers and textbook authors). This is made apparent by the increased quality and improved usability of the texts currently being produced. Nevertheless, the lion's share of instructional texts remain "unexplored" by linguistics and consequently are being written by individuals with little or no professional knowledge about the main factors governing the quality of these texts.

1 What are instructional texts?

This question actually raises two further questions, namely: "What constitutes a text?" and "Which texts are to be considered instructional?" Answering these questions is more problematic than it might initially appear.

1.1 Texts

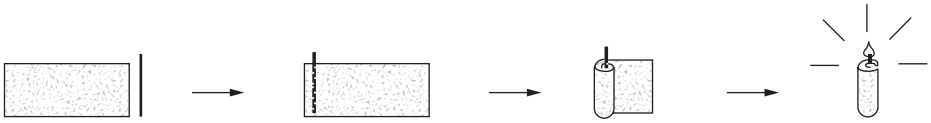
Upon reflection, we seem to know intuitively what constitutes a text. An impromptu definition might be something along the lines of: "pieces of written language used to communicate". However, problems inevitably arise whenever certain aspects touch the grey areas of textuality. I think we would all agree that texts may also contain pictures. That said, is there a limit to how many pictures a text may contain? Which text/visual-ratio is permitted before a text ceases to function as a text? Consider the following short set of instructions for creating a candle:

Prerequisites:
a leaf of beeswax
a cotton wick

How to:
1. Place the wick almost (but not quite) at the left edge of the beeswax leaf. Take care that part of the wick sticks out from the top of the beeswax leaf.
2. Gently fold the left margin of the beeswax over the wick.
3. Now wrap the wick and its coat of beeswax around itself until the whole leaf of beeswax is used up.

Your candle is now ready to be lighted.

This is obviously a text, and an instructional text at that. Now consider the following instructions (Figure 1):



As you can easily see, this sequence of pictures is equivalent to our text example. Should we consider our picture a text, then? If not: would it become a text with the addition of the following textual descriptions?

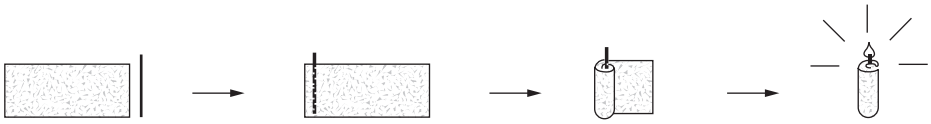


Figure 1: Multimodal instructions. Text – Image – Continuum.

I assume that if you answered "No!" to the former question, you will do the same with the latter. To be sure, there is no definitive answer to this question. But regardless how you judge the textuality of this example, it demonstrates two common aspects of instructional texts:

- Instructions are an utterance that may be either verbal or nonverbal. Even complex instructions need not necessarily rely on text or spoken language (Marcel and Barnard 1979)
- Therefore, instructional texts are a class of texts exhibiting extreme variability. They may be realized in a number of ways ranging from
  - spoken instructions (such as route directions) and
  - purely textual instructions (such as patient information forms) to
  - predominantly pictorial instructions (such as an IKEA assembly manual) and even to
  - instructional films and animated features (cf. Lowe 2007).

1.2 Instructions

Since the textuality of instructions eludes a simple definition, we might wonder whether the term "instructional" might be easier to define. On first sight this seems to be the case. But does this really reveal the whole picture? The following questions illustrate how the meaning of "instructional" in "instructional text" is not as clear as it appears at first blush.

In most circumstances, an instructional text is simply equated with texts used in an educational setting. But what is the core feature present in all examples of this text class "instructional texts"? Is it that they are used to teach facts/states of affairs/processes? Well, there are many texts that teach things (or texts that we might learn from). Are these texts required to be used in some educational institution, regardless whether a school, university or similar institute? If so, what about scientific papers? While they are not instructional by intent, they are often used to teach academic seminars. Do they become instructional, just because the reader uses them in order to be instructed?

On the other hand, what if you use a school textbook in order to learn while at work? Will it become less instructional by changing the setting? Obviously not. So what can we do to get to grips with this elusive text class?

Let us begin with a few points that are so self-evident that we tend to overlook them. For instructional texts, instruction should be the common element. Now let us first consider school textbooks. Of course instruction plays a major role in them. Yet instruction is merely one component of a textbook's structure. An even larger share of a schoolbook's resources is dedicated to argumentation and explanation. Although we tend to confuse these terms, they are by no means synonymous. While we use instruction to show our readers how to follow a series of steps so as to correctly perform a certain task/action, we use explanation to provide our readers with cognition. Whereas the goal of an instructional text is the promotion of a skillset, the goal of an explanatory text is the dissemination of knowledge. To exemplify this difference, let us recall the example with the scientific paper. Such a paper might be instructional or argumentative, depending on the topic. Most scientific papers will argue some specific topic. Therefore, they may easily be used as explanatory or argumentative texts for educational purposes. There is also even a small segment of scientific papers whose primary objective is that of instruction (e.g., scientific experiments presented in order to allow other researchers to replicate them).

If we accept this basic distinction, then it becomes clear why the instructional text cannot be limited to the domain of school and university. There is a whole range of situations, in which we create texts in order to provide others with the means to perform activities. Just a few examples:

- How do I get from here to there? Route directions are a very basic text class with mainly instructional intent.
- How do I play this game? A book of rules offers the players an explanation of the game's objectives, boundaries and guidelines.
- How do I bake a cake? The recipe in a cook book explains what to do with the listed ingredients.
- A pharmaceutical company must maintain tight control of its drug formula (to prevent others from reproducing it).
- How do I drive a car? A driving instructor shows you how.

As you can see, instructions may be produced by professional experts such as schoolbook authors, technical writers or company training experts. That said, many instructional texts are also produced by amateurs.

Should amateurs be excluded from giving instruction? Of course not. Instructing others is a universal ability, one we even share to a certain extent with other species in the animal kingdom like the macaques (c. f. Masataka et al. 2009). Considering that animals are capable of instruction without recourse to verbal language, it should come as no surprise that we humans are likewise able to instruct pictorially or nonverbally (though for the rest of this paper we will mainly concentrate on the linguistic aspects of instructions).

Typically, most of the traits that we will subsequently discuss also apply for privately produced instructional texts. There are, however, some minor differences: in most cases, amateurs are not able to use functional design as efficiently as professionals.

This often results in a rather untypical layout with long passages of run-on text. Furthermore, amateurs tend to phrase instructional passages more politely. At first, this might seem to be a good idea. Unfortunately, politeness often manifests itself in oblique formulations. Instead of simply ordering an individual to perform an action, we end up requesting or advising them to do so: “Could you open the door?” or “You should avoid touching the surface.” As sensible as this may be in real-world conversations, such phrasing leads to misunderstandings in instructional texts. Hence, professional writers tend to maximize textual concreteness, even at the cost of ignoring some social conventions.

2 Common traits of instructional texts

Let us now take a closer look at instructions. What are they? How can we characterize them linguistically? As a starting point, let us first analyse the meaning and implications of the verb “to instruct”. To instruct implies the participation of two parties, i.e., the person providing instruction (the instructor) and the one receiving it (the instructed). It also implies a disparity in the participants’ respective knowledge bases, with the instructor possessing knowledge that the instructed needs. The act of instruction seeks to equalize the general knowledge level. Finally, instructions relate to a differential in process-oriented knowledge, aim at enabling people to do things rather than merely providing knowledge of what or why things are.

From a linguistic standpoint, it becomes clear that instruction falls quite neatly into Johns S. Searle’s class of directive speech acts (Searle 1969). This separates them from representative speech acts, which seek to inform people about things (and which would also cover argumentative or explanatory texts, although these also target different knowledge levels).

If you examine instructional texts more closely, you will find a large number of directive speech acts, but you will also notice many speech acts that are not directive in nature. Does this mean that these texts are not fully instructional? Does this perhaps even mean that the entire text might not be classified as instructional?

Of course not. There many reasons for the use of non-directive speech acts in instructional text. A few examples will explain why this is so.

1. Instructions often deal with situations in which an activity may lead to injury or damage. Therefore, warnings play an important role in instructional texts. "Don't turn right at this point, or you will find yourself in the old town center." "Don't stop stirring the risotto or it will burn."

   "Danger: Do not remove the lid unless the appliance has been disconnected." Warnings are a part of the directive class of speech acts. That said, it should be clear that they also do not take centre stage in any given instructional text, playing merely a supporting role. Nevertheless, they do remain vital, since instructional texts would not function properly without them.
2. Any process is oriented towards a goal, a desired end to be achieved. Therefore, instructions often make promises, a feature belonging to the commissive variety of speech acts. Consider the following examples: "Always keep right and you will reach the address without any problems." "Stir frequently and you will create a rich, creamy consistency."
3. Often procedures have prerequisites that must be fulfilled before the procedure may begin. As representational speech acts, these text segments take an important, even integral role in the activity sequence.

As you can see, many different speech acts interlock in the composition of instructional texts.

Most instructional texts rely on comparatively rigid structures, which are usually organized in a step-by-step manner. In technical writing (but increasingly also in other fields of instructional writing) this speech act sequence is used to standardize instructions. Consider this example:

(warn) *Never use the names of existing accounts. Existing accounts will be erased!*
(describe-prerequisites) *You need to be an administrator to install new user accounts.*
(instruct 1) *1. Open the system control centre.*
(instruct 2) *2. Activate the control "new user".*
(instruct 3) *3. Allocate user rights (read, write, execute).*
(describe-result) *You will find the new user profile in the "user control centre".*

Before each sentence, I have parenthetically noted the speech act that describes the subsequent sentence (it would not be present in the final printed document). You can see a clear speech act sequence guiding the user through the instruction. In order to standardize the output of a multi-author team, you might stipulate that basic

instructions must always follow this exact speech act structure. This would assure that a) warnings would always be the initial element, b) prerequisites are always mentioned, c) each activity concludes with a result, thus providing the reader with confirmation whether or not the activity was successful.

Since instructional texts tend to be organised as a step-by-step procedure, layout and design do much to support this sequential structure. Ideally, this results in a layout that attempts to clarify textual functions (cf. Waller 1982). Therefore, unlike many other forms of publication, instructional text design is mostly not aimed at producing an emotional reaction or reception. This is even true for texts that seemingly wish to invoke some positive emotional response, e.g., cookbooks. Certainly, cookbooks often try to promote a certain atmosphere connected to the cuisine's country of origin, to the sensuality of cooking in general and to the joy of preparing high-quality food. But regarding the recipes themselves, you will notice that the texts and the layout are quite standardized – compartmentalizing the name of the meal, the ingredients, the individual steps for preparation and any supporting information like nutritional values, preparation time or difficulty level. In my lectures, I sometimes conduct the following experiment: I present a sketch of a recipe's layout, in which all text has been replaced with grey columns. I then ask my students to tell me which text type might correspond to a particular column. About 80 percent of the time, students correctly guessed the text types on their first attempt.

So you can see, layout in instructional texts lends itself easily to conventionalisation. Some of these designs and pictographs have even undergone official standardization. This is the case with ANSI Z.535, a US-norm that standardizes the layout, pictographs and phrasing of safety and accident prevention alerts. The following illustration (Figure 2) demonstrates different types of hazard.

Not only layout and design play an important part in instructional writing. Instructional writing has always strived for a greater level of illustrativeness and for a more

⚠ DANGER	DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING	WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	CAUTION indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.
CAUTION	CAUTION, without the safety alert symbol, is used to relate practices not related to personal injury
NOTICE	NOTICE indicates a property damage message.

Figure 2: Safety signals according to ANSI Z.535.

direct interaction with the reader. Consequently, from the beginning instructional writers attempted to exploit the potential of current technologies and media. An early example is a text manual describing a how-to on telephone use. This text was not only distributed as a printed document; the telephone companies created dedicated phone lines customers could call in order to listen to the instructions being read aloud. Another early example is provided by those television segments from the 1960s that demonstrated the correct behaviour in the event of nuclear assault. Today, instructional films and infographics constitute an important part of the landscape of instructional text. The current tendency is to reduce the amount of text in instructions and to rely more on visual and acoustic communicative approaches. This offers various advantages:

- more illustrative communication,
- increased reader motivation,
- conveyance of marketing messages (trendy, high-quality),
- improved translatability,
- reaching illiterate "readers".

Even where instruction is still presented as written text, it has become more dialogic. One example would be those companies that have introduced Twitter support channels that provide the opportunity to communicate directly with customers and offer troubleshooting in an iterative process. Moreover, there are the examples of eLearning, web-based training and mobile learning: i.e., instructional writing adapted to computers, the internet and to smart phones, respectively. Each of these cases permits the adoption of new strategies that would scarcely be possible with a hard-copy instructional product. In computer and smartphone based training, instructional writers often include dialogic elements like student chat rooms or feedback from a human e-learning tutor. They incorporate animations, simulations and interactive models. So, instructional texts increasingly become instructional environments, where users can access information in a multi-medial and multi-modal learning experience.

3 Instructional text and comprehensibility

Since instructional texts aim at furthering the readers' skills and capabilities, comprehensibility has always played a major role in evaluating this text class. As early as the seventeenth century, Jan Amos Comenius emphasized the importance of illustrativeness for educational texts (cf. Herzog 2004). Comenius used this term to denote the use of pictorial elements as well as for the style and content of a text. He stressed the importance of examples in texts and even formulated an incipient kind of target group orientation, wherein he showed that language teaching must take into account the knowledge level of the child and that any teaching must start with the facts a pupil already knows.

From its inception, traditional rhetoric and stylistics have always exerted considerable influence on instructional text. Indeed, they continue to do so. Many technical writers cite Strunk and White's *Elements of Style* or the Chicago manual of style as the ultimate authority on the question of how to produce technical writing. Quite a feat for two books that had their first print runs in 1919 and 1906 respectively. Yet despite their considerable success, traditional stylistics leaves much to be desired as a model for optimizing instructional text. Stylistics tend to treat "language" or "style" as something that can be optimized per se. They often claim that there is a style best suited for all kinds of texts. As we have seen above, instructional texts differ in many ways from, say, newspaper articles or philosophical essays. A good theory of instructional style should consequently reflect this state of affairs. Therefore, many companies have developed customized style guides, dealing with instructional texts such as technical writing or support communication (cf. Microsoft's styleguide for online documentation: http://www.microsoft.com/Language/en-us/default.aspx).

Are there any alternative ways to improve comprehensibility? A good starting point is to consider typography and text design. In the mid twentieth century psychologists began testing the legibility of various print types. They discovered quite a number of predictable (and some not-so-predictable) facts. Unfortunately, we cannot cover them in detail here. Just to give you an example, one of the more surprising findings was that whitespace plays a significant role in text legibility. Since layout in general plays a large part in the legibility of instructional texts, it is clear that results like these have their impact on the presentation of instructional documents.

Another approach to get to grips with text comprehensibility considers the textual elements themselves. This, too, was conceived and developed by psychologists seeking to quantify textual comprehensibility and thereby provide objective criteria for readers and authors alike. Simply put, they measured word and sentence lengths of given text segments and calculated them in a formula. The number and variety of researchers advocating this approach resulted in a multitude of different formulae. One of the most prominent is Flesch's so called "readability score". To this day, readability scores are occasionally used for evaluating texts, e.g., there is a Florida State law that requires insurance policies to achieve a certain readability score (http://law.onecle.com/florida/insurance/627.4145.html). There are also several software packages that calculate readability scores, e.g., the open source software Flesh (http://flesh.sourceforge.net/). Initially this seems to fulfil the need that many authors of instructional texts often establish: an objective and easy-to-use means of determining the comprehensibility and thus the success of instructional texts. But upon closer inspection, we find it leaves much to be desired. Readability formulae are only concerned with the surface of the texts. While irregular sentence length may portend that something may be amiss with a text, it does not show the whole picture. With instructional texts, other factors like text structure or the use of instructive examples are more important. Textual elements like these determine whether or not an instructional text can be easily comprehended, thereby helping the reader to perform the actions an instruction shows.

There have been attempts to systematize the individual factors that govern comprehensibility. In the mid-1970s a group of German psychologists around Friedemann Schulz von Thun (2011) tried to aggregate different factors of comprehensibility and combine them in various clusters of comprehensibility factors. In order to determine what the most important factors of comprehensibility might be, they interviewed experts on text production (journalists, teachers, editors, schoolbook authors) about their opinions on comprehensibility. They found quite a number of different factors, which they arranged into four distinct categories: simplicity – structure – concision – motivational add-ons. The comprehensibility of texts may easily be rated by considering these four dimensions and the individual measures they encompass.

The model is still widely used in German writing classes and helps to establish a mental model for comprehensibility. It helps practitioners in the field of instructional writing to organize their stylistic tools in order to achieve a higher overall comprehensibility. On the other hand, the model has some severe drawbacks. It postulates that any text will need the same measures for and the same degree of comprehensibility. It leaves out the readers' different levels of previous knowledge and the conventions of the document's genre. Text written in such a way may easily lead to results that in some contexts might well be considered ridiculous. This shows in their own work, when the authors demonstrate how to optimize a legal text. The result might be appropriate for a children's encyclopaedia, but it would not work in the context of jurisprudence. Therefore, psychological methods do not seem to suffice for the production of comprehensible instructions.

One of the key factors for achieving greater understanding of how comprehension and comprehensibility function was the shift in focus away from surface phenomena in texts towards an investigation of the reader's/listener's interpretation process. In academia, this shift in focus was the product of cognitive theories, which proved that text interpretation is not a passive process of information-decoding, but rather an active process of meaning-construction. This made it evident that anyone wishing to improve textual comprehensibility must take into account the text's prospective readers. Comprehensibility was transformed from being merely an aspect of a text into a description of the relation between a given text and that text's target audience. This entailed that texts can no longer be characterized as comprehensible in themselves.

For practitioners this insight led to the increasing importance of techniques for analysing and modelling target groups. One notable example of these is the so called persona method (cf. Cooper 2008), which works with prototypical models of a target group. For each persona, a complete profile is constructed, detailing how the target group lives, works, which products it uses and many other facts. Unlike statistic-driven target group models, personas try to paint a vivid portrait of the target group, using narrative techniques such as giving the persona a name, listing their hobbies etc. It is evident that it is much easier for writers to adapt their style to such a profile than to mere statistic data.

But this still offers no sufficient method of evaluating the success of an instructional document.

In the early 1980s some researchers and practitioners in the field of instructional texts began to argue that comprehensibility should be assessed by the outcome of user interaction and not so much by the content and style of the texts (Wright, P. 1981), but only recently have people realized that this is a more feasible and better way to evaluate the comprehensibility of instructional texts.

Instructional texts aspire to enable the reader to perform actions. And as the saying goes: the proof of the pudding is in the eating – and the proof of instructions is in the performance. Today instructional texts are often tested with methods appropriated from testing software usability. The leaders in the field of content testing were websites, which evaluated how users interacted with their content. Since interaction often has to be guided by design and/or instructional text, soon practitioners in the field of technical writing discovered the possibilities and opportunities usability testing had to offer. Currently, many types of instructional text regularly undergo usability testing:

- car route directions (Nowakowski, Green and Tsimhoni 2003),
- technical writing (Schneider 2005; STC 2011),
- cook books (Wikipedia 2011; Raaphorst 2003),
- and numerous others.

This offers an elegant venue for authors of instructional texts. Readers' performance competence can easily be monitored after they have read the instructions. It merely becomes a matter of noting aspects of production, i.e., where/when they hesitate in performing the action, how long it takes them to complete the task, whether or not they make mistakes.

With usability testing, a firm connection between text and users can be established. Comprehensibility therefore is no longer a trait of a given text but becomes firmly connected to target groups and to real world effects.

4 The future of instructional texts

As we have seen, instructional texts cover a wide range of topics, genres, media and target groups. They often show predictable structures and a functional, down-to-earth style. As products or as texts supporting product functions, they constitute a major economic factor, especially where technical writing, support communication and business training are concerned.

Are there common trends that we can identify? What can we say about the future of these important texts? Are there previous analogous developments that could indicate the direction instructional texts might head in the future?

In fact there are – with some restrictions! Although privately produced instructional texts do not show any major trends, business instructional texts are subject to some interesting trends. These fall into four different categories, which can be analytically separated while remaining nevertheless interlocked:

- modularization,
- standardization,
- automation,
- academic foundation.

Interestingly enough, these four trends follow a development path that runs parallel to the industrial production of goods. It indicates that these texts – within a business setting – are being considered as business commodities and subject to the same economic pressures as other industrial goods. Let us take a closer look at the four trends concerning professional instructional text.

4.1 Automation

Writing instructions can be a voluminous undertaking. While the number of pages in most books seldom exceeds (or even approaches) 1000 pages, a manual for a complex product like an airplane may run well over 100,000 pages. Thus it is not surprising that early on authors tried to invent ways to automate as many steps in the writing process as possible.

Although information technology plays a crucial role in such automation, this trend started well before the widespread use of computers. Even before the eighties, many companies used standard texts, cutting and pasting them into photocopied versions of their manuals. From these humble beginnings, automation has become widespread in the production of instructional texts. The following are a few examples demonstrating how prevalent the automation process is in modern editing rooms.

One of the first stations in the automated text process is proofreading and editing. Some of these automated procedures have found widespread use even in private writing environments. A case in point is the grammar and spell checking functions of modern word processing applications. In a professional environment, tools are currently being used that offer deeper integration of those same functions. A modern language checker will typically

- identify spelling errors and provide correct alternatives,
- identify grammar errors,
- compare the text to a self-definable set of stylistic rules,
- supply alternatives for sentences concurrently with text input,
- check for the appropriateness of usage according to the current context.

Modern content management systems are a class of software for automating text production itself. In extreme cases, instructional texts become a mere compilation of standard text modules. Such texts essentially consist of three aspects:

1. the set of predefined text blocks,
2. the rules for combining these blocks and,
3. text variables (e. g. names, measurements, dates) which modify the text blocks.
   The following simple example has two individual parts, the name and the individualised registration link. More complex examples might include specific information blocks depending on the data that you submit in the application form:

> *Dear Markus Nickl,*
> *Thank you for requesting an invitation to join ResearcherID. Please accept our exclusive invitation and register today! Copy and paste this link into your browser:*
> *http://www.researcherid.com/VerifyURL.action?id=dnlNu85FHeG2fwU4AECGtr7tmnV-82k%2F9SyX%2BL6Yk9nV4eF%2RD%2C5AQvl6nrLROz3hq*
> *[...]*
> *If you have any questions about the registration process, please contact the Thomson Reuters Scientific support team (http://scientific.thomson.com/support/). Please note that the sending email address cannot accept replies.*
>
> *Kind Regards,*
> *The ResearcherID Team*
>
> *You have received this e-mail in the genuine belief that its contents would be of interest to you. To not receive these messages from Thomson Reuters Scientific, please go to our preference page (http://ts-productinfo.com/r/r.asp?671807&aea215e7518846cf&H).*

Another area where automation has gained significant influence is the translation of instructional texts. Machine translation (i.e., the use of computer software to generate automated translations of texts) continues to be viable only in restricted and well-defined areas. Artificial intelligence cannot yet grasp enough of the intricacies of language to deliver satisfactory human-readable translations. In the case of instructional texts, however, there is a detour around this dilemma. Since instructional texts are often comparably well-structured and repetitive (within the document and between different variants of documents), databased translation-memory-systems (TMS) have found widespread use in the translation of business texts. The principle behind these software systems is a simple pattern match. A TMS includes each sentence (or partial sentence, phrase) in the source language and each corresponding sentence in the target language within a database repository. As soon as a sentence is identified as a repetition, it is matched with its corresponding translation from the repository. This works well with instructional texts, since many instructional sentences (and warnings) are repeated throughout the text. The system works even better with different types of instructional documents (e. g., technical documentation vs. training material). Of course, it works

best when the translation work is being performed on different variants of the same document (e.g., different product models from the same series) or different versions of the same document (e. g., training material for software versions 1.0, 2.1 and 3.0). After the initial configuration the database will be stocked with a large amount of pre-translated texts, thus reducing translation costs immensely.

4.2 Standardization

Standardization is one of the prerequisites of automated text production. As we have seen above, instructional texts are in themselves fairly standardized. This is due to the fact that instructions often follow a strict procedure designed to focus reader attention on an easy step by step application of the instructions, rather than distracting the reader with convoluted textual variation.

On its most basic level, standardization involves aspects of layout and design exclusively. The design of instructional texts is usually quite complex. Consider the design of a cookbook compared to (e.g.) a novel. The cookbook indicates different text segments, such as a list of ingredients, a cooking procedure or various statistical data (calories, preparation time etc.) in a consistent and straightforward manner. When successfully executed, the layout and design of an instructional text support the different text segments, thereby reflecting the inherent structure that instructions exhibit as a text class.

Modern instructional texts reveal a trend towards the further advancement of standardization. On the level of word and phrase, instructional texts often employ controlled vocabulary or terminology. The control and usage of particular terminology present a common dilemma for companies, owing to several factors:

- Author collaboration: When various authors work together, they automatically/inevitably? use different synonyms to denote the same concept, thereby muddling the terminology pool with confusing variants.
- Text revision: Instructional texts typically are revised and reused ad infinitum. Even when these revisions are not being undertaken by different authors (which is more often than not the case), it is still difficult to adhere to a consistent vocabulary. An author might forget s/he used “point out” in the first version of the document, when “indicate” seems a much more attractive alternative five months later.
- Department structures: Different departments in a company might coin different terms to refer to the same product. A machine that developers have designated LZ 311 might end up being called “Multivac Exceller” in Marketing, as “the Exceller” in sales, while those in Support know it under “Product Version 19023”.
- Translation: One term may be translated accurately by different terms in the target language. Terminology management therefore has to maintain consistent

translations. It also must guarantee that product names remain consistent in any of the countries the product is available.

In a simple setting, a terminology system may consist of a list of terms, translations of these terms for each supported language and a list of unapproved terms. List administration can be maintained in a simple Excel file or a database. In more complex settings, companies often employ terminology management systems. This class of software tools does not merely list the terminology but identifies terms, their cognates and unapproved terms in the instructional texts and supplies the correct usage. The software also takes into account the textual context and target audience, allowing a text aimed at end users to display terminology different from that of a text intended for maintenance engineers. Finally, modern terminology management systems often include term harvesting modules, i. e., for identifying terms in a given corpus. Term harvesters often use combined statistical and linguistic approaches, thus allowing them to propose terms not easily identifiable as members of the same cognate pairs.

Standardization is not yet as widespread, when we look beyond the word level. This may be due to the fact that grammatical standardization unleashes its full potential only with vast text corpora, which are produced by a large number of authors and over a long stretch of time. A typical application is Simplified Technical English (STE 2011; cf. ASD 2011), which is widely used in the field of aeronautic instructional texts such as documentation, flight handbooks and even flight communication. With STE instructional texts become standardized regarding

- applicable terms,
- applicable word meanings for polysemes,
- permitted grammatical structures and the realization of these structures,
- grammatical constructs contingent on text parts.

STE standardizes instructional texts on a far reaching level. Simplified instructions attain greater comprehensibility and become machine controllable. Heretofore, it is used only in clearly restricted areas. This may be an inherent problem of large overall standardization efforts. But nevertheless it stands to reason that controlled languages will become more widespread with instructional texts.

Thus standardization seems to be a common trend for instructional texts. It is facilitated by the structure of instructional texts, which is highly predictable in comparison to other classes of text. In professional settings, this trait of instructional texts is systematically exploited in order to obtain machine-interpretable texts, to coordinate the efforts of large authoring teams and to maintain a consistent style over long publication periods or frequent revisions. It may well be expected that standardization will become even more common in the creation and maintenance of instructional texts, governing more text types and integration standardization on a deeper linguistic level.

4.3 Modularization

One effect of standardization is the enabling of instructional text modularization. Many instructional texts use similar text segments repeatedly. From a business perspective, this means that the same work is being performed redundantly, thereby creating a burden on the company's finances and resources.

Therefore, many companies try to identify such repetitive text segments and re-use them

- within the same document,
- within related documents,
- for different document versions,
- for different media outputs of a document.

Now where are the cases in point for the modularization of texts? Modularization realizes its full potential only in cases where there is a large collection of texts that attain a high degree of thematic and/or structural identity. Thus modularization is most often used in companies producing volume content. Instructional texts in particular fall under that description, such as support e-mails, manuals, training material or workplace instructions.

In such cases, re-use of text segments has many advantages, ranging from

- accelerated production time, fewer costs,
- superior coordination of authoring teams,
- greater consistency of terminology and style,
- improved translatability (thus saving time and money),
- easier identification of missing content; thematic integrity.

So it comes as no surprise that an increasing number of companies capitalize on modularization techniques. How do you establish modularized text production for a company's instructional texts? Essentially there are two strategies to text modularization:

- a top-down approach, where master documents are modified by including text variables (such as product names, dates etc.) and by hiding text segments,
- a bottom-up approach, where independent text segments are combined in order to produce the final documents.

Which strategy best suits a company is mainly determined by the complexity, variability and amount of the corpora. For smaller corpora, where only a few different text classes are present, a top-down approach is easily implemented and usually sufficient. Master documents for these purposes can often be created and administrated with simple text processing software like MS Word. For larger text corpora and for authoring teams with numerous members, dedicated systems for modularization are required. Usually these software systems are content management tools (CMS), a class of database applications used for editing and administrating content. A CMS is

often XML-based. It stores text in a media-independent form. That means that while the content (or text) is being written, the authors are not aware

- in which part of the document structure the content will be published (e.g., introduction, quick start information, security sections, how-to chapters),
- in which type of document the content will be published (e.g., manuals, training material, product fliers etc.),
- in which layout the content will be published, and
- in which media the content will be realised (e.g., print, online help, web applications, mobile apps etc.).

How can you create content for such environments? First of all, you have to decide on a level of granularity. Conventional levels might be sentences, paragraphs or chapters. In general it is best to choose module size of medium granularity, stretching for about three paragraphs. Smaller modules easily become unmaintainable, while bigger chunks offer little benefit in terms of reuse.

Although conventional levels of text analysis may offer a road measure for deciding module size, they do not offer much help when deciding where to set the boundaries of a module.

The reason for this might be that conventional text segments are oriented towards the thematic text structure. Since modules vary according to their overall topics, discovering a general method for module identification and limitation becomes problematic. Linguistic expertise offers a way out of this dilemma. As text linguistic research has shown since the 1970s, texts exhibit a dual structure, based on thematic progression and on the operational framework / organizational structure. Themes of instructional text may vary widely according to products, target groups and text intentions. But the speech act structure is pretty comparable for many different kinds of instructional texts, so it has become the method of choice to use speech acts as the basis for modularizing texts. Thus a set of activities constitute an instruction, which is then the delimiter for the module. You can find an example of this technique in *Common traits of instructional texts* (section 2).

Of course, if you look at modularisation from a linguistic perspective you will notice that content becomes isolated from the macrostructure of the text. This would usually lead to less coherent texts, but most instructional texts are comparatively predictable regarding their structural realisation and instructional texts are divided in themselves as comparably small chunks of information. Therefore, instructional texts lend themselves more easily to modularisation than, say, a marketing text or a business report.

4.4 Academic foundation

Another trend in professional writing (and especially in instructional texts), is the increasing amount of academic research. While writing instructions had long

been viewed as mere practitioner's work, the last few decades have seen a change in opinion. Of course there has always been research in pedagogy and thus also in classical instructive material. But this was mainly focused on issues concerning educational activities like lesson planning and exam development. The matter of how training material and instructional texts should be written remained largely a blind spot for classical pedagogy.

Today many academic disciplines focus on the production of instructional texts. Numerous universities offer technical writing programs, where some of the major instructional text classes are being researched. But there are also other disciplines that concern themselves with instructional texts. Business administration today takes a close look at after-sales processes; customer relationship includes instructional texts and platforms like support hotlines or web-based customer care centres.

A new trend is also the closer cooperation between companies and academic research. Universities today go directly into the companies and analyse how instructional texts are being produced and where there might be lines of approach for optimisation. There is a plethora of studies containing on-the-job interviews or participant observation in business authoring and content developer teams. (e. g. Borthwick and Pierson 2008)

Even companies themselves have begun to research instructional texts. There is an increasing number of internal research projects and academic theses focusing on different kinds of professional instructions: for the most part these are concerned with technical writing, but other support-related fields of instruction have received their share of attention. Typical research approaches are the identification and establishment of writing standards or aspects of usability in support-oriented text platforms. There are also an increasing number of projects that analyse the conditions and opportunities offered by new text platforms like Web 2.0 or the use of mobile devices for instructional purposes (cf. Jacquez 2012). All in all, instructional text now receives a degree of attention which far exceeds former efforts. As a consequence, instructional texts today have attained a higher level of professionalism, standardization and production speed than in the twentieth century. At the same time, instructional text has become more individualized than it previously had been, providing instruction tailored to fit its target audience – an excellent confirmation of the benefits of academic research in practical areas.

5 Conclusion

Instructional texts – at first sight they seem to be a minor part in the entirety of text production. And, admittedly, it remains a rather small sector, if you only consider school and university textbooks as instructional texts. But if we broaden our perspective somewhat, we discover that instructional texts make up a large part of all texts,

either private or professional. A few examples may give an impression of the many types of different instructional genres besides mere text books:

- route directions,
- task schedules,
- recipes,
- procedural requirements,
- training material,
- technical writing,
- support dialogs etc.

But is it legitimate to consider these texts as a common text class? Are these texts not too diverse, do they have enough in common? I think they do. There are many mutual traits that each of the above text examples shares with its peers, above all the following:

1. emphasis on directive speech acts and on achievement of a specified goal,
2. comparatively rigid and predictable structure, often visualised as numbered lists,
3. strong reader orientation, often leading to dialog-like structures or elements even in monolog texts, such as questions, summaries, explicit mention of text aims or implied reader questions.

This has consequences for instructional texts. Directive speech acts and goal-orientation seem to favour a style that is crisp and to the point. This is supported by the explicit structure of the texts. Furthermore, this structural orientation leads to texts that – on the surface – show many different layout elements, e.g., bullet lists, numbered lists, tables and running heads. Instructional texts display many of these standardised typographic and layout elements. But very often they also develop ad hoc solutions for document-specific text segments, such as special markers for activity results or prerequisites. On the macrostructural level, this often leads to a text segment in which different typographic and stylistic conventions are explained.

A less obvious consequence is that comprehensibility begins to play a major role in the discussion of instructional texts. There have been many attempts to measure comprehensibility as an inherent factor of texts. Research has shown that comprehensibility must always be studied in respect to the target readership. Therefore, modelling an instructional text's target audience is an important element of most professional writing processes in this discipline. A case in point is the applicability of usability testing for instructional texts. Instructional texts almost always seek a clear result outside the merely textual or imaginable, supplying the means for a reader to perform specific actions.

This provides the author with an opportunity to control the success of a document. It allows testing to determine a) whether or not readers will achieve the desired result, b) whether readers will achieve it in the way the instructional text intends it

to be achieved, and c) whether there are any disruptions (hesitations, comments etc.) during the execution of the activity.

When we examine instructional texts we discover a class of texts that can undergo rapid changes. This is due to several factors:

1. Instructional texts have become recognized as a commercial asset. Not only do they influence productivity, they are themselves a product (or a part of a product) and they establish a customer relationship beyond the point of sales. Textbooks, as a major component of the text class of instructions, have long been recognized as commodities. What is new in this case is that companies other than publishing houses are beginning to recognize the value of instructional texts for their businesses. This also means that instructional texts are being scrutinized in order to calculate a cost-benefit-ratio. Consequently, instructional texts are integrated into industrial production processes like automated content creation or standardization of text segments.
2. Instructional texts, more than other text types, need to be illustrative. This has been recognized as early as the seventeenth century, when Comenius proclaimed that textbooks must be illustrative in order to capture the minds of children. For a long time this simply meant the adoption of a concrete, motivating style and the sparing use of pictorial elements (since pictures were expensive to produce). Today, modern media offer new possibilities for instructional texts. Obviously, a website might not only include pictures, but also sound files or animation. With increasing frequency, instructional texts are beginning to use models of the things they wish to explain. Hence it becomes easier for the students to discover how their actions might influence the system they are learning about. For instance: A traditional textbook on hydraulics would likely include an illustration of a hydraulic system along with some explanatory text and the correct formulae for calculating hydraulic systems. Today an author might include a piece of software that allows a user to manipulate a model of a hydraulic system, thus witnessing directly how (e.g.) pressure and the diameter of a hydraulic column are connected.
3. Instructional texts are receiving more public attention. The quality of schoolbook material is now being publicly discussed, product handbooks are being evaluated by consumer protection organizations; support calls are monitored by customers and companies alike. This leads to more professional texts. But it also leads to more legally-conscious texts. When instructional texts abound with safety messages or when school textbooks receive a juridical review to ensure that no readers' sensibilities are encroached upon, it has implications on the texts, making them less direct, less open, and an example of strategically planned communication.
4. With modern technology, instructional text changes from the written to the spoken spectrum of language. In 1990 somebody would have drawn you a map or given you a written direction, naming important landmarks en route. Today most

of us will rely on a car navigation system. And: Although cook books are more popular than ever, also TV shows and YouTube films abound, showing how to prepare a fancy dinner.

So keep your eyes open and watch where the instructional text is heading.

References

ASD (Aerospace and Defence Industries Europe). 2011. Simplified Technical English. Specification ASD-STE100. International specification for the preparation of maintenance documentation in a controlled language. http://www.asd-ste100.org/ASD-STE100%20Abstract.pdf (accessed 26 March 2012).

Borthwick, Arlene and Melissa Pierson (eds.). 2008. *Transforming Classroom Practice: Professional Development Strategies in Educational Technology*. Washington D. C.: International Society for Technology in Education.

Chicago Manual of Style. 2012. http://www.chicagomanualofstyle.org/home.html (accessed 26 March 2012).

Cooper, Alan. 2008. The origin of personas. https://www.cooper.com/journal/2008/05/the_origin_of_personas? (accessed 19 April 2018)

Herzog, Nico. 2004. Das Prinzip der Anschaulichkeit - Comenius und sein Orbis sensualium pictus. Grin Verlag für akademische Texte.

Jacquez, R. J. 2012. The Mobile Learning Revolution Blog. http://rjacquez.com/ (accessed 1 August 2017).

Langer, Inghard, Friedemann Schulz von Thun and Reinhard Tausch. 2011. Sich verständlich ausdrücken. Auflage 9. S. 189ff. Ernst Reinhardt Verlag.

Lowe, Richard H. 2007. Animated Documentation. A Way of Comprehending Complex Procedural Tasks? In D. Alamargot, P. Terrier and C.-M. Cellier (eds.), *Written Documents in the Worksplace*, 231–242. Oxford and Amsterdam: Elsevier.

Marcel, Tony and Barnard, Philip. 1979. Paragraphs of Pictographs: The Use of Nonverbal Instructions for Equipment. In Paul A. Kolers, Merald E. Wrolstad and Herman Bouma (eds.), *Processing of Visible Language Vol. I*, 501–518. New York: Plenum Press.

Masataka N., H. Koda, N. Urasopon and K. Watanabe. 2009. Free-Ranging Macaque Mothers Exaggerate Tool-Using Behavior when Observed by Offspring. *PLoS ONE* 4(3). e4768. doi:10.1371/journal.pone.0004768.

Microsoft's styleguide for online documentation: http://www.microsoft.com/Language/en-us/default.aspx (accessed 26 March 2012)

Nowakowski, C., P. Green and O. Tsimhoni. 2003. Common Automotive Navigation System Usability Problems and a Standard Test Protocol to Identify Them. Paper presented at the ITS-America 2003 Annual Meeting (CD-ROM), Washington, D. C. Intelligent Transportation Society of America. http://www.umich.edu/~driving/publications/ITSA-2003-Christopher.pdf (accessed 1 August 2017).

Raaphorst, Sebastian. 2003. CookBook: A Usability Study. http://www.cs.toronto.edu/~sr/academic/csi51221paper.pdf (accessed 26 March 2012).

Schneider, Stephen. 2005. Usable Pedagogies: Usability, Rhetoric, and Sociocultural Pedagogy in the Technical Writing Classroom. *Technical writing quarterly* 14(4), Lawrence Erlbaum Associates. 447–467.

Searle, John. 1969. *Speech Acts*. Cabridge: Cambridge University Press.
STC – Society for Technical Communication. 2011. Usability Interface. The Usability SIG Newsletter. http://www.stcsig.org/usability/newsletter/index.html (accessed 26 March 2012).
Strunk, William and E. B. White. 2007. *The Elements of Style*, 4th edn. London: Pearson Longman.
Wikipedia, "Usability", http://en.wikipedia.org/wiki/Usability (accessed 11 March 2012).
Waller, Robert H. W. 1982. Text as Diagram: Using Typography to Improve Access and Understanding. In David H. Jonassen (ed.), *The Technology of Text. Principles for Structuring, Designing, and Displaying Text*, 137–166. Englewood Cliffs, NJ: Educational Technology Publications.
Wright, Patricia. 1981. Usability: the criterion for designing written information. In Paul A. Kolers, Merald E. Wrolstad and Herman Bouma (eds.), *Processing of Visible Language* Vol. II, 184–205. New York: Plenum Press.

Part IV: **Science communication**

Jonathan J. Webster

18 The Language of Science – a systemic-functional perspective

Abstract: Over the course of history, as the need arose for more powerful and abstract theories of experience, humankind has relied on the power of language 'to reconstrue commonsense reality into one that imposed regularities on experience and brought the environment more within our power to control'. The source of that power in language lies in its potential for grammatical metaphor.

Grammatical metaphor in scientific discourse is described as 'a steady drift towards things; and the prototype of a thing is a concrete object'. Examples of grammatical metaphor include length, which is 'a junction of (the quality) "long" and the category meaning of a noun, which is "entity" or "thing"', and motion, which is 'a junction of the (the process) "move" and the category meaning, again of a noun'. With grammatical metaphor, the scientist can make the world stand still, or turn it into one consisting only of things, or even create new, virtual realities.

We will also explore how the features of scientific English have developed over time, evolving to meet the needs of the experts, giving them enormous power over the environment, but at the risk of alienating learners and turning science into 'the prerogative of an elite'.

> The language of science demonstrates rather convincingly how language does not simply correspond to, reflect or describe human experience; rather, it interprets or, as we prefer to say, "construes" it. A scientific theory is a linguistic construal of experience. (Halliday 1993/2004: 207–8)

Studies from a systemic-functional perspective into the language of science, pioneered by M.A.K. Halliday, see an evolving phenomenon which demonstrates that most fundamental ability of humankind: the ability to draw on the meaning-making resources of grammar in search of new ways of theorizing (and re-theorizing) about ourselves and our world. What has "evolved as the scaffolding for scientific knowledge" (1993/2004: 211) is "a dedicated semiotic system: a special register of a language" (1993/2004: 218).

Halliday's own interest in studying the language of science grew out of his concern "to find the source of the difficulties faced by learners of science" (2004: xv). One can only help the learner, however, to the extent that (s)he understands how the discourse works.

Halliday's search led him back into the history of scientific discourses. Out of that "excursion into history", he discovered "new strategies evolving: new ways of organizing the grammar as a resource for making meaning" (2004: xx). What he found was that over the course of history, as the need arose for more powerful and abstract

Jonathan J. Webster, Hong Kong (China)

https://doi.org/10.1515/9783110228014-018

theories of experience, humankind has been empowered by the metaphor-making potential of language "to reconstrue commonsense reality into one that imposed regularities on experience and brought the environment more within our power to control" (2004: xvii). There has been a steady drift in the grammar of scientific discourses towards things. Things have been foregrounded at the expense of qualities, processes and relations, and while this nominalizing grammar has given scientists enormous power over their environment, so much so that they can make the world stand still, or even create new, virtual realities, still it has done so at the risk of alienating learners and turning science into "the prerogative of the elite" (1989/2004: 179). "The language of science," writes Halliday, "though forward-looking in its origins, has become increasingly anti-democratic: its arcane grammatical metaphor sets apart those who understand it and shields them from those who do not" (1993/2004: 225).

1 Grammatical metaphor

Elaborating on what he means by "grammatical metaphor", Halliday writes, "Scientific discourse rests on combining theoretical technicality with reasoned argument; and each of these relies on the same metaphorical resource within the grammar. Semantically, each relies on the grammar's power of condensing extended meanings in a highly structured, nominalized form" (1999/2004: 127). Grammatical metaphor involves the junction of category meanings, not simply word meanings. The word *movement*, for example, is "a junction of (the process) 'move' and the category meaning of a noun" (2004: xvi).

In the following example from a microbiology text, the metaphoric noun *movement* in the expression *movement of the solvent across the membrane* illustrates how grammatical metaphor has reconstrued a happening into a some*thing* which now "serves as the starting point for a further step in the reasoning: some theoretical conclusion can be drawn from it" (1995/2004: 20):

> When a solution of any substance (solute) is separated from a solute-free solvent by a membrane that is freely permeable to solvent molecules, but not to molecules of the solute, the solvent tends to be drawn through the membrane into the solution, thus diluting it. Movement of the solvent across the membrane can be prevented by applying a certain hydrostatic pressure to the solution.

Halliday describes three stages, or as he puts it, "three successive waves of theoretical energy" (1998/2004b: 46), as the discourse moves away from "the clausal world of the mother tongue" (1995: 21), in the direction of a nominalizing grammar with which one can reconstrue experience as a semiotic universe made of things. First, generalization, i.e. from proper noun to common noun, making possible our commonsense theories of knowledge. Second, abstractness, i.e. from concrete categories to abstract ones, making it possible to re-theorize in "uncommonsense" terms. Third, metaphor,

i.e. from congruent construals to metaphorical ones, allowing us to re-theorize over again, in the form of our technical and scientific theories of knowledge. Each wave removes us "one step further away from ordinary everyday experience" (1998/2004b: 47), but at the same time each "enlarge[s] the meaning potential by adding a new dimension to the total model" (1998/2004b: 46)

Similarly, there are successive stages in the direction of grammatical metaphor over the course of a child's education. In primary school students are introduced to abstract technical terms, "but it is only in the secondary school, with its technical, discipline-based forms of knowledge, that the student will be learning through forms of discourse where the predominating mode is the metaphoric one" (2004: xix). This, according to Halliday, is because grammatical metaphor cannot be fully apprehended until the age of puberty.

Halliday illustrates the kind of scientific discourse secondary students are likely to encounter with the following examples taken "from randomly opened pages of a senior secondary textbook, a book written for non-specialists" (1993/2004: 215–216). In each case, Halliday demonstrates how the metaphorical compares with its less-metaphorical alternative.

(1) *A further consequence of the decreasing electronegativity down Group VII is that* ***the relative stability of the positive oxidation states increases with increasing relative atomic mass of the halogen****.*
(Hill and Holman 1978/83: 243)

metaphorical	less metaphorical
the relative stability of x increases with increasing y of z	*x becomes more stable as z acquires more y*

(2) *Let us imagine a hypothetical universe in which the same time-symmetric classical equations apply as those of our own universe, but for which behaviour of the familiar kind (e.g. shattering and spilling of water glasses) coexists with occurrences like the time-reverses of these.*
(Penrose 1989: 397)

metaphorical	less metaphorical
behaviour of the familiar kind, e.g. x-ing of y, coexists with occurrences like z-w	*things behave not only in familiar ways, like y x-ing, but also in ways where the w is z-ed*

For Halliday, the label "scientific English" describes a register which is recognizable on the basis of "a cluster of associated features having a greater-than-random (or rather, greater than predicted by the unconditioned probabilities) tendency to co-occur" (1988/2004: 141), rather than the obligatory incidence of particular features. The features of "scientific English" are illustrated in the following example from an article appearing in *Scientific American* on "*The fracturing of glass*" (Michalske and Bunker 1987: 81):

(3) *The rate of crack growth depends not only on the chemical environment but also on the magnitude of the applied stress. The development of a complete model for the kinetics of fracture requires an understanding of how stress accelerates the bond–rupture reaction.*

Table 1: Grammatical analysis of "the rate of crack growth".

wording (grammatical class)	word/phrase (grammatical function)	referring to	agnate to
the rate of crack growth (nominal group)	rate (Head/Thing)	an attribute of a process	how quickly?
	crack (Classifier)	name of an attribute resulting from a process	X cracked cracks grow
	growth (Head/Thing)	name of a process	X grows
	of crack growth (Qualifier)		(the rate) at which cracks grow

Halliday notes the parallelism between the two nominalized expressions "the rate of crack growth" (see grammatical analysis in Table 1) and "the magnitude of applied stress", both of which are then related to one another by the simple present tense verbal group "depends on". Similarly the recursively post-modified nominal expression as Subject of the next sentence – "the development [of [a complete model [for [the kinetics [of [fracture]]]]]]" is related by the simple present tense verbal group "requires" to the following complex nominal expression, "an understanding of how stress accelerates the bond-rupture reaction", in which the noun functioning as Head/Thing refers to a mental process: agnate to *(we) must understand*, which in turn projects a rank-shifted clause functioning as Qualifier – "how stress accelerates the bond-rupture reaction." In contrast to the complexity evident in the construction of each nominal expression, both sentences are grammatically simple, each with only three elements: nominal group + verbal group + nominal group.

Halliday (1988/2004: 143) points out how the metaphor – *rate of crack growth* – comes to be constructed step-by-step over the course of the text: *(glass) cracks – to crack (glass) – a crack (grows) – the crack (has advanced) – (make) cracks (grow) – (rate of) crack growth*, subsequently leading to "crack growth rate": *we can decrease the crack growth rate 1,000 times*. As Halliday puts it, "the text itself creates its grammar, instantially, as it goes along" (1988/2004: 143).

Grammatically, the congruent, commonsense way of talking – in which "experience is construed as an interplay between happenings (which are transitory) and entities (which persist)" (Halliday 1995/2004: 15) – is reconstrued along the lines of what Halliday calls "grammatical metaphor". This metaphor-making potential is

"a concomitant of a higher-order stratified semiotic – once the brain splits content into semantics and grammar, it can match them up in more than one way" (Halliday 1999/2004: 123). We can re-construct our experience of reality by exploring the alternative connections between semantics and grammar, thereby expanding an already highly-elastic, multi-dimensional meaning space.

Semantics and grammar are coupled together through what Halliday calls "a relation of congruence" (1998/2004a: 96). The congruent mode of the grammar, in which a verb refers to some happening, and a noun refers to something, is what "lies behind the wealth of commonsense knowledge that children lay down in the first few years of life" (1995/2004: 14). Figure 1 shows this congruent coupling between semantic and grammatical categories (Halliday 1998/2004b: 40).

Congruence in rank		Congruence in status (elements)	
semantic	*grammatical*	*semantic*	*grammatical*
sequence	clause nexus	thing (entity)	noun (/nominal group)
figure	clause	quality	adjective (in nominal group)
element	group/phrase	process	verb (/verbal group)
		circumstance (1)	adverb (/adverbial group)
		circumstance (2)	prepositional phrase
		minor process	preposition
		relator	conjunction

Figure 1: The principle of congruence between semantic and grammatical categories.

Grammatical metaphor occurs when the two – semantics and grammar – become decoupled and then recoupled another way, re-defining the relationship between form and meaning, such that "the meaning is now represented by a different form; only, it is no longer the same meaning, because some fusion has taken place, a "semantic junction" in which the meaning of the original form has left its mark" (2004: xvi).

This recoupling both reflects and enables a reconstrual of experience. Unlike the congruent coupling between semantics and grammar, which corresponds to "a commonsense theory evolving in daily life" (1998/2004a: 59), its metaphorical counterpart in the discourses of science represents a reconstrual of experience into "a world of 'things'" (1995/2004: 21), opening them up to be observed, investigated and explained (1998/2004a: 59).

> In place of the mixed, clausal world of the mother tongue, in which experience is construed as an interplay between happenings (which are transitory) and entities (which persist), our technological world is one that consists almost entirely of things – the only "happenings" in it are the relations we set up between one "thing" and another. (Halliday 1995/2004: 21)

Figure 2 shows the various types of grammatical metaphor identified by Halliday (1998/2004b: 41–43).

Key to figure:	semantic element	grammatical class
	grammatical function	example

1.	quality ⇒ entity	adjective ⇒ noun
	Epithet = Thing	unstable = instability
2.	process ⇒ entity	verb ⇒ noun
	(i) Event = Thing	transform = transformation
	(ii) Auxiliary = Thing:	
	(tense)	will/going to =prospect
	(phase)	try to = attempt
	(modality)	can/could = possibility, potential
3.	circumstances ⇒ entity	preposition ⇒ noun
	Minor Process = Thing	with = accompaniment; to = destination
4.	relator ⇒ entity	conjunction ⇒ noun
	Conjunctive = Thing	so = cause/proof; if = condition
5.	process ⇒ entity	verb ⇒ adjective
	(i) Event = Epithet	[poverty] is increasing = increasing [poverty]
	(ii) Auxiliary =	
	(tense)	was/used to = previous
	(phase)	begin to = initial
	(modality)	must/will [always] = constant
6.	circumstance ⇒ quality	adverb/prepositional phrase ⇒ adjective*
	(i) Manner = Epithet	[decided] hastily = hasty [decision]
	(ii) other = Epithet	[argued] for a long time = lengthy [argument]
	(iii) other = Classifier	[cracked] on the surface = surface [cracks]
7.	relator ⇒ quality	conjunction ⇒ adjective
	Conjunctive = Epithet	then = subsequent; so = resulting
8.	circumstance ⇒ process	*be / go* + preposition ⇒ verb
	Minor Process = Process	be about = concern; be instead of = replace
9.	relator ⇒ process	conjunction ⇒ verb
	Conjunctive = Event	then = follow; so = cause; and = complement

Figure 2: Typology of grammatical metaphor.

10. relator ⇒ circumstance	conjunction ⇒ preposition/-al group
Conjunctive = Minor Process	when = in times of/ in… times if = under conditions of/under… conditions
11. [zero] ⇒ entity	= the phenomenon of…
12. [zero] ⇒ process	= …occurs/ensues
13. entity ⇒ [expansion]	noun ⇒ [various] (in env. 1, 2 above)
Head = Modifier	the government [decided] = the government's [decision], [a/the decision] of/by the government, [a] government(al) [decision] the government [couldn't decide/was indecisive]= the government's [indecision], [the indecision] of the government, government(al) [indecision]

* or noun; cf. mammal [cells]/mammalian [cells]

Figure 2: (continued)

The "general drift" of grammatical metaphor is "towards the concrete whereby each element is reconstrued in the guise of one that lies further towards the pole of stability and persistence through time" (1998/2004b: 40–43). Halliday illustrates this drift with the following example whose metaphoric quality is especially obvious when contrasted with its less metaphoric (i.e. more congruent) alternative:

Metaphorical original:

(4) *Recognition of the tremendous heat resistance of bacterial spores was essential to the development of adequate procedures for sterilization.*

Congruent alternative:

(5) *Until <people> recognized that bacterial spores could resist <even> being made tremendously hot they could not develop adequate procedures (?) by which <objects> could be made sterile.*

Among the various examples of processes and qualities (re)construed as nouns – *recognition, resistance, development, sterilization, heat* – Halliday notes that some, such as *resistance,* have become "technicalized", "appear[ing] in a variety of theoretical contexts from electricity to immunology each with its own specialized taxonomic environment" (1998/2004b: 38). Other terms, such as *heat,* are technical terms whose origin may be traced back to classical Greek, eventually finding its way into modern European languages via Latin. Both instances – *heat* and *resistance* – are described

as "dead metaphors" whose semogenic history began with transcategorization, culminating in "a new type of complex phenomenon" – either a quality or a process construed as a thing. Used together, *heat* + *resistance,* form a complex technical term in its own right which refers not to a resistance to heat itself, rather to the effects of heat.

Halliday differentiates between such instances of grammatical metaphor as *heat* and *resistance,* on the one hand, which have become systemic as a result of being technicalized or as a product of history, and a word like *recognition,* on the other hand, whose use, at least in the example just cited, is instantial and discourse dependent (1998/2004b: 39). In the register of diplomacy, however, as Halliday acknowledges, the word *recognition* has been technicalized, having gone from being congruent to metaphorical, and from instantial to systemic, at which point the metaphor has died and its meaning can no longer be unpacked.

Beyond nominalization, grammatical metaphor also includes "the experientializing of logical-semantic relationships: that is, reconstruing 'so' as *cause*, 'then' as *follow* and so on" (1998/2004b: 39–40). In the congruent alternative to the above metaphorical example, the conjoined sequence of processes – *recognized* and *made sterile* – "becomes a single clause; and the relator, from being a conjunction, becomes typically a verb – in this instance, there is a further shift whereby the relator is nominalized to become an adjective *essential*" (1998/2004b: 39–40).

It is not as though the choice between congruent and metaphorical is binary. Rather, as Halliday illustrates (1998/2004a: 84–85), there may exist a series of agnate forms at intermediate points along a cline of metaphoricity:

(6) *Osmolarity increases, so putrescine is rapidly excreted.*
(clause nexus: paratactic)
(7) *Because osmolarity increases, putrescine is rapidly excreted.*
(clause nexus: hypotactic)
(8) *That osmolarity increases has the effect that putrescine is rapidly excreted.*
(clause: two rankshifted clauses, finite)
(9) *Osmolarity increasing leads to putrescine being rapidly excreted.*
(clause: two rankshifted clauses, non-finite)
(10) *Increasing of osmolarity causes rapid excreting of putrescine.*
(clause: two nominal groups, verb as Head)
(11) *Increase of osmolarity causes rapid excretion of putrescine.*
(clause: two nominal groups, mass noun as Head)
(12) *Increases of osmolarity cause rapid excretions of putrescine.*
(nominal groups, count noun as Head)

Besides the conjunctive relationship expressed by the relator *cause*, which is illustrated in the above examples, other conjunctive relationships include (1998/2004a: 85):

complex causal (e.g. *prevent, increase*)
(13) *the presence in the medium of the amino acid proline dramatically* ***increases*** *a bacterium's ability to grow in a medium of high osmotic strength*

(14) *movement of the solute across the membrane can be **prevented** by applying a certain hydrostatic pressure to the solution*

temporal (e.g. *precede*)

(15) *many failures are **preceded** by the slow extension of existing cracks*

identifying (e.g. *be*)

(16) *the most efficient energy-producing mechanism **is** respiration*

symbolizing (e.g. *signal, mark*)

(17) *the growth of attachment between infant and mother **signals** the first step in the child's capacity to discriminate amongst people*

projecting, "cause to know" / "because *x* happens, I know that *y* happens" / "think" (e.g. *suggest*, *deduce*)

(18) *Griffith's energy balance approach to strength and fracture also **suggested** the importance of surface chemistry in the mechanical behaviour of brittle materials*

(19) *relative osmotic tolerance **can be deduced** from their relative K^+ contents*

additive (e.g. *complement; correlate*)

(20) *the theoretical program of devising models of atomic nuclei has been **complemented** by experimental investigations*

(21) *the inheritance of specific genes is **correlated** with the inheritance of a specific chromosome*

2 Historical development of scientific discourses

This potential for reconstruing experience has been most evident in critical junctures in human history when it has become necessary for the discourse to evolve to keep pace with developments in mathematics, science and technology.

> We find one such reconstrual of experience in the languages of the iron age cultures of the Eurasian continent (of which classical Greek was one), which evolved discourses of measurement and calculation, and ordered sets of abstract, technical terms – the registers of mathematics and science (cf. Dijksterhuis 1950, [1961] 1986, Part 3). This grammar was carried over through classical and medieval Latin, and also, with a significant detour via Syriac and Arabic, into the national languages of modern Europe. A further reconstrual then took place in the "modern" period, with the evolution of the discourses of experimental science from Galileo and Newton onwards; (Halliday 1998/2004a: 94).

Explaining how these scientific registers came about, Halliday describes how scientists made use of pre-existing resources "to create a discourse that moves forward by logical and coherent steps, each building on what has gone before" (1988/2004: 152–153). Going back to Chaucer's *Treatise on the Astrolabe*, Halliday identifies "a kind of technical, perhaps proto-scientific discourse which is received into English from classical Greek via classical and medieval Latin" (1988/2004: 144). It was the early

Greeks who developed "the potential of deriving from the lexical stem of one word another word of a different class (technically, the transcategorizing potential of the derivational morphology)" (1993/2004: 212). Verbs and adjectives were transformed into nouns referring to abstract entities like "motion", "weight", "sum", etc. Meanwhile, it was Greek mathematicians who "developed the modifying potential of the Greek nominal group; in particular, the resource of extending the nominal group with embedded clauses and prepositional phrases" (1993/2004: 213). These resources were subsequently "taken over by calquing (systematic translation of the parts) into Latin" (1993/2004: 213). Commenting further on these developments, Halliday writes,

> More than anything else, these two potentials of the grammar, that for turning verbs or adjectives into nouns, and that for expanding the scope of the nominal group – including, critically, the potential of combining the two together – opened up a discourse for technology and the foundations of science. In Byzantium, where Greek remained the language of learning, this discourse was eventually absorbed into Arabic, which had itself meanwhile emerged independently as a language of scholarship. In western Europe, where Latin took over, it continued to evolve into medieval times; by then, however, while the outward form was still Latin, the underlying semantic styles were those of the next generation of spoken languages, Italian, Spanish, French, English, German and so on, and further developments, even if first realized in Latin, were more an extension of these languages than of Latin itself. Probably the main extension of the grammar that took place in medieval Latin was in the area of relational processes (types of "being"), which construed systems of definitions and taxonomies of logical relationships. (Halliday 1993/2004: 213).

Three centuries after publication of Chaucer's *Treatise*, in Newton's *Treatise on Opticks*, particularly in arguments and conclusions following on from his experiments, there are "some nominalizations with grammatical metaphor; [and] abstract nouns as non-technical terms (typically processes or attributes)" (Halliday 1988/2004: 150). Halliday identifies the following as "typical motifs of the *Opticks*, together with their lexicogrammatical realizations" (1988/2004: 150):

1. descriptions of experiments: intricate clause complexes; very little grammatical metaphor; abstract nouns as technical terms of physics;
2. arguments and conclusions from these: less intricate clause complexes; some nominalizations with grammatical metaphor; abstract nouns as non-technical terms (typically processes or attributes);
3. mathematical formulations: clause simplexes ("simple sentences" of one clause only), typically of the form "a = x", where a, x are long lexically dense nominal groups with multiple group + phrase embedding; abstract nouns as mathematical technical terms.

By the end of the eighteenth century, this practice of nominalizing the experiential context and using the verbal group to signal the logical relationship between processes (e.g. *a* causes *x; a* proves *y*) "has emerged as the most highly valued model for scientific writing" (Halliday 1988/2004:153). The direction of change in the evolution of scientific English is illustrated in the schematic shown in Figure 3 (Halliday 1988/2004: 155), with the latest step to date being the nominalization of the causal relation itself.

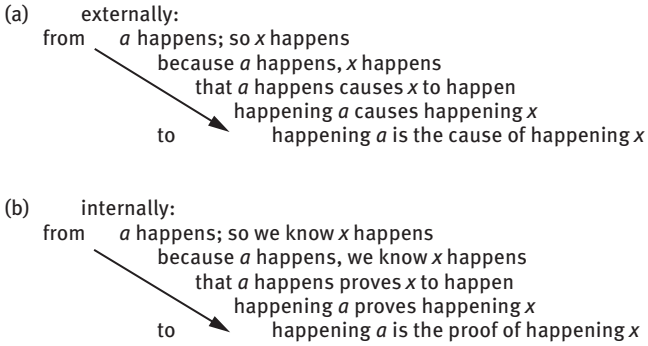


Figure 3: The direction of change in the evolution of scientific English.

Halliday explains the rationale for this direction of change as follows (1989/2004: 174–175):

> Why did scientific writers, from Isaac Newton onwards, increasingly favour such a mode of expression? – one in which, instead of writing "this happened, so that happened", they write "this event caused that event"? These were not arbitrary or random changes. The reason lies in the nature of scientific discourse. Newton and his successors were creating a new variety of English for a new kind of knowledge; a kind of knowledge in which experiments were carried out; general principles derived by reasoning from these experiments, with the aid of mathematics; and these principles in turn tested by further experiments. The discourse had to proceed step by step, with a constant movement from "this is what we have established so far" to "this is what follows from it next"; and each of these two parts, both the "taken for granted" part and the new information, had to be presented in a way that would make its status in the argument clear. The most effective way to do this, in English grammar, is to construct the whole step as a single clause, with the two parts turned into nouns, one at the beginning and one at the end, and a verb in between saying how the second follows from the first.
>
> [...]
>
> It would be wrong to give the impression that in developing this favourite type of clause structure, and the grammatical metaphor that made it possible, the scientists were guided by any conscious planning. They were not. Newton and his contemporaries did discuss the best ways of constructing a scientific paper, and they tried to regulate the use of vocabulary for building elaborate taxonomies, especially in biology (and taken up later on in chemistry); but they were not aware of their own use of grammar, and these forms evolved naturally in response to pressure from the discourse. (Halliday 1989/2004: 174–175)

3 Favourite clause type

In semantic and grammatical terms, the "favourite clause type" of English scientific writing can be summed up as follows:

semantic:
sequence of two figures, linked by a logical-semantic relation

grammatical:

[congruent]: nexus of two clauses, with Relator / conjunction in secondary clause (optionally also in primary clause)

[metaphoric]: one clause, relational: identifying / intensive, circumstantial or possessive of three elements:

Identified	+Process	+ Identifier
nominal group	verbal group	nominal group

There are variant forms 1. with relational: attributive process, where the second nominal group may have adjective as Head; 2. with relational: existential process, with one nominal group only. These have slightly different semantic profiles. The second nominal group (if present) may be inside a prepositional phrase.

The favourite clause type is grammatically simple, but lexically dense. When Halliday refers to the lexical density of scientific writing, noting that "it can be, unquestionably, extremely dense" (2004, chap 7: 195), he is referring to the number of lexical words (i.e. content words) per ranking clause (i. e. not embedded). Examples of Halliday's counting are illustrated below (lexical words italicized; count shown in square brackets [ ]) (2004, chap. 6: 168):

(a) But we never did anything very much in *science* at our *school*. [2]
(b) My *father* used to *tell* me about a *singer* in his *village*. [4]
(c) A *parallelogram* is a *four-sided figure* with its *opposite sides parallel*. [6]
(d) The *atomic nucleus absorbs* and *emits energy* in *quanta*, or *discrete units*. [8]
(e) Griffith's *energy balance approach* to *strength* and *fracture* also *suggested* the *importance* of *surface chemistry* in the *mechanical behaviour* of *brittle materials*. (*Scientific American*, December 1987) [13]
(f) The *conical space rendering* of *conical string's gravitational properties applies* only to *straight strings*. (*Scientific American*, December 1987) [10]

Based on his own counting of both scientific texts and informal speech, Halliday reported an average lexical density of around six lexical words per clause in scientific texts, whereas two lexical words per clause for informal speech. Lexical forms in scientific texts are distributed mainly inside nominal groups. This stringing together of modifying words makes scientific writing seem "artificially alien and obscure" to the uninitiated.

4 Meeting the demands of scientific discourse

Arguing against what he considers to be "a rather impoverished view of language", which regards the language of science as simply "a tool, an instrument for expressing

our ideas about the nature of the physical and biological processes" (1993/2004: 202), Halliday, citing Bazerman (1988) and Lemke (1990), makes the point that science is not just a set of ideas which, though expressed in language, otherwise exists independent of language. Rather "a scientific theory is itself a linguistic (or at least a semiotic) object" (1997/2004: 182).

A scientific theory is "a specialized, semi-designed subsystem of a natural language" whose construction becomes "an exercise in lexicogrammar", whose steps Halliday summarizes as follows (1998/2004a: 94–95):

1. expanding the noun as a taxonomic resource
2. transcategorizing processes and qualities into nouns, relators into verbs etc., with resulting semantic junction;
3. compacting pieces of the argument to function in an "information flow" of logical reasoning;
4. distilling the outcomes of 2. and 3. to create technical taxonomies of abstract, virtual entities;
5. theorizing: constructing a scientific theory through the reconstruing of experience as in 1.–4., with a "favourite clause type" in which virtual entities (instantial and/or systemic) participate in virtual processes based on logical-semantic relations ("relational processes").

The outcome of this lexicogrammatical exercise is not just a new scientific theory but a new ideology.

> Ideationally, the nominalizing grammar creates a universe of things, bounded, stable and determinate; and (in place of processes) of relations between the things. Interpersonally, it sets itself apart as a discourse of the expert, readily becoming a language of power and technocratic control. In both aspects, it creates maximum distance between technical scientific knowledge and the experience of daily life. (1998/2004a: 95)

Recalling the efforts of seventeenth century scientists, as summed up in John Wilkins' *Essay Towards a Real Character and a Philosophical Language* (1668), Halliday reflects on the importance attached to language by the founders of modern science in the west, who sought to design a "philosophical language", not simply for annotating with a view to transmitting knowledge already obtained, but rather as "a means of arriving at new knowledge, a resource for enquiring and for thinking with" (1993/2004: 204).

On the one hand, there is a need to construct systematic taxonomic hierarchies, based primarily on hyponomy ("is a kind of"), for technical terminology in which technical concepts can be arranged hierarchically by kind and part. The means for constructing hyponymic sets already exist in everyday language, and may be readily extended to technical and scientific terminologies. While English is less consistent in how it identifies hyponymic sets – *blackberry*, *strawberry*, *raspberry* are obviously kinds of *berry,* but *trout*, *herring*, and *carp* are not explicitly identified as kinds of fish, in Chinese, on the other hand, every kind of fish ends in *yú* 魚, and all names of colours are linguistically indicated by the addition of *sè* 色 after the name of the colour,

as in 红色 *hóng sè* ('red'), 蓝色 *lán sè* ('blue'), 黑色 *hēi sè* ('black'). In Chinese, the same practice is carried over to the construction of technical and scientific taxonomies; as Halliday illustrates with the following examples: "all gases are a kind of (i.e., compounded with) *qì* 氣, ... *lièbiàn* 裂變 ('fission') is a kind of *biàn* 變 'change', *tāishēng* 胎生 ('viviparity') is a kind of *shēng* 生 ('giving birth'), *pínlǜ* 頻率 'frequency' is a kind of *lǜ* 率 ('rate'), and so on" (1993/2006: 337).

For creating "more elaborated taxonomies", both English and Chinese employ premodification, which Halliday illustrates with the following examples:

(22)	plastic	sùliào	塑料
(23)	foam plastic	pàomò sùliào	泡沫塑料
(24)	thermal plastic	rèsù sùliào	熱塑塑料
(25)	engineering plastic	gōngchéng sùliào	工程塑料
(26)	phenol plastic	fēnquán sùliào	酚醛塑料

A scientific taxonomy is a hierarchy of classes of objects. Entities which are not objects, such as properties (attributes typically realized as adjectives) and processes (events, actions, states typically realized as verbs), may become objects, i.e. "objectified", by being grammatically turned into nouns, i.e. nominalization. In English, this objectification is achieved morphologically – *move* becomes *motion*, *strong* becomes *strength*. In Chinese, however, as Halliday explains, objectification can be achieved by other than derivational morphology, but by means no less grammatical:

> Chinese also objectifies. So from bùwěn 不穩 'unstable' we have bùwěnxìng 不穩性 'instability'. In Chinese, however, when a word changes its grammatical class in the syntax, it is not usually signaled morphologically; so biànhuà 變化 'transform' is also 'transformation'. Thus while Chinese speakers often regard the large number of nominalizations ending in xìng 性 as foreignisms, it is not the nominalization itself they are reacting to but its formal marking – the way the noun xìng 性 "quality" has become delexicalized through excessive use. It is often said that Chinese does not go in for nominalizations the way that English does; it prefers verbs. It may very well be that in other registers this process of nominalization has not gone so far as in English; but as far as the discourse of science is concerned there is no noticeable difference.
>
> For example,
>
> liǎng diànzǐ-di jìngdiàn chìlì shìnéng wéi zhèng zhí, qiě yǔ liǎngzhě-di
>
> jiānjù chéng fǎnbǐ
>
> 兩電子的靜電斥力勢能為正值，且與兩者的間距成反比
>
> the electrostatic repulsion potential of two electrons is a positive value, and
>
> is in inverse proportion to the distance between them (Halliday 1993/2006: 339)

Complex nominalization involving not only the process but also its participants and circumstances, i.e. "expanding the nominal group still further to include some or all of the elements of a clause" (Halliday 1993/2006: 340), may be achieved in English through both pre- and post-modification, both of which, to a greater or lesser extent, tend to

blur the semantic relationships which were more explicit in the original wording. Taking Halliday's example, the difference in semantic function of "electrical" in each of the following examples is left "entirely implicit": *electrical energy, electrical coil, electrical calibration, electrical potential*. When it comes to postmodifiers with prepositional phrases, however, there is less lost in the nominalization/objectification thanks to the semantic relations still signaled by the preposition(s), e.g. "the overall enthalpy charge **for** the conversion **of** graphite **to** carbon dioxide" (Halliday 1993/2006: 341).

In spite of the fact that there is no postmodification in Chinese, semantic relations are not completely lost in nominalization thanks to "both embedded clauses and (the Chinese equivalent of) prepositional phrases" (1993/2006: 341) premodifying the head noun. In the following example, *di* 的 ('of') shows hypotaxis, and *hé* 和 ('and') indicates parataxis:

(27) 漢字 部件 結構 參數 分析 的 內容
hànzì *bùjiàn* *jiégòu* *cānshù* *fēnxī* *di* *nèiróng,*
character component structure parameter analysis "of" content

方法 和 原則
fāngfǎ *hé* *yuánzé*
method "and" principle

content, method and principle of the parametric analysis of the composition and structure of [Chinese] characters.

The creation of a technical vocabulary – technicalization – is related to this tendency favouring nominalization.

> Creating a technical term is itself a grammatical process; and when the argument is constructed by the grammar in this way, the words that are turned into nouns tend thereby to become technicalized. In other words, although we recognize two different phenomena taking place (as we must, in order to be able to understand them), in practice they are different aspects of a single semiotic process: that of evolving a technical form of discourse, at a particular "moment" in socio-historical time. (Halliday 1993/2004: 207)

Taking the following extract from Newton's *Opticks*, Halliday illustrates how lexical and grammatical resources are combined into "a rhetorical structure which soon developed as the prototypical discourse pattern for experimental science" (1993/2004: 206):

> If the Humours of the Eye by old Age decay, so as by shrinking to make the Cornea and Coat of the Crystalline Humour grow flatter than before, the Light will not be refracted enough, and for want of a sufficient Refraction will not converge to the bottom of the Eye but to some place beyond it, and by consequence paint in the bottom of the Eye a confused Picture, and according to the Indistinctness of this Picture the Object will appear confused. This is the reason of the decay of sight in old Men, and shews why their Sight is mended by Spectacles. For those Convex glasses supply the defect of Plumpness in the Eye, and by increasing the Refraction make the Rays converge sooner, so as to convene distinctly at the bottom of the Eye if the Glass have a due degree of convexity. And the contrary happens in short-sighted Men whose Eyes are too plump. (Newton 1704: 15–16 (Book One, II, Ax. VII))

In terms of lexical resources, Halliday points to such technical terms as "Crystalline Humour", "Refraction", "Convex" and "convexity". Grammatically, Halliday cites several examples to illustrate how what is initially worded as either a verb or adjective is subsequently reworded as a noun:

(i) *will not be **refracted** enough . . . for want of a sufficient **Refraction***
(ii) *paint (.) a **confused** Picture . . . according to the **Indistinctness** of this Picture*
(iii) *make the Cornea (.) **grow flatter** . . . supply **the defect of Plumpness** in the Eye*
(iv) *those Convex glasses . . . if the Glass have a due degree of **convexity** . . .*

5 A model for "doing science"

The language of the physical sciences, which pioneered the development of scientific language, has been subsequently extended to include progressively more complex systems, first biological, then social systems.

> A physical system, at least as construed in classical Newtonian physics, is purely physical in nature; but a biological system is both biological and physical, while a social system is at once all three. Hence it was progressively more difficult to understand the kind of abstraction that was involved in construing these various systems: a "biological fact" is more problematic than a "physical fact", and a "social fact" is more problematic still. To put this in other terms, the relationship of an observable instance to the underlying system changes with each step; and the grammar, which developed around the semantics of a physical fact, has to come to terms with, and to naturalize, each of these new types of instantiation. (Halliday 1993/2004: 217–218)

When it comes to a science of language, or a science of semiotic systems, one is dealing with a fourth order of complexity, going beyond the physical, biological, and social to deal with meaning. Citing Claude Hagège (1981), Halliday notes how "it is the working practices of scientists – how they construct theories to explain the phenomenon of experience – that provide the model for those (including linguists) who want to 'do science', rather than philosophers' interpretations of these, which are theories constructed to explain how scientists work" (1993/2004: 219–220). This does not mean that one must follow the methods of physical, biological or social sciences to become "scientific", but rather that the scientific study of semiotic systems will need to develop alongside and on analogy with the others. As it does so, the semiotic sciences "will change our conception of what 'doing science' means":

> It will not change the principles of theory construction, or the essentially public nature of scientific activity; but it will add a new type of instantiation, and hence a new relation between the observer and the phenomenon, which will broaden our conception of possible kinds of reality. At present, because the relation between observable instance and underlying system is obscure there is a huge gulf in linguistics between the study of language and the study of text; and this is of

> practical significance, in that it adversely affects all forms of activity involving language, whether in language education, language pathology or language planning. In this respect, at least, there would seem to be room for a more "scientific" approach between the observer and the phenomenon, which will broaden our conception of possible kinds of reality. (1993/2004: 207–208)

6 The language of literacy

Arguing that the language of science has become the language of literacy, Halliday notes how that "form of language that began as the semiotic underpinning for what was, in the world-wide context, a rather esoteric structure of knowledge has gradually been taking over as the dominant mode for interpreting human existence" (1993/2004: 211). The reach of this influence extends "from the discourses of technocracy and bureaucracy to the television magazine and the blurb on the back of the cereal packets" (1993/2004: 211), even the "care tag" on the inside of a piece of clothing. On one such "care tag", Halliday found the following metaphoric wording: "Prolonged exposure of the item will result in its rapid deterioration", which as he illustrates, could be derived from a much less metaphoric (i.e. congruent) alternative: "If the item is exposed for long, it will deteriorate rapidly" (1999/2004: 102–103)

(i) make the Medium of the Process a possessive modifier: "the item" → "of the item"/ "its";
(ii) shift classes sideways by turning verbs and adjectives into nouns: "exposed" → "exposure", "deteriorate" → "deterioration"; and replacing conjunctions with verbs "if" → "will result in"; and
(iii) shift structural configurations downwards by recasting
    a. clause complexes as clauses: "If the item is exposed for long / it will deteriorate rapidly" → "Prolonged exposure of the item will result in its rapid deterioration"; and
    b. clauses as groups: "the item is exposed for long" → "prolonged exposure of the item"; "it will deteriorate rapidly" → "its rapid deterioration".

7 An evolving system

Looking ahead to how the language of science might evolve in the future, Halliday begins by noting how the creators of scientific discourse adapted natural language to meet the needs of experimental science, developing "powerful new forms of wording" in order to "construe a reality of a particular kind – one that is fixed and determinate, in which objects predominate and processes serve merely to define and classify them" (1993/2004: 223). Our "dialogue with nature" (Prigogine and Stengers, 1984) has proved less fixed, however, as the discourse of science attempts to keep pace with changes in the direction of scientific inquiry – "from absolute to relative, from object to process, from determinate

to probabilistic, from stability to flow" (1993/2004: 223). What this suggests for the future development of scientific discourse is a return to the congruent, commonsense ways of meaning "learnt at their mothers' knees", "back[ing] off from its present extremes of nominalization and grammatical metaphor, and go[ing] back to being more preoccupied with processes and more tolerant of indeterminacy and flux" (1993/2004: 224).

How this will come about is not just by inventing new words, but by "recasting the nominal mode into a clausal one while developing the verbal group as a technical resource" (1993/2004: 224). Stressing the fact that a language is "an evolved system" (1993/2004: 224), Halliday casts doubt on the idea that such change can be successfully achieved through deliberate tweaking.

> There are signs that people are looking for new ways of meaning – for a grammar which, instead of reconstructing experience so that it becomes accessible only to a few, takes seriously its own beginnings in everyday language and construes a world that is recognizable to all those who live in it. We would then no longer be doomed, as Prigogine and Stengers put it, "to choosing between an antiscientific philosophy and an alienating science" (1984: 96).

The likely social consequences of this trend away from nominal and back to clausal mode in scientific discourse include narrowing the gap "between the commonsense discourse of home and neighborhood and the elaborated discourse of school and the institutions of adult life" (1993/2004: 224), and between written and spoken language. Developments in internet-based technology for exchanging information are also contributing to this blurring of the distinction between speech and writing.

8 An interesting paradox

The fact that scientific discourse foregrounds things at the expense of qualities, processes and relations makes for what Halliday describes as an "interesting paradox : the most abstract theorizing is achieved by modeling everything on the concrete" (1998/2004b: 48). While the impact of this paradox on the wider discourse has been profound, still it is not the only means whereby we may attempt to make sense (i.e. meaning) out of the persistent evolution of all that makes us human. Our potential for making meaning is never exhausted. As the nature of scientific inquiry changes and the discourse evolves to keep pace with those changes, we can anticipate new ways of meaning in the language of science.

References

Bazerman, Charles. 1988. *Shaping Written Knowledge: the Genre and Activity of the Experimental Article in Science*. Madison, WI: The University of Wisconsin Press.

Dijksterhuis, Eduard Jan. 1950. *De mechanisering van het wereldbeeld.* Amsterdam: Meulenhoff.

Dijksterhuis, Eduard Jan. [1961] 1986. *The Mechanization of the World Picture: Pythagoras to Newton*. Princeton, NJ: Princeton University Press [First published Oxford: Clarendon Press].
Hagège, Claude. 1981. *Critical Reflections on Generative Grammar* (translated by Robert A. Hall Jr). Lake Bluff, IL: Jupiter Press.
Halliday, M. A. K. 1988/2004. On the language of physical science. In Jonathan J. Webster (ed.), *The Collected Works of M.A.K. Halliday* (Vol. 5), 140–158. London and New York: Continuum.
Halliday, M. A. K. 1989/2004. Some grammatical problems in scientific English. In Jonathan J. Webster (ed.), *The Collected Works of M.A.K. Halliday* (Vol. 5), 159–180. London and New York: Continuum.
Halliday, M. A. K. 1993/2004. Writing Science: Literacy and Discursive Power. In Jonathan J. Webster (ed.), *The Collected Works of M.A.K. Halliday* (Vol. 5), 199– 225. London and New York: Continuum.
Halliday, M. A. K. 1993/2006. The analysis of scientific texts in English and Chinese. In Jonathan J. Webster (ed.), *The Collected Works of M.A.K. Halliday* (Vol. 8), 334–345. London and New York: Continuum.
Halliday, M. A. K. 1995/2004. Language and the reshaping of human experience. In Jonathan J. Webster (ed.), *The Collected Works of M.A.K. Halliday* (Vol. 5), 7–23. London and New York: Continuum.
Halliday, M. A. K. 1997/2004. On the grammar of scientific English. In Jonathan J. Webster (ed.), *The Collected Works of M.A.K. Halliday* (Vol. 5), 181–198. London and New York: Continuum.
Halliday, M. A. K. 1998/2004a. Things and relations: regrammaticizing experience as technical knowledge. In Jonathan J. Webster (ed.), *The Collected Works of M.A.K. Halliday* (Vol. 5), 49–101. London and New York: Continuum.
Halliday, M. A. K. 1998/2004b. Language and knowledge: the 'unpacking' of text. In Jonathan J. Webster (ed.), *The Collected Works of M.A.K. Halliday* (Vol. 5), 24–48. London and New York: Continuum.
Halliday, M. A. K. 1999/2004. The grammatical construction of scientific knowledge: the framing of the English clause. In Jonathan J. Webster (ed.), *The Collected Works of M.A.K. Halliday* (Vol. 5), 102–139. London and New York: Continuum.
Halliday, M. A. K. 2004. Introduction: How Big is a Language? On the Power of Language. In Jonathan J. Webster (ed.), *The Collected Works of M.A.K. Halliday* (Vol. 5), xi–xxiv. London and New York: Continuum.
Hill, Graham and John Holman. 1978/83. *Chemistry in Context*. Walton-on-Thames: Nelson.
Lemke, Jay L. 1990. *Talking Science: language, learning, and values*. Norwood, NJ: Ablex.
Michalske, Terry A. and Bruce C. Bunker. 1987. The fracturing of glass. *Scientific American* 257. 122–129.
Newton, Issac. 1704. *Opticks, or a Treatise of the Reflections, Refractions, Inflections and Colours of Light*. New York: Dover Publications 1952 (London: G. Bello and Sons, 1931; based on the 4th edn., London 1730; originally published 1704).
Penrose, Roger. 1989. *The Emperor's New Mind: concerning computers, minds and the laws of physics*. London: Oxford University Press.
Prigogine, Ilya and Isabelle Stengers. 1984. *Order out of Chaos: man's new dialogue with nature*. London: Heinemann.
Vilenkin, Alexander. 1987. Cosmic Strings. *Scientific American* 12. 94–98, 100, 102.

Sabine Ylönen

19 Oral discourse in scientific research

Abstract: This chapter discusses the role and characteristics of oral discourse in scientific research, with "scientific" understood in a broad sense, covering any discipline of research. After introducing corpora of oral academic discourse, genre-specific characteristics of PhD defences, research group meetings, colloquia, and conference presentations are discussed from a discoursal point of view. In scientific research, oral discourse plays a fundamental role in the social construction of knowledge. Its analysis offers valuable insights into the sociology of scientific communities.

1 Introduction

Oral discourse plays a significant role in scientific research. It is the basic communicative means in face-to-face interactions of research communities, for example in laboratories and project meetings, for networking or in presenting and discussing research at workshops, seminars and conferences. Even in rather conventionalised genres, such as conference presentations, the speakers have more possibilities and freedom to express their personality, thoughts and stance (attitudes, feelings, values and so on) than in their written counterparts, such as research articles. Whereas the writing of papers is subject to processes of elimination (of all possible research motivations and findings, for example, cf. Knorr-Cetina 1991: 239–240), the analysis of oral discourse makes it possible, in principle, to follow scientific research from scratch (including all kinds of uncertainties, negative findings or power-related decisions in the process of knowledge construction). Technology-mediated oral communication between individuals in distant locations has been possible since the telephone was invented in the nineteenth century. Today, video conferences enable speakers located in different parts of the world to see each other in their own surroundings while interacting synchronously (possibly including the sharing of documents), thus virtually shrinking distances. However, such technology-mediated oral communication is somatically much more distanced than face-to-face interactions because not all of the traditional senses (hearing, sight, taste, smell, touch) are involved (see Scollon and Scollon 1995: 27). To date, research on all facets of oral discourse is generally still in its infancy and has been restricted to the analysis of transcribed recordings of face-to-face interaction.

Despite of the crucial importance of oral communication in science, it has only recently become a focus of LSP research. Mauranen's (2012: 71–72) statement that speaking has been overlooked in English for specific purposes and its subfield of

Sabine Ylönen, Jyväskylä (Finland)

https://doi.org/10.1515/9783110228014-019

English for academic purposes due to the main interest in written texts is also true for languages other than English. The reason for this neglect lies not only in the importance of written texts, such as scientific papers and text books, but it also has to do with the availability of spoken language material for research purposes. Whereas it has been quite easy to access, store and analyse written text, technology for recording and storing the ephemeral spoken word has only developed in the last decades. In addition, a detailed analysis of oral discourse is an extremely labour-intensive task because the recordings have first to be transcribed. Also permission to record spoken language is usually difficult to get and restrictions for using these recordings are often much more rigorous than those for printed texts. This is why there are only a few open-access databases of academic discourse available for research purposes, namely corpora for oral academic English. So far, research of oral academic discourse in languages other than English has been based on private data that is not accessible to other researchers. Nevertheless, research in this field is growing rapidly, and also corpora for languages other than English designed for open-access are under construction.

This chapter on *oral discourse in scientific research* covers oral practices of all disciplines. In English, "science" refers usually to the so-called hard sciences (natural sciences and medicine) which is why "academic discourse" is often preferred when analysing communicative practices in the so-called soft sciences (Suomela-Salmi and Dervin 2009: 3). On the other hand, "academic discourse" is a rather broad concept that may include discourse in both research and education, even in secondary education, as well as talk outside of the primary learning environments (including administrative office hours, cf. Limberg 2010). *Science* is hereafter understood in a broad sense, covering not only natural and physical sciences but also social sciences and the humanities. The focus on *scientific research* chosen here excludes studies of educational discourse albeit corpora for academic discourse (comprising also lectures, seminars or office hour consultations at universities, for example) will be briefly introduced below. Following this, research into four genres of oral discourse in scientific research will be discussed: studies on PhD defences, research group meetings, colloquia, and conference presentations, followed by some conclusions.

2 Corpora for oral academic discourse

In 2012, there were only two large open-access corpora for oral academic discourse: the American MICASE (Michigan Corpus of Academic Spoken English, Simpson et al. 2002) and the British BASE (The British Academic Spoken English). Another large but not freely accessible corpus also containing oral academic discourse was compiled by the TOEFL 2000 project: the T2K-SWAL Corpus (TOEFL 2000 Spoken and Written Academic Language) (Biber et al. 2004: 8). All these corpora aimed, above all, to develop the teaching and assessment of English for academic purposes. Consequently, they

contain speech events mainly of educational settings at the university and only fewer speech events of scientific research. The largest variety of different speech events are covered by the MICASE corpus but only three of them can be characterised as scientific research (public interdisciplinary or departmental colloquia, lab group and other meetings, and dissertation defences). The BASE plus corpus includes also conference presentations and staff interviews (BASE and BASE plus n. d.). In addition, a smaller John Swales Conference Corpus (JSCC), containing 23 transcripts of conference presentations and discussions, was made available to the public in 2008. This corpus is based on the conference in discourse analysis organised to celebrate the official retirement of Professor John Swales in 2006.

In 2013, three other large corpora containing oral academic events were made freely accessible for research purposes: ELFA, VOICE and GeWiss. ELFA and VOICE are both corpora for English as a Lingua Franca, and GeWiss is a multilingual corpus of oral academic discourse. ELFA (English as a Lingua Franca in Academic Settings) was compiled in Finland. In addition to educational event types it comprises also scientific research event types (conference presentations and discussions, PhD thesis defence presentations and discussions, as well as panel discussions) from several disciplinary domains (ELFA 2008). Also VOICE (Vienna-Oxford International Corpus of English, comprising recordings from educational, leisure, professional domains) contains some speech events from *research and science* communication (about 10% of the corpus). Since 2013, 26 speech events from the *professional research and science domain* have been available as transcripts, and three of them also as audio files as part of the VOICE 2.0 Online corpus. These speech events are conversations (in which people interact without a predefined purpose), interviews, panels, question-answer-sessions (in which members of an audience ask questions which are answered by specialist speakers) and one workshop discussion. (VOICE n. d.)

The first corpus of its kind comprising oral academic discourse in several languages is the GeWiss corpus (Gesprochene Wissenschaftssprache). It was launched in 2009 to collect speech events for academic German, English and Polish (Fandrych, Meißner and Slavcheva 2012 and 2014). In addition, spoken events in German as a vehicular language used by non-native speakers in Germany, Great Britain and Poland were collected. The GeWiss corpus contains oral presentations and examinations in these languages, with 25% of the data being conference presentations. The corpus has also been expanded to comprise more data from Bulgaria, Finland and Italy (GeWiss n. d.). In 2017, the GeWiss corpus will migrate to a host at the Institut für Deutsche Sprache (IDS n. d.).

The advantage of large electronic corpora is that they allow for generalisations of research results based on statistical analyses of quantitative data. However, such corpora can also be used for interpretative investigation of qualitative data as long as they allow accessing entire speech events (and not only frequency lists or key words in context, for example). All freely available corpora for oral academic discourse mentioned above contain only some genres of scientific research, and analysis related

to these corpora has often focused on educational genres or has not distinguished between genre-specific features of academic discourse (for example when focusing on frequencies in word use, such as *point* and *thing* as in Swales 2001 or on humour as in Lee 2006, both analysing all MICASE speech events). However, there is a vast amount of research on oral discourse in scientific research based on private (not open access) data.

3 Genres of oral discourse in scientific research

Oral discourse in scientific research can be classified into communicative events with more or less conventionalised ways of speaking. Such conventionalised ways of speaking are often labelled genres. According to Bazerman (1988: 62), a "genre is a social construct that regularizes communication, interaction, and relations." Swales (1990: 58) defines a genre as "a class of communicative events, the members of which share some set of communicative purposes", and these purposes "constitute the rational for the genre". Furthermore, Swales points out that the "exemplars of a genre exhibit various patterns of similarity in terms of structure, style, content and intended audience", and that the genre names are "inherited and produced by discourse communities". Nevertheless, similar patterns for lexicogrammatical and textual features "do not constitute obligatory or definitory criteria for genres", as Mauranen (1993: 18) points out. Swales (2004: 61) relativises his earlier definition of genre in his book *Research Genres* because "such definitional depictions may not be true in all possible worlds and all possible times" and because they "can prevent us from seeing newly explored or newly emergent genres for what they really are". He reflects on different possible genre definitions, drawing on a metaphorical motivation for genres such as "frames of social action", "language standards", "biological species" and so on (p. 68), and discusses, for example, multiple purposes of genres (p. 71), labelling from the perspectives of speakers, listeners, and analysts (p.74), and the dependence of genre definitions on methodologies (p. 72–73) as well as the interconnectedness of genres (chains, sets, networks) that are often in hierarchical relationship to each other (p. 77).

An important characteristic of any discourse in scientific research is that it is conducted in institutionalised contexts. According to Ehlich and Rehbein (1977: 37), institutional practice is „organized power, a societal machinery" within which the members have usually certain roles and rights. According to Limberg and Geluykens (2007: 248), the participants in 'scientific talk' "have a comparable level of educational background, area of expertise, and (research) experience". However, this generalisation is not quite true because the expertise and experience of professors, senior and junior researchers involved in scientific discourse may differ substantially, and also the rights attached to these roles are different. On the other hand, the character of the speech event (whether it is more or less formal, conventionalised or legally

bound) affects the roles and rights of the participants which can be expected to be the more equal the more informal the setting is, for example.

Due to different legal and conventionalised rules of various countries, institutions, disciplines or paradigms, the patterns of the genre (in terms of both the setting within a certain social practice and verbalised realisation) may vary in manifold ways even though the inherited genre names sound similar. For example, an undergraduate *examination* at a German university is often held orally whereas in Finland it is almost invariably written (Ylönen 1994: 97). Also undergraduate *seminars* were found to have quite different purposes and interconnections with other genres at Finnish and British universities (Mauranen 1994: 12–13). In oral scientific discourse, such differences were studied by comparing PhD defences and conference presentations of different communities (see chapters 3.1 and 3.4).

Until now, research on oral discourse in scientific research has been restricted to the analysis of a few genres of face-to-face interaction (see also Swales 2004). In the following, an overview of research results concerning PhD defences, research group meetings, colloquia, and conference presentations will be given.

3.1 PhD defences

PhD defences are oral examinations of dissertations. Different organisational patterns were found, for example, in US-American and Finnish *PhD defences* as studied by Riekkinen (2009: 29) who compared defences in the MICASE and ELFA corpora. She points out that in Finland there is usually only one examiner (known as an opponent) whereas in the Michigan corpus there is a whole panel of examiners. The rights to speak are consequently distributed in different ways in the more dialogic events in Finland and the generally polylogic events in the US.

Recski (2005: 7) points out that the ceremonial procedures, levels of formality and length of PhD defences may differ in different geographical contexts. For example, in Britain the defence is held in a small closed room with few participants (external and internal examiners, chair, supervisor, and candidate) whereas in Scandinavia the examination takes place in a big room and in presence of a larger audience (Swales 2004: 145–146). In Finland, for example, the ceremonial rituals are on a high level of formality that includes the prescription of both extralinguistic (dress code, order of entry and leaving the room, standing and sitting procedures) and linguistic features (fixed formulas for opening: *As the Custos appointed by the faculty I declare this public examination opened*. and closing the sessions *The public examination has been concluded*.). Also in other parts of the defence formulaic expressions must be used by the doctoral candidate, the opponent, and the custos (i. e. the chairman of the doctoral dissertation) at the University of Jyväskylä (n. d.). In the USA, on the other hand, the defence procedure seems to be much more relaxed and allows the speakers to use colloquial language, including humorous openings, as Swales (2004: 165) demonstrated for a social psychology defence:

> Chair: okey-doke, uh well Kim Sook was gonna do another, very brief summary of what he's up to. Uh to bring it all up on our screens ...
>
> Candidate: alright, um ... first of all i'd like to thank all of you, for agreeing to be on the committee, reading the draft, and coming to the defense, being with me at, my last moment of, graduate school.
>
> Senior member 3: <LAUGH> such optimism
>
> <LAUGH SS>

As a characteristic for defences Recski (2005: 21) found that hedging and uncertainty features are used by the "defendant" when confronted with face-threatening questions. But also the opponents use hedges as shown in Riekkinen's (2009) study. She found that more hedges and inclusive expressions (such as *you know*) were used by those opponents who gave more direct feedback in which the candidate risked losing face (Riekkinen 2010: 85).

The typical structure of a PhD defence in the USA is according to Grimshaw, Feld, and Jennes (1994: 52–53) divided into four segments: the *opening segment*, the *defence proper*, the *in camera segment*, and the *closing segment*. The main difference with defences in Finland seems to be the absence of the so called *in camera segment* in Finland. In the USA, this is a short period in which the candidate is sent out of the room while the dissertation and the oral defence are evaluated. Another remarkable difference is that the dissertation in Finland is usually already printed at the time of the defence whereas in the USA this is not the case, but the candidate is often required to make revisions to his text before the degree is awarded, and the defence itself thus functions as a "collective editorial session" (Swales 2004: 169).

3.2 Research group meetings

The purpose of research group meetings (RGMs) is in generating group decisions. Swales (2004: 175) describes RGMs (also known as lab meetings) as more-or-less regularly occurring meetings in which "at least one faculty member, his or her immediate group of research students, and relevant postdoctoral fellows or visiting scholars" participate. According to Swales (2004: 175–176) RGMs may involve progress reports, discussions of readings, brainstorming sessions, technical issues, dry runs (i.e. conference presentation run throughs), opening statements at proposal or dissertation defences, "breaking news" about the field or job opportunities, and so on.

Knowledge construction in scientific research can perhaps be studied best by analysing research group meetings. Negotiations of the interpretation of research findings, for example, were investigated in a project called "Socialization of Scientific Discourse" and its follow-up project "The Collaborative Construction of Scientific Knowledge in a University Physics Laboratory". Both were conducted in the 1990s by a research team at the University of California, Los Angeles (UCLA), under the direction of Elinor Ochs. Over a period of six months, this project collected participant field

observations, interviews with each regular group member, 60 hours of transcribed audio and video recordings of experimental laboratories, small group and weekly group meetings, overhead transparencies and printed materials which members brought to the meetings, e-mails sent between a member of the group and a colleague in Europe, archived research papers, published articles and dissertations. In addition, tutorial sessions explaining the concepts and principle behind the member's research were audiotaped, and background articles on relevant topics were consulted. (Ochs, Gonzales, Jacoby 1996: 332–333, Jacoby and Gonzales 1991: 154–155) Such a holistic approach (focusing on one and the same research group over a certain period and including all types of data from observation and recordings to accompanying written material and interviews of the group members) enables the analysis of knowledge construction from scratch in a relatively small local scientific discourse community.

Jacoby (1998) focused on conference presentation run throughs. Conference presentations in the field of physics are usually very short (ten minutes), and the RGMs functioned as rehearsals for the presentations and gave critical feedback for improving them. The tenor of the critical feedback was characterised as frank and insistent, and the structure of the discussions described as complaint – negotiation – agreement: first a particular problem of the presentation was addressed, next the status of the complaint and possible solutions were negotiated, and finally the remedy was agreed upon before the discussion moved on to the next topic (Jacoby 1998: 376).

How generating consensus in this context was influenced by *deadlines and time limits* was analysed by Ochs and Jacoby (1997). The activity was analysed by focusing on videotaped cycles of conference talk preparation in an RGM and related e-mail correspondence between a graduate student (first co-author and conference presenter), his former mentor from France (third co-author), and his dissertation chair (second co-author). The rehearsed presentation by the graduate student received conflicting criticism from these two co-authors. The reason for these different views on matters of rhetoric ("what to say, what to display visually, what to leave out, and in what order the information should be presented", p. 479) obviously resulted from their professional orientation as theoretician (first co-author and present in the RGM) on the one hand and experimentalist (second co-author and commenting via e-mail from France) on the other. The student's rhetorical dilemma derived from the time constraints for his presentation: because of the 10-minute limit he could not include both co-authors' views into his talk. Time played also a crucial role in generating consensus. While two weeks before the conference the theoretician wanted to skip measurement details of the experiment (he used the pejorative "big deal" for sticking with the measurement facts only) and in contrast emphasise theoretical interpretations (p. 489), the experimentalists criticised his view as "forcing interpretation on the data" (p. 490). As the time of the conference became closer and decisions had to be made, the theoretician gave up his theoretical inference. In exchange, the experimentalists agreed to back away from foregrounding the measured data of the inductive research process, and agreed to the theorist's suggestion to begin the presentation with the "bombshell"

(p. 497) that their experiments offered a way to draw theoretical implications (concerning the dynamics of spin glasses). However, this consensus was momentary and negotiated for the purpose of the conference presentation, and the discussion about the relationship between measurements and theory continued thereafter.

That the roles of *experts and novices* may change between the members of a RGM was shown by Jacoby and Gonzales (1991) who investigated the recordings of this particular physics RGM by means of conversation analysis. Albeit a hierarchical status may provide an expert status on a macro-level, the micro-level analysis of the utterances in the interaction between the RGM members showed that the reconstruction of Self and Other is a continuous bidirectional process, and the constitution of a participant as expert may simultaneously lead to the constitution of another as less-expert. The RGM leader, for example, became either a micro-expert or a micro-novice at different moments of the unfolding interaction although being the uncontested macro-expert in social hierarchy. The authors emphasised that this bidirectionality of apprenticeship, learning and socialisation is, at the same time, also a source for innovative changes in communities of practice (Jacoby and Gonzales 1991: 174–175).

Another interesting finding was made by Ochs, Gonzales and Jacoby (1996) about involving *talk, gesture, and graphic representation* for building meaning in oral scientific discourse. In their talk, physicists may personalize inanimate objects or even construct blended identities composed of the animate researcher and the inanimate physical entity. "When I come down I'm in the domain state" is the title of a paper and a quotation from the physics RGM. In this sentence, the personal pronoun "I" represents both the physical entity and the scientist. This blended identity was used to describe a change in a specific magnetic system with decreasing temperature by putting oneself in the position of the entity. The authors conclude that such "schizoid" constructions are part of scientific problem-solving and express "empathy with entities" the scientists "are struggling to understand" (p. 348). This utterance ("When I come down …") is combined with gesturing along the line of a graph in the direction of sinking temperature. The authors interpret this as *inhabiting* and *wandering in* a cognitive and spatial domain (expressed by the graph) (p. 350). They conclude that "grammatical structures and their meanings are constituted through interlocutors' larger activities, tool use, and gestural practices" (p. 359).

Swales (2004) compared the findings of the UCLA team with his own analyses of the MICASE corpus RGMs. Whereas the UCLA team analysed the same physics research group's weekly meetings over a six month period, the MICASE recordings are separate RGM events from different disciplines (4.6 hours from the fields of immunology, artificial intelligence, physics, and nat. recourses, Swales 2004: 178). The MICASE RGMs tackle different issues: discussions about upgrading the group's equipment and on-going research results (physics), a discussion of a graduate student's confusing findings (immunology), a dry run for a dissertation defence (artificial intelligence), and a master's students joint project discussion (natural resources). Due to the diverse tasks performed in this small number of recordings, Swales stated

that he could not find any coherent generic character for RGMs. He assumes that both the "types of issues being addressed (drafting, rehearsing, interpreting data, etc.)" and "localized and inherited ways of proceeding within highly specific communities of practice" may be responsible for the communicative scenarios of different RGMs (Swales 2004: 188). RGMs also function to socialise graduate students to the local discursive practices of the discipline.

3.3 Colloquia

A colloquium (derived from Latin *colloqui* = "to confer", and *loqui* = "to speak") is defined as a large academic seminar (Cobuild 1995), an informal conference or group discussion (Webster's 1996). As often in academic discourse, the label colloquium is used differently in different local academic communities. In Germany, for example, "Kolloquium" is often used to label an individual oral examination at the university (cf. Ylönen 2007). However, "Kolloquium" is used polysemously in German, and may also refer to a theses defence or a series of lectures, both with discussion open to faculty members and guests. In this paper, I refer to colloquium as an academic discussion and opportunity to exchange subject-specific ideas on a departmental, faculty or other unit forum, for example, which offers also students possibilities to learn the skills in and methodologies of research. Swales (2004: 189–190) considers the invited audience more important than the format of the event, and calls also the seminars investigated by Weissberg colloquia because here students had to "present their research before an open forum including all interested members of their academic departments and invited guests" (Weissberg 1993: 23). Tracy (1997: 3) describes a colloquium as an activity with "the university's most privileged and noble mission: the advancing and testing of ideas, the production of truth and knowledge". However, her study shifts attention to the participants' behaviour as human beings and the social dimension of the scientific enterprise.

In her detailed analysis of a weekly organised colloquium at her communication department of a US university, Tracy describes the typical departmental colloquium format as consisting of a thirty to fifty-minute presentation followed by a twenty-five to forty-five-minute discussion with around 20 participants (Tracy 1997: 8). Her data consisted of full discussions of 10 occasions and selected excerpts from others and of 35 minute interviews with 10 regularly attending participants (six faculty members and four graduate students). In addition she used secondary material, mostly interviews recorded in a communication department at another US university. She characterises colloquia as sites of intellectual discussion and focuses especially on the dilemmas that individual participants and the group are facing. Her method is action-implicative discourse analysis drawing on triangulated data: her knowledge gained through participation, tape recorded interaction in the colloquia (discourse of the occasion), and tape recorded interviews with the participants (discourse about

the occasion), shifting her focus back and forth between interactive and interview discourse (p. 17).

Individual dilemmas were examined by Tracy (1997) at the levels of *identity, positioning and accounting, questioning and responding,* and *character challenges*. The most noticeable identity concern of presenters and discussants was to be seen as intellectually able (p. 24). In presenting and discussing research the participants also present their own thinking, which is an inherently risky activity (p. 39). Consequently, positioning self as an experienced researcher also functions to support intellectual competence, at the same time bearing the risk of failing to perform at that high level. Accounts and disclaimers on researcher choices (e. g. labelling data deficiencies) and communicative style (e. g. why a paper was read) were also seen as indicators of beliefs and ideals about intellectual competence (p. 48), even though the speakers took risks of being judged as unsystematic (in research design, p. 47) or presenting in an inappropriate fashion (in sacrificing interactional naturalness to coherent and linguistically elegant performance, p. 49). Questioning and responding seemed to be connected to three main concerns about intellectual identity: being adequately knowledgeable, being an original thinker, and being intellectually sophisticated (p. 52). Originality, for example, was challenged by a discussant asking why the presenter had reviewed literature mostly from the eighties continuing "What's new in the way of these variables?" Interviews at the other university attested the presence and memorability of comparable originality challenges where an interviewee admitted to having liked such a "heated debate" containing the question "How's this different from your dissertation twenty years ago?" (p. 57–58) Tracy concludes her analysis of individual dilemmas by stating that the character of a person is challenged when questions about ethical issues or the practicality of a proposal or about the material interests served by a set of ideas are raised (p. 75).

Group dilemmas were analysed by Tracy (1997) in terms of *equality and expertise, expressions of institutional rank and emotion,* and *intellectual community*. Tensions were found, for example, between the claim of the colloquium as an egalitarian forum and the hierarchical structure of the department with participants' very different levels of authority and prestige carrying inequality. As one interviewee put it "Whenever it got to a battle of the floor it was almost always equals who would battle it out ..." (p. 81). Expressions of institutional rank included, for example, that students preferred to remain silent or asked information questions ("a nice little supportive question" – as one interviewee put it, p. 31) whereas faculty members chose to talk and asked also testing ("what are the pros and cons?" p. 97) and Socratic ("grilling") questions (p. 99). Participants judged the academy's views toward emotion and reason as being at odds (p. 111). Showing emotions, especially passion for ideas, was seen as desirable but also bearing risks of coming across as self-defensive or hostile. Tracy concludes that "It is not clear how one can display emotion about ideas but not about people" (p. 112). Also humour was seen as a challenge for intellectual discussion by carrying face-threatening risks (p. 124). Swales (2004: 195) summarises this by saying

that "a humorous and lighthearted event may undermine sustained engagement with the issues, while a deadly serious climate may lead to boredom and the dull parading of previously established viewpoints."

In his analysis of the MICASE colloquia, Swales (2004: 196) could find only little evidence for dilemmas described by Tracy (1997). One reason may be that the MICASE data consist only of discourse of the occasion – as Swales put it: he could analyse this data only from a textual perspective. Swales (2004: 196) describes the MICASE colloquia as "operating on the kind of intellectual level that Tracy hopes to see."

Tannen (2002) points to the agonistic nature of academic discourse (which she also calls "ritualised adversativeness"). In reference to Tracy (1997) she characterises the colloquium as a forum for student acculturation to "battle training" (p. 1662). She also points out the "commonplace among American academics that that many British, German, and French counterparts are more given to vitriolic attacks and sarcastic innuendo than are American-trained scholars" (p. 1655). On the other hand, Rowley-Jolivet (2002: 111) reports that the degree of aggressiveness and direct criticism was seen by her specialist informants in physics as gradually declining from North America over Europe to Japan. Finnish students, for their part, regarded the academic communicative culture in German-speaking countries as being more aggressive than that in Finland (Ylönen and Vainio 2010: 43). It would be interesting to study what such perceptions or beliefs of possible different cultural traditions in oral academic discourse might be based on. This requires an analysis of on-site data from other countries and in other languages than English.

3.4 Conference presentations

The main difference between a colloquium and a conference is that the latter is a broader forum for discussing research on various topics within one discipline. Researchers, often coming from different parts of the world, meet for at least two up to several days to present and discuss their research. Presentations are usually organised in parallel strands on specific sub-topics of the discipline. In addition, there are usually plenary or keynote speeches given by prestigious researchers with the reputation to be able to present a review of the up-to-date research in their field. Other forums at conferences may include panel discussions, poster sessions, workshops and symposia, for example. Opening and closing remarks – occasionally delivered by politicians or other non-scientists – function as bridges between research and everyday life by emphasising the societal impact of research in the area. Together with exhibitions, excursions, and other informal meetings at conference receptions or coffee and lunch breaks etc., conferences offer manifold possibilities for networking and personal and scientific exchange of ideas. In the following, analyses of conference presentations dealing with original research will be discussed with special focus on oral discourse practices.

Conferences offer a forum to present research results for the first time to a wider public. Even though speakers have more freedom to express their personality, thoughts, emotions or humour than in written original contributions, conference presentations are rather conventionalised events within a scheduled programme. Rituals include, for example, introducing the speaker, thanking for the introduction and contextualising the paper. Time constrains for the presenters and the right to speak for discussants are also controlled by chairs. Already prior to the conference, the opportunity to present research results is controlled by the review process for proposed abstracts. Another controlling instance follows when contributions are chosen for the conference proceedings in a review process. Ventola (2002: 44) introduces the concept of semiotic spanning for this kind of links to the past and the future. Semiotic spanning also refers to the multimodal character of conferences, in which presenters and discussants build links to their own discourse worlds and to other discourses, employing visuals, texts, experiments, questionnaires and so on. However, Swales (2004: 197) questions the need for such a new concept even though admitting that it "draws useful attention to cross-referential aspects of conferences".

According to Swales (2004: 198), research into conference presentations (CP) from a discoursal perspective started in the 1980's with Dubois' pioneering studies of the annual meetings of the Federation of American Societies of Experimental Biology followed by "a recent flurry of interest in Europe, starting in the mid 1990's". He assumes that this interest emanates from the endeavour to "help continental European scientists and scholars maintain their rightful place in increasingly Anglophone conferences and conventions" (p. 198).

In relation to other forms of scientific discourse, conference presentations can be situated between laboratory life and refereed publication of research results (Dubois 1980, Rowley-Jolivet 2002). Rowley-Jolivet states:

> The conference presentation has, so to speak, a foot in both worlds: closely connected to laboratory life both by the oral nature of its discourse and by the fact that it is often the first public appearance of the research carried out there, a conference presentation is nevertheless a structured discourse genre delivered in a public forum and therefore also a close cousin of the research article in many respect. (Rowley-Jolivey 2002: 97)

The preliminary character of research results, surprising findings and the reasons for choices made during the research process are often made much more transparent than in the written counterparts of oral presentations (conference proceedings or research articles), as Rowley-Jolivet's examples from conference presentations in geology and physics show:

> Preliminary character: *What I would like to present now is preliminary results of* ... (p. 100)
>
> Surprising findings: ... *and we were confused as to why* ... (p. 105)
>
> Reasons for choices: *Actually this turned out to be too small, we had to put* ... (p. 104)

Also Thompson (2002) has witnessed similar characteristics. Storytelling and narratives were constituent in conference presentations in different disciplines (e. g. physics, surface sciences, discourse analysis and English teaching) whereas related written articles contained only brief statements, as the following example shows (p. 159):

> Oral presentation:
> So we thought we had a nice picture of this molecule we were quite happy that the molecules that were forming this structure this orientation that they were forming a well-defined surface until we did some STM work with … and then our whole world fell apart for a while but in rebuilding it it's turned out to be a much more complex world than we previously thought.
>
> Written article:
> The α structure is relatively complex.

The audience of oral conference presentations is thus, so to speak, able to eyewitness the construction of scientific facts (Fleck [1935] 1979) within the research process to a much higher degree than readers of an original research paper.

In addition to the tentative claims made in conference presentations of most disciplines, Räisänen (2002) found that in many engineering disciplines the aim was to make the key developments public. In contrast to most other disciplines in which abstracts are used for accepting or rejecting conference papers, peer-reviewed conference proceedings were published prior to the conference and formed the basis for the acceptance of a paper in the automotive crash safety conferences studied by Räisänen (2002: 75). These interdisciplinary conferences in applied sciences, with participants from academia and industry, were thus a forum for getting consensual knowledge claims accredited. Räisänen characterises them also as a reward system and market place (p. 78).

With reference to international conferences Ventola (2002: 27) points out that not only language skills cause problems for participants coming from different language and cultural backgrounds, but also differences in academic presentation traditions. Presentation styles were found to differ greatly, for example, in a study of conference presentations given by Russian and German scientists, causing irritation on both sides (Kotthoff 2001). Her corpus consisted of 20 conference presentations on cultural studies recorded in Germany, Kazakhstan, Russia, and Georgia, but her (pilot) study focused only on eight of these (four given by Germans and four by Russians). Differences in conference presentation styles were found in narrowing the topical focus, reference to the state of the art, and pointing out personal contribution to the field. These activities were introduced metalinguistically by the native speakers of German but not by those of Russian whose presentations, in contrast, had more general scopes and left orientation within the topical development and clues to the personal contribution to be discovered by the audience themselves. Reasons behind these differences seem to derive from different values and beliefs towards intellectual

competence. For example, wide reading seemed to be more valued than originality by the native Russian presenters. In addition, Kotthoff points to different societal conditions such as recruitment conventions, funding of research, exchange and networking practices, and access to publications. Whereas originality of research and received grants are important criteria for search committees in Western academia, in-house recruitment was more often the case in the institutions of the former Soviet Union (p. 345). In Kotthoff's view, giving a conference presentation is by itself evidence for academic prestige in the Eastern tradition, and needs not to be proved by originality (p. 346). However, Kotthoff also points to hegemonic structures of increasingly globally oriented research practices and postulates an international prestige gradient (internationales Prestige-Gefälle) as indicated by the preference to publish in Western journals (p. 328), for example.

The importance of such transepistemic framing (Knorr-Cetina 1981) became clear also in a study of conference presentations given in 1991 by East- and West-German researchers of plant breeding (Ylönen 2009). In this study, opening and closing addresses as well as conference presentations were analysed from the point of identity and social positioning. In the context of the reunification, the asymmetric starting position of East- and West-German plant breeders became clear in both research methodologies (classic plant breeding in East-Germany vs. gene technology in West-Germany) and communicative strategies (appeals for understanding by East-Germans vs. praise of Eastern-German achievements by West-Germans). The results showed that the value of research depends also on the time and place where it was conducted, and its originality on ideational (politically predefined settings) and financial opportunities of scientific communities.

4 Conclusion

The focus of this chapter has been on oral scientific research analysed from a discoursal point of view. However, due to the lack of space many interesting studies could not be discussed, such as visual language and more linguistically focused analyses of presentations as well as conference discussions. A comparison of genres introduced here shows that the institutional frame influences the way participants speak and interact. This seems to be true not only for differences between genres but also for those between different discourse communities. The studies reviewed above show the significant role oral discourse plays in scientific research, be it for the development of ideas and the construction of knowledge or for the socialisation of graduate students into the discursive practices of the discipline. Ethnographic and conversation analytic studies of discourse practices in scientific research offer also interesting insights into thought styles (Fleck [1935] 1979) and the sociology of scientific communities as well as their values and beliefs about intellectual competence.

References

Auer, Peter and Harald Baßler (eds.). 2007. *Reden und Schreiben in der Wissenschaft*. Frankfurt/Main: Campus.

Bazerman, Charles. 1988. *Shaping Written Knowledge: The Genre and Activity of the Experimental Article in Science*. Madison: University of Wisconsin Press.

Biber, Douglas. 2010. *University Language. A Corpus-Based Study of Spoken and Written Registers*. Amsterdam and Philadelphia: John Benjamins.

Biber, Douglas, Susan M.Conrad, Randi Reppen, Pat Byrd, Marie Helt, Victoria Clark, Viviana Cortes, Eniko Csomay, Alfredo Urzua. 2004. Representing Language Use in the University: Analysis of the TOEFL 2000. Spoken and Written Academic Language Corpus. Princeton, NJ: Educational Testing Service.

Breitkopf, Anna. 2010. Involvement in conference presentations: a cross-cultural view. In Walther v. Hahn and Cristina Vertan (eds.), Specialized Language in Global Communication. Proceedings of the XVIth European Symposium on Language for Special Purposes (LSP), Hamburg (Germany) 2007, 251–260. Frankfurt am Main: Peter Lang.

Cobuild. 1995. *Collins Cobuild English Dictionary*. Glasgow: Collins.

Dubois, Betty Lou. 1980. Genre and structure of biomedical speeces. *Forum Liguisticum* 5. 140–169.

Ehlich, Konrad and Jochen Rehbein. 1977. Wissen, kommunikatives Handeln und die Schule. In Herma C. Goeppert (ed.), *Sprachverhalten im Unterricht. Zur Kommunikation von Lehrer und Schüler in der Unterrichtssituation* (UTB 642), 36–114. München: Fink.

Fandrych, Christian, Cordula Meißner and Adriana Slavcheva. 2012. The GeWiss Corpus: Comparing Spoken Academic German, English and Polish. In Thomas Schmidt and Kay Wörner (eds.), *Multilingual Corpora and Multilingual Corpus Analysis* (Hamburg Studies in Multilingualism), 319–337. Amsterdam and Philadelphia: John Benjamins.

Fandrych, Christian, Cordula Meißner and Adriana Slavcheva (eds.). 2014. *Gesprochene Wissenschaftssprache. Korpusmethodische Fragen und empirische Analysen*. Heidelberg: Synchron.

Fleck, Ludwik. [1935] 1979. *Genesis and Development of a Scientific Fact*. Chicago: University of Chicago Press.

Grimshaw, Allen D., Steven Feld and David Jennes. 1994. The Multiple Analysis Project: Background, History, Problems, Data. In Allen D. Grimshaw, Peter J. Burke, Aaron V. Cicourel, Jenny Cook-Cumperz, Steven Feld, Charles J. Fillmore, Lily Wong Fillmore, John J. Gumperz, Michael A. K. Halliday, Ruqaiya Hasan and David Jenness (eds.), *What's Going On Here? Complementary Studies of Professional Talk* (Volume Two of the Multiple Analysis Project), 3–57. Norwood, NJ: Ablex.

Jacoby, Sally.1998. *Science as performance: socializing scientific discourse through the conference talk rehearsal*. Los Angeles: UCLA PhD thesis.

Jacoby, Sally and Patrick Gonzales. 1991. The constitution of expert-novice in scientific discourse. *Issues in Applied Linguistics* 2(2). 149–181.

Knorr-Cetina, Karin. 1981. *Die Fabrikation von Erkenntnis. Zur Anthropologie der Naturwissenschaft*. Frankfurt/Main: Suhrkamp.

Kotthoff, Helga. 2001. Vortragsstile im Kulturvergleich: Zu einigen deutsch-russischen Unterschieden. In Eva-Maria Jakobs and Annely Rothkegel (eds.), *Perspektiven auf Stil*, 321–350. Tübingen: Niemeyer.

Lee, David. 2006. Humor in spoken academic discourse. *NUCB Journal of Language Culture and Communication* 8(3). 49–68.

Limberg, Holger. 2010. *The Interactional Organization of Academic Talk: Office Hour Consultations*. Amsterdam and Philadelphia: John Benjamins.

Limberg, Holger and Ronald Geluykens. 2007. Spoken Academic Discourse: A Critical Review. In Bettina Kraft and Ronald Geluykens (eds.), *Cross-Cultural Pragmatics and Interlanguage English*, 245–270. München: Lincom.

Mauranen, Anna. 1993. *Cultural Differences in Academic Rhetoric*. Nordeuropäische Beiträge aus den Human und Gesellschaftswissenschaften. Frankfurt/Main: Peter Lang.
Mauranen, Anna. 1994. Two discourse worlds: Study genres in Britain and Finland. *Finlance* XIII. 1–40.
Mauranen, Anna. 2010. Discourse reflexivity – A discourse universal? The case of ELF. [Special Issue on metadiscourse, Annelie Ädel and Anna Mauranen (eds.)]. *Nordic Journal of English Studies* 9(2). 13–40. http://ojs.ub.gu.se/ojs/index.php/njes/article/view/413/401 (accessed 8 February 2013).
Mauranen, Anna. 2012. *Exploring ELF. Academic English Shaped by Non-Native Speakers*. New York: Cambridge University Press.
Ochs, Elinor, Patrick Gonzales and Sally Jacoby. 1996. "When I come down I'm in the domain state": grammar and graphic representation in the interpretive activity of physicists. In Elinor Ochs, Emanuel Schegloff and Sandra Thompson (eds.), *Interaction and Grammar*, 328–369. Cambridge: Cambridge University Press.
Ochs, Elinor and Sally Jacoby. 1997. Down to the wire: The cultural clock of physicists and the discourse of consensus. *Language in Society* 26. 479–505.
Recski, Leonardo. 2005. Interpersonal engagement in academic spoken discourse: a functional account of dissertation defences. *English for Specific Purposes* 24. 5–23.
Reershemius, Gertrud. 2012. Research cultures and the pragmatic functions of humor in academic research presentations: A corpus-assisted analysis. *Journal of Pragmatics* 44. 863–875.
Riekkinen, Niina. 2009. "This is not criticism, but …" Softening criticism: The use of lexical hedges in academic spoken interaction. Helsinki: University of Helsinki Unpublished MA thesis. http://www.helsinki.fi/englanti/elfa/ProGradu_Niina_Riekkinen.pdf (accessed 22 July 2017).
Riekkinen, Niina. 2010. "This is not criticism, but …" – Softening criticism: The use of lexical hedges in academic spoken interaction. [HES Special Issue on English as a Lingua Franca, Anna Mauranen and Niina Hynninen (eds.)]. *Helsinki English Studies* 6, 75–87. http://blogs.helsinki.fi/hes-eng/files/2010/12/Riekkinen_HES_Vol6.pdf (accessed 8 February 2013).
Räisänen, Christine. 2002. The conference forum: A system of interrelated genres and discursive practices. In: Eija Ventola, Celia Shalom and Susan Thompson (eds.), *The Language of Conferencing*, 69–93. Frankfurt am Main: Peter Lang.
Rowley-Jolivet, Elizabeth. 2002. Science in the making: Scientific conference presentations and the construction of facts. In Eija Ventola, Celia Shalom and Susan Thompson (eds.), *The Language of Conferencing*, 95–125. Frankfurt am Main: Peter Lang.
Scollon, Ron and Suzanne Wong Scollon. 1995. Somatic communication: How useful is 'orality' for the characterization of speech events and cultures. In Uta M. Quasthoff (ed.), *Aspects of Oral Communication*. Berlin and New York: de Gruyter.
Suomela-Salmi, Eija and Fred Dervin (eds.). 2009. *Cross-cultural and Cross-linguistic Perspectives on Academic Discourse Volume 2* (Series Pragmatics and Beyond). Amsterdam and Philadelphia: John Benjamins.
Swales, John M. 1990. *Genre analysis. English in Academic and Research Settings*. New York: Cambridge University Press.
Swales, John M. 2001. Metatalk in American academic talk: The cases of 'point' and 'thing'. *Journal of English linguistics* 29. 34–54.
Swales, John M. 2004. *Research Genres. Explorations and Applications*. New York: Cambridge University Press.
Tannen, Deborah. 2002. Agonism in academic discourse. *Journal of Pragmatics* 34. 1651–1669.
Thompson, Susan. 2002. 'As the story unfolds': the uses of narrative in research presentations. In Eija Ventola, Celia Shalom and Susan Thompson (eds.), *The Language of Conferencing*, 147–167. Frankfurt am Main: Peter Lang.

Tracy, Karen1997. *Colloquium: Dilemmas of Academic Discourse*. Norwood, NJ: Ablex.
University of Jyväskylä. [n. d.]. Procedure at Dissertation. https://opiskelu.jyu.fi/en/instructions/doctoral-dissertation#section-8 (accessed 1 March 2017).
Ventola, Eija. 2002. Why and what kind of focus on conference presentations? Eija Ventola, Celia Shalom and Susan Thompson (eds.), *The Language of Conferencing*, 15–50. Frankfurt/ Main: Peter Lang.
Ventola, Eija, Celia Shalom and Susan Thompson (eds.). 2002. *The Language of Conferencing*. Frankfurt am Main: Peter Lang.
Webster's. 1996. *Webster's Encyclopedic Unabridged Dictionary of the English Language*. New York: Gramercy.
Weissberg, Bob. 1993. The Graduate Seminar: Another Research-Process Genre. *English for Specific Purposes* 12. 23–35.
Ylönen, Sabine. 1994. Die Bedeutung von Textsortenwissen für die interkulturelle Kommunikation – Kommunikative Unterschiede im Biologiestudium an den Partneruniversitten Jyväskylä und Bonn. *Finlance* XIII. 89–113.
Ylönen, Sabine. 2007. Training wissenschaftlicher Kommunikation mit E-Materialien. Beispiel mündliche Hochschulprüfung. In Konrad Ehlich and Dorothee Heller (eds.), *Die Wissenschaft und ihre Sprachen* . (Linguistic Insights: Studies in Language and Communication 52), 115–146. Frankfurt am Main: Peter Lang.
Ylönen, Sabine. 2009. Deutsch-deutscher Wissenschaftsdialog im Umbruch: Soziale Positionierung in mündlicher Wissenschaftskommunikation zwischen Ost und West. *Fachsprache* 1–2. 21–47.
Ylönen, Sabine and Virpi Vainio. 2010. Mehrsprachigkeit und Rolle des Deutschen im Studium aus der Sicht finnischer Studierender. *Apples – Journal of Applied Language Studies* 4(1). 29–49. http://apples.jyu.fi/article_files/Articles_2010_Ylonen_Vainio.pdf (accessed 1 April 2013).

Online-Corpora

BASE. [n. d.]. BASE (British Academic Spoken English) and BASE Plus Collections. University of Warwick. http://www2.warwick.ac.uk/fac/soc/al/research/collect/base/ (accessed 8 February 2013).
ELFA. 2008. The Corpus of English as a Lingua Franca in Academic Settings. Director: Anna Mauranen. http://www.helsinki.fi/elfa/elfacorpus (accessed 8 February 2013).
GeWiss. [n. d.]. Gesprochene Wissenschaftssprache [Spoken Academic Discourse]. https://gewiss.uni-leipzig.de (accessed 8 February 2013).
IDS. [n. d.]. DGD – Datenbank für gesprochenes Deutsch. http://dgd.ids-mannheim.de *(accessed 1 March 2017)*.
John Swales Conference Corpus. 2009. *John Swales Conference Corpus*. Ann Arbor, MI: The Regents of the University of Michigan. http://jscc.elicorpora.info/ (accessed 8 February 2013).
Simpson, R. C., S. L. Briggs, J. Ovens and J. M. Swales. 2002. *The Michigan Corpus of Academic Spoken English (MICASE)*. Ann Arbor, MI: The Regents of the University of Michigan. http://micase.elicorpora.info (accessed 8 February 2013).
VOICE. [n. d.]. *The Vienna-Oxford International Corpus of English* (version 2.0 online). http://www.univie.ac.at/voice/ (accessed 8 February 2013).

Ulla Tiililä

20 Legal discourse as an example of domain-specific science communication

Abstract: This article examines the concept of *legal discourse* and compares it to various related concepts, particularly *legal language*. The article begins with a review of previous research on legal discourse and the perspectives raised. Legal discourse encompasses other discourses, while also existing side by side with them. Legal science, e.g., is considered to be just one of the many legal discourses. In many cultures, the key source of legal discourse is written legislation. Other essential sources include the processes that precede and lead to the issuance of provisions as well as the processes of implementing provisions. The article also investigates the varied nature of legal discourse through an intertextual analysis of empirical data. By way of example, the article considers such perspectives as the multifaceted nature of legal discourse, style as an indicator of formality, and legal discourse in administrative decision-making. The examples examined demonstrate that while legal language often triggers the interpretation of legal discourse, the opposite is not necessarily the case: legal discourse is not always manifested as legal language. The article also shows that a wide range of discursive processes underlie texts written in legal language and that the end result should not necessarily be tampered with, say, by changing clause or sentence structures, as is customary for traditional language planning efforts.

1 Language of the law and legal discourse

The communicative world of law and justice has previously been examined from a variety of linguistic perspectives – not surprisingly, because "the law is a thoroughly linguistic phenomenon" (Koivisto 2011: 11, translation by the author; see also, e.g., Gibbons 1994: 3) and would not exist without language (Trosborg 1992). Yon Maley (1994: 11) has aptly noted that "language is medium, process and product in the various arenas of the law where legal texts, spoken or written are generated in the service of regulating social behaviour."

The close and multifaceted relationship between the law and language cannot be described with a single concept. Furthermore, the concepts of *language* and *discourse* must be distinguished for the purposes of this article. I use the concept of the *language of the law* to refer to a group of register features typical of legislative texts.

Ulla Tiililä, Helsinki (Finland)

https://doi.org/10.1515/9783110228014-020

These features have been listed in numerous publications (see, e.g., Johnson and Coulthard 2010: 10; also Mattila in this book). The language of the law is characterised by such syntactic and lexical features as long and complex sentence structures, special terminology, and a generic and impersonal perspective; similar features have been reported in several languages. Using the term *legal language*, Heikki Mattila (2002: 81–149) explains that its features include precision, universal applicability, distance, rigidness, archaism and dignity.

Such linguistic features have been referred to using the concepts of *style*, *register*, *jargon*, *dialect* and *sublanguage* (e.g., Engberg 2010: 49–52; Trosborg 1992; Witczak-Plisiecka 2007: 22–25).Some authors have also reflected on the extent to which certain features considered typical of the language of the law may in fact be myths (Tiersma 2005). Also worth noting is that the language of the law as a domain-specific language encompasses other domain-specific languages, such as the language of accounting or environmental sciences (Nordman 2009: 55). Moreover, the language of the law and justice may be used side by side in administrative activities with the language of, say, economics or medicine. Having studied official texts written in German, Silvia Sechi (2003: 7–8) points out that a clear-cut distinction between different language forms is ultimately impossible.

What then is *legal discourse*? The concept of *discourse* is used synonymously with those of *discussion*, *language use* and *text*, and *discourses* are usually studied precisely through *language* as well as through other semiotic systems. The concept is used in a range of ways in different disciplines. Anna Solin (2001: 31–32) notes that discourse is used variously to refer to the institutional provenance, topic, situational context, function or ideology of language.

Crucially, by using the concept of *discourse*, the focus shifts from specific linguistic features and clauses towards larger linguistic units as well as genuine, situational language use (e.g., Fairclough 1992: 3; see also Foucault, e.g., 1972). James Gee (1999: 6–7; 17–23) has divided the concept into *Discourse* with a capital D and *discourse* with a lower case d. According to Gee (1999: 7), the latter involves language-in-use, while the former refers to ways of signifying and describing things, phenomena and events from a specific perspective and in a specific manner that are historically rather persistent and are used from one interaction to another (Pietikäinen and Mäntynen 2009: 27; also Gee ibid.). To these, Jaana Vuori (2001: 81–82) adds the concept of "medium-sized discourse". According to her, *discourse* in its small-scale meaning refers mainly to a linguistic phenomenon that stretches beyond clause and sentence boundaries, whereas medium-sized *discourse* is used when seeking and analysing discourses in specific textual data, relating them to each other and naming them (e.g., the discourse of crime reporting, the discourse of medicine, the discourse of stay-at-home mothers). The concept of *discourse* in its broadest sense connects "individual utterances and text excerpts with major historical processes and changes of thought systems" (Vuori 2001: 82, translation by the author). Van Dijk (1997: 2–3)

notes appropriately that *discourse* is a practical, social and cultural phenomenon that should be analysed by focusing on order and organisation.

When we begin to explore the concept of legal discourse, we are examining not only the characteristics and varieties of the language of the law, but also the significance and impact of justice vis-à-vis various social contexts and practices. In many cultures, the concrete origin of legal discourse is written legislation, which according to Trosborg (1992) has a two-fold function: regulative and constitutive. Moreover, John Gibbons (1994: 3) sees the key elements of the law as being the law as code, the law as a collection of provisions, and the law as processes.

Rick Iedema (1997: 73) claims that *institutional discourses* are typically related to constraint and 'shouldness' on the one hand and enablement and power on the other. In constitutional states, the institutional actions of the administration and bureaucracy are based on the law, which they also implement. Thus, in the context of a constitutional state, institutional and legal discourse can be broadly characterised in the same way: as the discourse of constraint, shouldness and enablement. Exploring the concept of *legal language*, Mattila (2002: 3–7) mentions such related expressions as *the language of the law*, *legislative language*, *the language of administration*, *official language*, *the language of planning* – all of which are language varieties used by public authorities. Moreover, Kaarlo Tuori (2006: 27) emphasizes that *legal discourse* as a concept is broader than *legal science* or *legal scholarship*. According to him legal discourse "refers to all legal communication which takes place within the legal practices of the legal system".

Hence legal discourse cannot be examined without considering the processes that precede and lead to the issuance of legal provisions. Such processes include legal drafting and related scientific and other social discussion as well as social trends in different periods (e.g., *juridification*). To illustrate this, consider the example of family care. Laura Kalliomaa-Puha (2007) has noted that care, alongside many other areas of our society, has been juridified. Similarly, Ida Koivisto (2011: 316, translation by the author) points out that the "[l]egal system absorbs other social rationalities, colonising them as part of itself. The ethical or economic requirement of today may become the legal requirement of tomorrow." On the other hand, the implementation of the law emerges as essential. Relevant issues here include the (usually institutional) processes and practices of justice and negotiation, popularisation, communication, interpretation, translation, control and decision-making. Tuori (2006: 28–29) sees legal science as one of the legal practices such as law-making and adjudication. These practices are intertwined and they participate simultaneously in the ongoing legal discourse.

A distinct area is forensic linguistics, where linguistics is used as a means of criminal investigation and legal evidence. For example, Shuy (2001) focuses solely on forensic linguistics when presenting discourse analysis in the context of the law. However, the language of the law and the features and translations of legal texts (e.g., Bhatia 2010; Cao 2010) may be discussed in a presentation of forensic linguistics

(Coulthard and Johnson 2010), or a book on the language of the law may devote a separate section to forensic linguistics (Gibbons 1994).

Yet another perspective on legal discourse can be obtained by examining it as part of other discourses or side by side with them. Koivisto (2011) adds four sub-discourses to the discussion on the meta-discourse of good governance: the *ethical/moral sub-discourse*, the *efficiency sub-discourse*, the *development sub-discourse* and the *legal sub-discourse*. According to her (2011: 286, translation by the author), legal discourse can be summed up as consisting of "the rights of individuals in relation to public powers and/or the obligations concerning the behaviour of public authorities in exercising public power". Maley (1994: 13) counters that there is not one but several legal discourses, and Trosborg (1992) describes languages for special purposes (LSP) "as a range of domains which branch into subdomains each encompassing a number of sublanguages". Gunnarson (2009: 10) points out that professional discourses change as society changes: they are also affected by such phenomena as internationalisation, globalisation and technical development.

Legal discourse can be approached from many perspectives, and as seen above, the concept of discourse has also been used in various ways in research on legal discourse. However, the concept remains useful for examining the social impact of legal thought and structures. It can be used to examine how the legal perspective extends beyond the work and activities of legal professionals to other spheres. This is typically manifested precisely through linguistic and textual practices. Legal discourse is a professional discourse: it requires domain-specific knowledge and skills, developed through language use, language and discourses (Gunnarsson 2009: 5–6, see also, e.g., Bhatia 1994: 153). As Ann Blückert (2010: 299), a Swedish researcher of acquisition and teaching of legal language explains, "new law students may learn from their teachers that legal Swedish is an entirely new language". At the same time she shows that alongside the norms that are specific to the legal use of language students have to learn to master the norms of academic language, such as referencing. In education attention is also paid to acquiring the written linguistic norms in general language practice. (Blückert 2010: 300.) As Tuori (2006: 28) emphasizes, legal science is not only a legal practice but also a scientific practice.

When considering the essence of legal discourse from the perspective of language studies, we are dealing with intertextual and inter-discursive networks and chains of spoken, written and electronic text types (for an overview of research in this area, see, e.g., Nordman 2009: 54–58; Witczak-Plisiecka 2007 18–21; for research on written texts, see, e.g., Johnson and Coulthard 2010: 8–9). Next, I will focus on the varied ways of implementing legislation. Both the implementation of the law and the promotion of the perspectives of legality and the law may be manifested very clearly through specific linguistic structures, particularly lexico-grammatical clues.

I will also explain how legal discourse is independent from a particular (e.g., formal) manner of presentation: legal discourse can be manifested in almost any way and context (see also Bhatia and Candlin 2008: 140). When examining

legal discourses, the focus is often not only on language but also on the participants in the discursive situation. This article highlights situations in which one of the participants is a layperson and concentrates on written interaction rather than, say, legal proceedings. Aspects of power as well as the various manifestations of legal discourse emerge as particularly relevant (see also Maley 1994: 32–35; Gunnarsson 2009: 7).

2 The many faces of legal discourse

Legislation ultimately affects almost all our everyday activities. The steering effect of legislation through its implementation cannot be realised if it is not part of our daily lives. However, the special nature of the language of the law means that this is not always achieved (see, e.g., Piehl 2006: 184–185; Piehl: 2008). Non-specialists often have difficulty understanding the language of the law due to its domain-specificity. In extreme cases, the language of the law may resemble a foreign language. Hence, if the new law students have to learn legal language like a new language (Blückert 2010), it is not an overstatement to say that a kind of translation and interpretation is required to make legislation understandable to non-specialists. Nevertheless, as we are also dealing with relationships between texts written in the same language, the process can be explored from the perspective of intertextuality.

Genres devoted to promoting the steering effect of legislation and disseminating information about it include the *leaflets* and *websites* of public authorities and public service providers. Leaflet texts, both printed and electronic, are particularly important for organisations which exist essentially to implement legislation. One example is the Social Insurance Institution of Finland (Kela), which is responsible for implementing, developing and providing information on statutory social security. Kela leaflets are prepared through a process in which legislative language is translated into plain language better suited to providing information to the public (see, e.g., Lassus 2010: 37).

The original legislative text may be transformed both linguistically and visually during the editing process. Let us first examine the process through which the language of the law may be transformed. We will see how two sections of the Finnish National Pensions Act are rendered in different information texts: first on a plain language website and then in a leaflet in easy-to-read language. The purpose is to illustrate that, despite being interlinked, language and discourse are not the same thing. Rather, legal discourse takes many forms. While the information texts in the examples below describe the grounds for receiving a disability pension (section 12), they also refer to what the Act calls the "residence period requirement" (section 9). Example 1 features extracts from the sections of legislation to which the website in example 2 and leaflet in example 3 refer.

Example 1

Kansaneläkelaki 9. § (extract from the beginning)

Asumisaikavaatimus

Kansaneläkkeen ja lapsikorotuksen myöntämisen edellytyksenä on, että hakija on asunut Suomessa vähintään kolmen vuoden ajan 16 vuotta täytettyään.

vähintään kolmen vuoden ajan 16 vuotta täytettyään. Asumisaikavaatimusta ei kuitenkaan edellytetä henkilöltä, jonka työkyvyttömyys on alkanut hänen asuessaan Suomessa ja ennen kuin hän on täyttänyt 19 vuotta. Asumisaikavaatimusta ei myöskään edellytetä työkyvyttömyyseläkettä hakevalta henkilöltä, joka on saanut 16 vuotta täyttäessään alle 16-vuotiaan vammaistukea. https://www.finlex.fi/fi/laki/ajantasa/2007/20070568 (accessed 21 May 2018)

National Pensions Act, section 9 (extract from the beginning)

Residence period requirement

To receive a national pension and a child increment, the applicant shall have resided in Finland for at least three years after reaching the age of 16.

The residence period requirement shall not, however, apply to persons who became incapacitated for work while residing in Finland and before they reached the age of 19. Similarly, the residence period requirement shall not apply to persons who apply for a disability pension if, on reaching the age of 16 years, they were being paid disability allowance for persons under the age of 16 years.

Kansaneläkelaki 12. § (extract from the beginning)

Oikeus työkyvyttömyyseläkkeeseen

Työkyvyttömyyseläkkeeseen on oikeus 16–64-vuotiaalla työkyvyttömällä henkilöllä, kuitenkin siten, että alle 20-vuotiaalle eläke voidaan myöntää vain 16 §:ssä mainituin edellytyksin.

Työkyvyttömänä pidetään tätä lakia sovellettaessa henkilöä, joka on sairauden, vian tai vamman takia kykenemätön tekemään tavallista työtään tai muuta siihen verrattavaa työtä, jota on pidettävä hänen ikänsä, ammattitaitonsa sekä muut seikat huomioon ottaen hänelle sopivana ja kohtuullisen toimeentulon turvaavana. https://www.finlex.fi/fi/laki/ajantasa/2007/20070568 (accessed 21 May 2018)

National Pensions Act, section 12 (extract from the beginning)

Right to a disability pension

Those entitled to a disability pension shall be persons between the ages of 16 and 64 who are incapacitated for work, but persons under 20 only on the criteria laid down in section 16.

Under this Act, persons are considered disabled if they, due to illness, defect or injury, are incapable of performing their regular job or other comparable employment considered to be suitable for them and to ensure a reasonable income having regard to their age, professional skills and other circumstances.

These excerpts are characterised precisely by those features often considered typical of legal text. According to Aino Piehl (2008: 158), Finnish laws have an average sentence length of approximately 15 words and clause length of 10 words. In Example 1,

the average clause length in the original Finnish version of section 12 is more than 11 words, and the sentences have 19 and 39 words, respectively. The clauses and sentences in section 9 are slightly shorter: the average clause length is nine words, while the sentences have 18, 20 and 16 words. In both examples, however, the clauses and sentences are longer than in average Finnish non-fiction texts, which have a clause length of 7–8 words and a sentence length of 11–12 words (Heikkinen, Lehtinen, and Lounela 2001).

As can be expected, both sections are written from the perspective of the third person and use the passive voice. The third person is used when referring to the applicant (*are incapable of*, *have resided*), whereas the passive voice is used to refer to official action, i.e., to those applying the legislation (*persons are considered*, *shall not apply*). The sections also include such jargonistic expressions as *residence period requirement* and *child increment*.

Example 2 is an extract from the Kela website explaining section 12 of the National Pensions Act and also outlining the requirements of section 9. Not only does the language of the extract contain several features of plain, reader-friendly language, but it also includes near direct quotations from the law. Notably, the text addresses the reader in the second person (*You must have lived*, *Your other pensions and benefits may not*). The sentence structures vary. The first and third items on the list are short, single-clause sentences, whereas the second item has a markedly different sentence structure. When comparing the text to its underlying text, it is apparent that the second item closely follows the text of the law, repeating both its sentence structures and its terms (*residence period requirement*). Also included is the adjective *reasonable*, which appears in the law and which Marja-Liisa Kuronen (2004: 48; also Maley 1994: 26–29) mentions as an example of the need to include flexible and discretionary elements in legislation.

Example 2

Kela website (original text)

Kansaneläkelain mukaisen työkyvyttömyyseläkkeen voit saada, jos täytät kaikki seuraavat edellytykset:

- Muut eläkkeesi ja korvauksesi jäävät alle tulorajan [link]
- Olet asunut Suomessa vähintään laissa vaaditun asumisajan, ts. kolme vuotta 16 vuotta täytettyäsi. Asumisaikavaatimusta ei kuitenkaan edellytetä, jos työkyvyttömyytesi on alkanut Suomessa asuessasi ennen kuin olet täyttänyt 19 vuotta, tai olet saanut 16 vuotta täyttäessäsi alle 16-vuotiaan vammaistukea.
- Olet 16-64-vuotias.
- Sairaus, vika tai vamma estää kohtuullisen toimeentulon turvaavan työnteon. Ks. työnteko eläkkeellä. [link] http://www.kela.fi/tyokyvyttomyyselake-ja-kuntoutustuki-kuka-voi-saada (accessed 4 March 2015)

Kela website

To qualify for a disability pension payable under the National Pensions Act, you must meet the following conditions:

- Your other pensions and benefits may not exceed a specified maximum limit. [link]
- You must have lived in Finland for at least the minimum period specified in the Act (three years after reaching the age of 16 years). However, there is no residence period requirement if you became incapacitated for work while you were 18 years old or younger and living in Finland or if, on reaching the age of 16 years, you were being paid disability allowance for persons under the age of 16 years.
- You are between 16 and 64 years of age.
- You have an illness, defect or disability that prevents you from earning a reasonable living. See working while receiving a pension. [link]

The website text in Example 2 has changed both linguistically and visually in the process of editing the original legal text, and the online environment is utilised through the addition of links. The nature of the text can, however, be characterised as heterogeneous, or, as Kuronen (2004: 200) would describe it, a collision between customer-friendly discourse and legal discourse. Features of the former include directly addressing the reader as well as the use of short sentences, whereas legal discourse is evoked by the references to legislation explicit in the first sentence and the second item on the list. The legislative references create a manifestly intertextual relationship with the law (see Fairclough 1992: 104). Also addressed in the text are *conditions* which, similarly to *terms*, can be considered a typical topic of legal discourse. This is close to the idea of constitutive intertextuality (Fairclough ibid.). Jannika Lassus (2010: 117–118), who compared Swedish-language social benefit leaflets written in Finland and Sweden respectively, found that the Swedish conditional conjunction *om* (if) is frequently used. The same conjunction is also typical of the legal texts on which the leaflets are based. Thus, legal discourse can seemingly hinge on a single conjunction: the legal sphere is a conditional universe full of terms and conditions that must be met.

The above website text also includes a three-part parallel repetition of *illness*, *defect or disability*, all expressions of a similar type with a related meaning. According to Vijay Bhatia (1994: 143–144; see also Hiidenmaa 2000: 51–53), such binomial and multinomial expressions are typical of legislative texts and contribute to the idea of comprehensiveness. Brenda Danet (1997: 28) considers such expressions examples of ritualistic language use, which is typical not only of types of oral text, but also of written documents. Nouns with close referents are often used in such parallel expressions. Mattila (2002: 57) highlights a similar issue when discussing ways to increase people's commitment to the law. According to him, citizens can be committed to the law through language. Respect for the law can be promoted through mechanisms that emphasise authority, in which language plays a major role. Accordingly, the effectiveness of legal language can be enhanced with suggestive elements, rhythm and "beat" (Mattila 2002: 61–65). Pirjo Karvonen (1996; 1997: 53) has also demonstrated that contemporary official and legislative Finnish language creates meanings similarly to folk poetry and fiction, using two- and three-part rhyming schemes and alliteration.

The same topic is examined in Example 3 below, but without the three-part parallel expression: mention is only made of *illness* and *disability*, which have markedly different meanings. The text is an extract from Kela's *Eläkkeelle* ("Retirement") leaflet. In 2010 Kela published all of its printed leaflets as easy-to-read texts. In the extract below, we encounter a text with short sentences and clauses, a direct address to the reader and various visual means of illustration, such as the inclusion of very little text on each line and the use of pictures and colours.

Example 3

Kuka saa Kelasta työkyvyttömyyseläkettä?

Voit saada työkyvyttömyyseläkettä,
jos olet 16–64-vuotias ja
sinulla on sairaus tai vamma,
joka estää sinua tekemästä työtä.
www.kela.fi/documents/…/Esite…Kela.pdf/8693870d-ac3b-4bbf-97ab-c7532a78ec4f \l " (page 6, accessed 21 May 2018)

Who can receive a disability pension from Kela?
You can receive a disability pension
if you are between the ages of 16 and 64, and
you have an illness or injury
that prevents you from working.

The easy-to-read text includes no direct references to the text of the law. It forms a coherent entity constructed in compliance with the principles of reader-friendliness, although some minor fragments of legal text are still apparent. Thus, legal discourse seems capable of encompassing both reader-oriented discourse and discourse that follows the original legal text and refers to legislation.

Maley's (1994: 13) statement on the existence of several legal discourses may be more clearly illustrated by studying the development of municipal day care decisions in the City of Helsinki at the turn of the twenty-first century. In the mid-1990s, the form used for these decisions contained appeal instructions (Example 4) that were an almost direct quotation from section 45 of the Social Welfare Act. The text features many components of the original legal text: the excerpt begins with the *milloin* (when) conjunction, which in its standard Finnish usage has a temporal meaning. However, in legal texts, it assumes a conditional meaning which in standard language is expressed by using the *jos* (if) conjunction (or the temporal two-word conjunction *silloin kun* meaning 'when'). This word alone is enough to trigger the interpretation of legal discourse. Also typical of legal texts is the fact that the extract begins with a conditional subordinate clause, not with the main clause that follows it (see Kuronen 2004: 134–135; also Bhatia 1993: 110). Another characteristic of legal language is the relative clause in the middle of the second sentence: it is a "wedge clause" that separates parts that belong together.

Example 4

Muutoksenhaku

Milloin hakija on tyytymätön x-päätökseen, on hänellä oikeus saada päätös sosiaali- ja terveysjaoston käsiteltäväksi, jos hän 14 päivän kuluessa päätöksestä tiedon saatuaan sitä vaatii. Tiedoksi saannin katsotaan tapahtuneen, jollei muuta näytetä, seitsemäntenä päivänä siitä, kun päätös asianomaisen ilmoittamalla osoitteella varustettuna on annettu postin kuljetettavaksi. Tiedoksisaantipäivää ei lueta em. määräaikaan.

Appeal

When an applicant is dissatisfied with x decision, he or she is entitled to appeal against the decision to the social and health division within 14 days of being notified of the decision. The notification shall be considered to have taken place, unless proven otherwise, on the 7th day following the day on which the decision was submitted to a post office for delivery to the address provided by the person concerned. The day of notification is not included in the above time limit.

At the beginning of the twenty-first century, city officials developed the decision form by revising the paragraph containing the appeal instructions. The sentences were shortened to clarify the structure. The previous third-person address has been replaced with a second-person address (*you are*, *you have*) and the use of the Finnish imperative to instruct the reader from the second sentence onwards.

Example 5

Uusittu muutoksenhakuohje

Jos olette tyytymätön tähän päätökseen, on Teillä oikeus hakea siihen muutosta. Osoittakaa oikaisuvaatimus alueenne sosiaali- ja terveysjaostolle. Liittäkää hakemukseen tämä päätös tai jäljennös siitä ja toimittakaa asiakirjat viimeistään xx klo 16 osoitteeseen:

Revised appeal instructions

If you are dissatisfied with this decision, you have the right to appeal against it. Please address your appeal to the social and health division of your district. Please enclose this decision or its copy with the appeal and submit the documents by xx, at 4 pm, to the address:

Kuronen (2004: e.g., 6, 46), who has studied the revision of insurance policy texts, particularly highlights the use of the second person to address the reader as an example of customer-friendly discourse. She emphasises, however (ibid. 6), that addressing the reader is not the only feature that activates this discourse. The revised appeal instructions in Example 5 above are a good example of a change that goes beyond the surface level of language.

In the old text (Example 4), the reader was offered extracts of provisions and complex information about the principles for calculating the *day of notification*. The revised text (Example 5) demonstrates an entirely new practice, which may also indicate

an ideological change: city officials now carry out the work on the client's behalf and notify each client of the date by which they are expected to act. This can, with good reason, be considered a manifestation of customer-friendly discourse; nevertheless, I would place this discourse within the sphere of legal discourse. The extract concerns what are presumably the client's (or applicant's) statutory rights, and the last statutory date for appealing against the decision. This is a concrete example of the multifaceted nature of legal discourse. From the perspective of the city department, this is what Maley (1994: 13; also Kuronen 2004: 48) refers to as the discourse of legal consultation.

In the above, I have cited examples that more or less comply with the expectations of legal discourse. Legal discourse appears on the one hand as formal and complex (e.g., legal texts) and on the other as the result of various forms of clarification, even easy-to-read language. As a final example of the multifaceted nature of legal discourse, I will present a completely different type of text: benefit decisions, which can easily be seen as manifestations of legal discourse. They create, change or remove people's rights and obligations (EIF 1994 V: 222–223). Benefit decisions are preceded by an application process and followed by an implementation process or, in some cases, an appeal process. They are thus placed at the centre of a network of legal discourse.

The often-repeated idea that benefit decisions are difficult to understand because they are written in legal language is somewhat of a myth. For example, social workers make benefit decisions as part of their work with clients and also write various other texts, such as the notes of meetings with clients. Aino Kääriäinen (2003: 139–148), who has studied the dynamics of documentation and information formation in child protection documents, has found that legal texts, decisions and their explanations, and written notes constitute an intertextual chain of documents. Her research data shows that the detailed descriptions of daily life in written notes are written in decision documents from a macro-perspective by classifying and conceptualising the issues. For example, if the notes say that *both the mother and her partner were blind drunk*, the decision document may state that *the mother has a serious problem with alcohol*.

As texts, benefit decisions are typically divided into sections with standard headings. Finnish decisions on income support often include a separate section for the actual decision (*Päätös* or Decision), background information (*Asiaseloste* or Facts), grounds for the decision (*Perustelut* or Grounds) and additional information (*Tiedoksenne* or Information). The sections headed Facts or Grounds may often be quite similar to written notes (see Example 6 below).

Example 6

Extract from a decision on income support

KIRJALLINEN TOIMEENTULOTUKIHAKEMUS pp.kk.07/TULLUT ETUUSKÄSITTELIJÄLLE pp.kk. pp.kk.07 PYYDETTY TOIMITTAMAAN TOSITE MAKSETUSTA JOULUKUUN VUOKRASTA, MOLEMPIEN VEROTUSPÄÄTÖKSET vvvv, PERHEEN KAIKKIEN TILIEN TILIOTTEET HAKIJAN [X-PANKIN] TILISTÄ p.kk.vv ALKAEN JA PUOLISON [X-PANKIN] TILISTÄ p.kk.vv ALKAEN pp.k.vv MENNESSÄ

TULLUT p.k.vv PUOLISON TILIOTE/VAIMO KÄYBYT TOIMISTOOSA pp.k.vv EIVÄT SAA MISTÄÄ VEROTUSPÄÄTÖKSIÄ.

Extract from a decision on income support

WRITTEN APPLICATION FOR INCOME SUPPORT dd.mm.07/RECEIVED BY BENEFITS OFFICER dd.mm.
dd.mm.07 REQUESTED A RECEIPT OF PAYMENT FOR THE DECEMBER RENT, TAXATION DECISIONS FOR BOTH yyyy, BANK STATEMENTS FOR ALL FAMILY ACCOUNTS FOR APPLICANT'S ACCOUNT IN [X BANK] FROM d.mm.yy. AND SPOUSE'S ACCOUNT IN [X BANK] FROM d.mm.yy BY dd.m.yy.
RECEIVED dd.m.yy SPOUSE'S BANK STATEMENT/WIFE VIDITED THE OFFICE dd.m.yy. CANNOT OBTAI TAX DECISIONS.

Several features add up to the note-like impression here. Written notes are typically assumed to be unpolished texts not intended for publication and not necessarily for a readership other than the writer him- or herself. Sue Walker's (2001: 43) list of the variables that describe the formality and informality of texts is a good tool for examining Example 6. Institutional texts are usually thought of as formal. The impression of formality is created by features that lead the reader to conclude that the text was carefully planned and that its production was a demanding process that may have required special material. The reader can also usually conclude that the manner of production was professional and may have involved fairly considerable costs. The impression of formality is further reinforced by a certain permanence and the use of standard language (Walker ibid.).

In Example 6, the impression of formal and, hence, typical institutional text is undermined particularly by the language, which does not comply with the requirements of standard written language. Noun phrases without verbs (*written application for income support*) are apparently a non-distinctive feature of this type of narrative (Viinikka 2011); in this case, the lack of verbs is combined, however, with non-standard punctuation: in one case, a full stop is replaced by a slash. Added to this is the exclusive use of capital letters caused by the restrictions of the data system. The end result is a text with very few elements that would help the reader to make sense of the larger meanings (i.e., clauses and sentences).

As the text also contains clear typing errors (*vidited*, *obtai*), the overall impression is that of an unplanned, unprofessional and everyday text written in a hurry – all features not typically associated with official, institutional texts. Despite these shortcomings, the text is a legally valid document that confers rights when it is named a *decision*. In other words, one example of legal discourse.

3 Style as a marker of formality

The above examples shed light on various manifestations of legal discourse: rights, restrictions, duties and opportunities (see Iedema 1997) can be discussed in various

ways. However, the presence of legal discourse is not always apparent in the places where one would expect it to be visible. Many government organisations exist solely for the implementation of the law. Such organisations can be considered manifestations of legal discourse right down to their names. Consequently, it is interesting to consider the forms arising from attempts at language clarification, customer orientation and popularisation at different times. From a wider perspective, these are phenomena which Norman Fairclough (1992: 201–215) has called *democratization* and *commodification*, whereas Srikant Sarangi and Stefaan Slembrouck (1996: 19–35) have drawn attention to what they call *debureaucratisation*.

From the point of view of texts and the communication of public authorities, this means that the implementing authorities communicate in a way that is no longer recognisable as the communication of public authorities. Such language use has diverged quite far from the formal and dignified communication traditionally associated with legal language use. Examples abound in social media (e.g., Ohlsson 2009: 60–64), where the websites of public authorities cannot always be distinguished from those of commercial organisations. In creating a new visual look, public authorities must be careful that their hard-copy mail is not mistaken for junk mail. On the other hand, advertisers try to reach potential customers precisely by, for example, using brown envelopes to make their mail look as official as possible.

The Institute for the Languages of Finland, which has official responsibility for language planning in Finland, has drawn attention to how official organisations name themselves and their units. New names appear to be influenced by commodification: government agencies adopt logo-like proper names which do not reveal their actual job description. Estonia has *Eesti Post*, Germany *Deutsche Post*, Sweden and Denmark *Posten Norden* (the Swedish Posten and the Danish *Post Danmark* have merged). In Finland E.g., *Suomen Posti* (*Finnish Post*) was renamed as *Itella* in 2007 (Paikkala 2010), which means nothing in Finnish. In 2014 the organisation changed its name again into a mixed-language-form name *Posti Group Oyj*. Problematic names have become so common in Finland that the Parliamentary Ombudsman (the official who ensures that Finnish authorities and officials discharging public duties observe the law and fulfil their obligations) has received several complaints from citizens. In one case, the Ombudsman stated that the English-language name Stroke Unit given to a Finnish hospital unit "does not comply with the legal provisions on linguistic rights and good governance" (Paikkala 2011).

Regarding a complaint about *Trafi* as the name of the Finnish Transport Safety Agency, the Parliamentary Ombudsman has stated that "public authorities must always present themselves publicly using their official name" and that this name must be such that customers "recognise it as the name of the public authority and it can be distinguished from the names of, for example, commercial businesses" (Parliamentary Ombudsman 2011). According to the Ombudsman's decision, the Finnish Transport Safety Agency was wrong to use the name Trafi on vehicle-tax envelopes.

One complainant had almost disposed of the letter in question because it looked like an advertisement rather than official mail (Parliamentary Ombudsman 2011).

The underlying reason for choosing names influenced by English and Latin may be a change in Finnish public administration, such as the aforementioned phenomenon of commodification. One might see a connection between the new culture of naming organisations and recent trends in public administration, particularly managerialism and New Public Management (Juhila 2006: 71–72). The latter have aimed to modernise the purportedly rigid and inefficient public administration and to increase its efficiency by borrowing methods and management theories from the private sector. Whatever the case may be, these administrative trends have coincided with the renaming of many government agencies, which have also revamped their image by avoiding the bureaucratic-sounding word *agency* (*virasto* in Finnish) in their names. The names of organisational sub-units are often simply nominalised verbs (e.g., *Surveillance* or *Advice)* which do not indicate their organisational status. This naming trend may also be based on the prevalent customer-driven approach and emphasis on the service mission of public authorities. For example, on their websites most Finnish government agencies describe their *services* or *activities*, not their *departments* or *units*. This may be connected to the idea that residents do not need to know how the local authority is organised to find the services that they require.

However, the customer-driven approach and the new kind of service orientation occasionally merge – if not collide – with a perspective which, due to its generic and comprehensive nature, shares many of the same features as legal discourse. For example, in the 2010s, the City of Kuopio in eastern Finland named one of its social services units *Service Area for the Promotion of Wellbeing* (*Hyvinvoinnin edistämisen palvelualue*) with sub-units called *Independent Wellbeing Services* (*omatoimisen hyvinvoinnin palvelut*), *Supervised Wellbeing and Independent Learning Services* (*ohjatun hyvinvoinnin ja omaehtoisen oppimisen palvelut*), *Citizenship Activation Services* (*kansalaistoiminnan aktivointipalvelut*), and *Arts and Events Service* (*taide- ja tapahtumapalvelu*). Such names show how the pursuit of a service-oriented system may lead to the creation of linguistic units that can best be described according to Lyons's (1977: 442–452) classical distinction as second-order or often third-order entities, in other words, highly abstract expressions rather than language usually considered as customer-friendly.

In the above, I have discussed cases in which legal discourse either manifests itself in less traditional ways or does not manifest itself at all where it would be expected or even desirable. Examples from the opposite end of the spectrum can also be cited in the context of information provision. Because the language of the law has a certain status, its wording is often considered untouchable. As a result, organisations – also those organised according to service areas – may draw up *notifications* which are actually almost direct quotations from an act or a decree.

Examples of the multifaceted environments in which legal discourse can be manifested include various signs, such as warnings and prohibitions. We are accustomed

to seeing the language of the law on road signs, but in principle such signs can be found anywhere. For example, those who travel on Finnish waterways may come across a yellow sign with the following nominal clause consisting of intertextual elements: *Rapids and currents in waters that contain salmon and whitefish, as referred to in section 8 of the Fishing Act* (*Kalastulain 8 §:ssä tarkoitettu lohi- ja siikapitoisen vesistön koski- ja virtapaikka*). Legal discourse can be manifested almost everywhere, from the most everyday situations to the most deserted natural landscapes.

4 Legal discourse in administrative decision-making

The world of decision-making offers distinctive perspectives on legal discourse. The decisions of courts of law are solidly situated in the world of legal experts, although the readers of such decisions are often laypeople. In contrast, both the writers and the readers of benefit decisions are non-specialists: benefit decisions are not made by judges or lawyers, but rather by various social services professionals, such as social workers.

How does legal discourse manifest itself in the implementation of the law when one of the parties is a municipal resident/citizen/client/patient and the other is, for example, a public service provider? The language used to implement the social security system is customarily considered difficult to understand because it is legal language. Next, I will investigate some municipal decisions granting statutory income support and transport services for the disabled. In Finland transport services (e.g., subsidised taxi rides) are offered to the severely disabled, who find it difficult or impossible to use public transport.

Municipal benefit decisions are usually based on applications and statements. The texts underlying the decisions typically feature standard language, the language of everyday communication and the language of domain-specific communication, such as the language of medicine. The relationship between these texts related to the application and the decision may be studied through intertextual analysis by, for example, exploring the way in which information is summarised in the texts. Example 7 is an extract from a medical certificate accompanying an application (see Tiililä 2007). The certificate first describes the patient's condition in diagnostic terms; a section entitled "Functional description" then follows.

Example 7

Lääkärinlausunto

Vammat tai sairaudet

1. Haemorrhagia intracerebalis cum hemiparesis hl 3, lk 3

l.sin, Aivoverenvuoto ja vas. puolen halvaus

Toiminnallinen kuvaus

- -*Bussin käyttö hankalaa* vas. puolen toiminnanvajauksen sekä tasapainohäiriön takia

Medical certificate

Injuries or illnesses

1. Haemorrhagia intracerebralis cum hemiparesis hl 3, lk 3

l.sin, cerebral haemorrhage and paralysis of the left side of the body

Functional description

Bus use difficult due to impaired functioning of the left side as well as a balance disorder.

The decision (Example 8) summarises the medical certificate by describing the patient's condition using the possessive structure and citing the medical certificate as the source of the information. This is followed by a deduction-like description. The information is a combination of the medical certificate's diagnostic section (entitled Injuries or illnesses) and functional description.

Example 8

Kuljetuspalvelupäätös

Hakemukseen liitetystä lääkärintodistuksesta ilmenee, että hakijalla on aivoverenvuodon ja vasemman puolen halvauksen aiheuttamia toiminnanvajauksia ja tasapainohäiriöitä, joiden takia *hakija ei kykene liikkumaan julkisilla liikennevalineilla ilman kohtuuttoman suuria vaikeuksia*.

Decision on transport service

The medical certificate enclosed with the application demonstrates that the applicant suffers from impaired functioning and balance disorders caused by a cerebral haemorrhage and paralysis of the left side of the body, as a result of which the *applicant is unable to use public transport without unreasonable difficulty*.

The result of the paralysis and other symptoms is said to be that the *applicant is unable to use public transport without unreasonable difficulty*. This assessment corresponds to the phrase *Bus use difficult* in the medical certificate. The non-existing human agent of the medical certificate corresponds to the *applicant* in the decision. Instead of talking about *bus* use, the decision refers to *public transport*. In the certificate text, the noun *use* and the associated adjective *difficult* are expressed with the negative phrase *cannot use without unreasonable difficulty*. This change cannot be described with the concepts used for the summarisation of information; rather it involves the translation of everyday discourse into legal discourse. The decision evokes section 5 of the Decree on Services and Assistance for the Disabled (Example 9), parts of which have been included in the text without modification:

Example 9

Vammaispalveluasetus 9. §

Kuljetuspalveluja ja niihin liittyviä saattajapalveluja järjestettäessä vaikeavammaisena pidetään henkilöä, jolla on erityisiä vaikeuksia liikkumisessa ja joka ei vammansa tai sairautensa vuoksi voi *käyttää julkisia joukkoliikennevälineitä ilman kohtuuttoman suuria vaikeuksia*.

Decree on Services and Assistance for the Disabled, section 9

In the arrangement of transport services and related accompanying services, a person shall be considered severely disabled if he or she has special difficulties in moving and, owing to his or her injury or illness, cannot use *public transport without unreasonable difficulty*.

Intertextual analysis demonstrates that to characterise the decision as having been written in legal language would be a one-dimensional description of what the text is and does. When comparing the text with its underlying text, it is clear that the linguistic change has involved the application of a macro-perspective to an individual applicant's situation: the applicant's situation has been translated into the language of the law and is now viewed from the perspective of legal classification. This process is crucial for decision-making. Sarangi and Slembrouck (1996: 43–45) use the term *bureaupretation* to refer to the process in which administrative officials consider the client's situation from the institution's point of view, which requires a kind of translation. Writing about a similar phenomenon, Niemi-Kiesiläinen, Honkatukia, and Ruuskanen (2006: 32) refer to the situation in which a court of law translates the "language of the parties into legal language". Whereas information texts require interpretation from legislative language into plain language, or even easy-to-read language, the direction is the opposite in decision-making: from plain language into legislative language. The phenomenon is also related to the fact that in legal discourse norms are typically differenciated from facts (Tuori 2006: 34). However, as Tuori (2006: 34) points out, legal facts are selected: in legal discourse only those facts that are legally meaningful are taken into account.

Similar translation occurs on many levels. It also takes place when administrative officials rename a citizen's *question* or *request* as a *claim*, which is a more powerful term connected to affective situations in everyday life. In the world of administration and justice, however, it is the established term for a contribution to a chain of discussion, and using the right term creates the right institutional context.

The control of citizens' contributions may go quite far. Returning to the example of transport services (Tiililä 2007), City of Helsinki decisions include not only the *decision* itself but also a section entitled Facts (*Asiaseloste* in Finnish), which describes the background to the case and summarises the content of the client's application and various expert statements. This is typically the only section in which the client's (the applicant's) words are summarised. Example 10 is an extract from the beginning of a Facts section.

Example 10

Asiaseloste

Haetaan sosiaalipalvelutoimistoon ppkkvv saapuneella hakemuksella kuljetuspalvel sairaalaan sekä vapaa-ajan matkoja käsittäen asioimisen, yhteiskunnallisen osallistumisen, virkistyksen tai muun syyn vuoksi jokapäiväiseen elämään kuuluvia matkoja.

Facts

Application received by the social services office on ddmmyy for transport services to hospital as well as for leisure travel, including the transaction of daily affairs, civic engagement, recreation or other travel as part of everyday life.

The extract seems to be a free summary of an application. The application process is referred to in Finnish using the passive verb, and the recipient (*social services office*), format (*application*) and time (*ddmmyy*) of the application are also specified. This is followed by the actual subject of the application: *transport services* for specific purposes. Intertextual analysis again sheds interesting light on this text. The original application form (Example 11) shows that the expressions in the decision are almost direct quotations from the form (italicised below).

Example 11

Katkelma kuljetuspalvelun hakulomakkeesta

Haen kuljetuspalvelua seuraaviin matkoihin:
Vapaa-ajan matkat käsittäen *asioimisen, yhteiskunnallisen osallistumisen, virkistyksen, tai muun syyn vuoksi jokapäiväiseen elämään kuuluvat matkat.*

Extract from the application form for transport services

I am applying for transport services for the following travel:
Leisure travel including the *transaction of daily affairs, civic engagement, recreation or other travel as part of everyday life.*

The authorities are supposedly quoting the applicant while in fact quoting themselves, for they themselves have of course prepared the original application form. If we trace back the chain of texts, we see that the text of the application form is largely based on the text of the relevant Decree (Example 12; largely identical phrases italicised).

Example 12

Asetus vammaisuuden perusteella järjestettävistä palveluista ja tukitoimista 759/1987

Kuljetuspalveluihin niihin liittyvine saattajapalveluineen kuuluu
vaikeavammaisen henkilön työssä käymisen, opiskelun, *asioimisen*,

yhteiskunnallisen osallistumisen, virkistyksen tai muun sellaisen syyn vuoksi tarpeelliset, jokapäiväiseen elämään kuuluvat kuljetukset.

Decree on Services and Assistance for the Disabled 759/1987

Transport services, including related accompanying services, shall include transport necessary for a severely disabled person's work, study, *transaction of daily affairs, civic engagement, recreation or other travel as part of everyday life*.

An almost direct quotation from a legislative text is claimed to be a statement uttered by the applicant, an individual citizen. This is self-contradictory because one of the key requirements placed on public administration and more generally on social services and care work in Finland is client consultation. The client's involvement and autonomy are emphasised, for example, in the ethical guidelines for social services professionals. Consultation and listening lie at the heart of social work, and the information provided by the client should be trusted (Arki, arvot 2005: 14–15).

These ethical guidelines are further reinforced by Finnish legislation, which emphasises the consultation of citizens, civic engagement and the consideration of requests and opinions (e.g., Administrative Procedure Act, section 34; Act on the Status and Rights of Social Welfare Clients, sections 4 and 8; Local Government Act, section 27). The right to influence the decisions that one is affected by is also one of the objectives of Finland's Disability Policy Programme (2010: 55). Arguably, adequate consultation is not achieved by presenting legislative text as the client's words, but we can also ask whether applying for support would otherwise be possible: does the text of the Decree on the application form also serve to inform the client? The next question then becomes: to what extent should citizens know the language of the law and administration, and do they need to master legal discourse in order to be heard? This phenomenon was studied as early as the 1990s by Peter Goodrich (1990: 11–34), who used the case of the Haida Indians to criticise the fact that people need to know the language of the law to have access to justice.

Thus, one dimension of legal discourse seems to be certain kind of control. The engagement in legal discourse is not controlling only the customers in ways described above. Legal professionals are also controlling the language used by non-professionals. Decision texts, e.g., usually consist of preformed textual extracts which can be retrieved from the information systems by using simple codes. Applying the extracts fastens the text-making processes. Moreover it is a way to ensure the use of linguistic forms approved by office lawyers in customer servants' direct interaction with customers.

The world of decision-making also opens other interesting perspectives on legal discourse. Naming a text a *decision* creates a performative context: it describes an act performed in the text while also performing the act. A non-specialist may, however, wonder why the text is called a *decision*. For example, children's right to day care is

an entitlement in Finland, and the relevant act refers to the *provision* of day care. Why cannot parents receive information about this provision process under the heading of *notification* or *information* rather than *decision*?

Considering the status of a *decision* in the network of administrative texts helps to shed light on this issue. In administrative contexts, a *decision* is often paired sequentially with an *application*. People may, however, be surprised to receive a *decision* without having first applied for anything. The initiative for making a decision sometimes comes from within the official benefit-paying organisation, sometimes from the employer. Therefore, we can suppose that the primary motivation for naming a text a *decision* is not connected to the client and the application process: a decision is not necessarily the second pair part of an application/decision adjacency pair; rather, it may be the first pair part of an entirely different kind of process (*adjacency pair*, see, e.g., Sacks, Schegloff, and Jefferson 1974). A text named a *decision* is a static entity: it can be repealed or implemented and, most importantly, appealed against. Hence, the naming of a text as a decision has a legal motivation and helps to anticipate conflicts: it is the first part of a sequential pair in which the second part is created through appeal processes and legal proceedings.

The impact of legal discourse on the activities of public authorities is demonstrated by the fact that decisions actually serve as the foundation for administrative activities. Decision-making that proceeds in the right order is a central part of public administration, and it is preceded by a range of actions and implementation measures. According to Mäenpää (2000: 152), the most common form of administrative act is precisely the written *administrative decision*. The sheer volume of decisions is indicated by the 259,000 or more Finnish households which received municipal income support in 2015; a written decision was associated with each of the individual cases (www.thl.fi). As for Kela, it made more than 10 million benefit decisions in 2009 (see Tiililä 2010: 172).

In many ways, administrative activities are based on the preparation of legally binding documents, i.e., decisions. Below is an example of a decision on municipal transport services.

Example 13

Ote kuljetuspalvelupäätöksestä

HAKEMUKSENNE HYLÄTÄÄN TERVEYSASEMALLE JA SAIRAALAAN TEHTÄVISTÄ MATKOISTA, KOSKA SAIRAUDEN- JA TERVEYDENHOIDON SAAMISEKSI TEHTÄVÄT MATKAT KORVAA KANSANELÄKELAITOS SAIRAUSVAKUUTUSLAIN NOJALLA.

Extract from a decision on transport services

YOUR APPLICATION CONCERNING TRAVEL TO A HEALTH CENTRE AND HOSPITAL IS REJECTED BECAUSE THE SOCIAL INSURANCE INSTITUTION REIMBURSES SUCH TRAVEL EXPENSES UNDER THE SICKNESS INSURANCE ACT.

The extract is interesting for an examination of legal discourse not only because it invokes the law. An intertextual analysis of chains of text (Tiililä 2007: 222–223), i.e., clients' applications, reveals that the Act on Services for the Disabled does not apply to the travel rejected in Example 13 nor do clients ever apply for it: the application form does not even have a separate section for hospital travel. The above text thus reports a decision rejecting something for which the client has not even applied. Continuing our intertextual analysis of comparing decisions with each other, we find that the same issue is expressed differently in other decisions (Example 14).

Example 14

Katkelma kuljetuspalvelupäätöksestä

TIEDOKSI: SAIRAUDEN- JA TERVEYDENHOIDON SAAMISEKSI TEHDYT MATKAT KORVAA KANSANELÄKELAITOS SAIRAUSVAKUUTUSLAIN NOJALLA.

Extract from a decision on transport services

FOR YOUR INFORMATION: THE SOCIAL INSURANCE INSTITUTION OF FINLAND REIMBURSES THE EXPENSES OF TRAVEL NECESSARY TO RECEIVE MEDICAL AND HEALTH CARE UNDER THE SICKNESS INSURANCE ACT.

The above example illustrates why administration has sometimes been called a decision-making machine. The example also brings us to a discussion of linguistic simplification. Bhatia (1993: 145–146) notes that the simplification of language may lead to a change of genre. Examples 13 and 14 are interesting because the same issue is expressed in two different ways within a single genre. This may be indicative of a struggle or alternation between legal and customer-oriented discourse, more general signs of which have been identified in administration (Tiililä 2007).

5 Conclusion

As Ann Blückert (2010: 300) has noted, law students face so called double messaging in their studies: On one hand they are advised not to apply long and complicated expressions in their texts. Yet they must read texts written in that manner. In her dissertation Blückert has, thus, proven right the phenomenon that Lars D. Eriksson (1999) calls *the polyphony of justice*. According to Eriksson "the choir of lawyers sings in many different voices". Tarja Salmi-Tolonen (2008: 235) discusses the same phenomenon when stating that "different legal contexts produce different kinds of legal prose". As much as we would like to categorize legal language or the language of law as one homogeneous language form, in reality legal scientists need to master many different registers and discourses in order to be able to communicate and interact in

the sociolinguistically heterogeneous environment of law as science. Moreover, the science of law itself is not a unified discipline and lawyers are not the only ones who have ownership to legal discourse.

The empirical examples cited in this article also demonstrate that legislation leaves an imprint on many texts, particularly those that play an administrative role. However, the examples also show that the language of the law should not necessarily be omitted from a text by, for example, changing clause structures. The language of the law may be consciously chosen as the result of a discursive process, as part of the consideration and justification associated with decision-making, for example, in a situation that requires the generalisation of the private. It is easy to concur with Solomon's view (1996; see also Rasmussen and Engberg 1999: 131–132) that a variety of approaches should be used to develop and simplify language. Justice and the implementation of the law are manifested in texts in many ways and settings. These multifaceted manifestations cannot be profoundly understood or successfully developed without viewing language from a discursive perspective as sequential statements and chains and networks of text processed by the participants.

References

Arki, arvot, elämä, etiikka 2005. Sosiaalialan ammattilaisen eettiset ohjeet. [Day-to-day living, values, life, ethics. The code of ethics for social work professionals]. Sosiaalialan korkeakoulutettujen ammattijärjestö Talentia ry. Helsinki: Ammattieettinen lautakunta.

Bhatia, Vijay. 1993. *Analysing genre. Language use in professional settings*. London and New York: Longman.

Bhatia, Vijay. 1994. Cognitive structuring in legislative provisions. In J. Gibbons (ed.), *Language and the Law*, 136–155. London and New York: Longman.

Bhatia, Vijay. 2010. Legal writing: specificity. Specification in legislative writing: Accessibility, transparency, power and control. In Malcolm Coulthard and Alison Johnson (eds.), *The Routledge Handbook of Forensic Lingustics*, 37–50. London and New York: Routledge.

Bhatia, Vijay K. and Christopher N. Candlin. 2008. Interpretation across legal systems and cultures. A Critical Perspective. In Vijay K. Bhatia, Christopher N. Candlin and Jan Enberg (eds.), *Legal Discourse across Cultures and Systems*, 127–143. Hong Kong: Hong Kong University Press.

Blückert, Ann. 2010. *Juridiska – ett nytt språk? En studie av juridikstudenters språkliga inskolning* [Legalese – a new language? A study of the language socialization of law students]. Upsala: Upsala University.

Cao, Deborah. 2010. Translating legal language. In Malcolm Coulthard and Alison Johnson (eds.), *The Routledge Handbook of Forensic Linguistics*, 78–91. London and New York: Routledge.

Danet, Brenda. 1997. Speech, writing and performativity: An evolutionary view of the history of constitutive ritual. In Britt-Louise Gunnarsson, Per Linell and Bengt Nordberg (eds.), *The Construction of Professional Discourse*, 13–53. London and New York: Longman.

Van Dijk, Teun. 1997. Discourse as interaction in Society. In Teun van Dijk (ed.), *Discourse as social interaction* (Discourse Studies: A Multidisciplinary Introduction 2), 1–37. London/ Thousand Oaks and New Delhi: Sage Publications.

EIF. 1994. Encyclopædia iuridica fennica. [Encyclopedia juridica Fennica]. Suomalainen oikeustietosanakirja. Suomalaisen lakimiesyhdistyksen julkaisuja. Osat I–V. Jyväskylä: Gummerus.

Engberg, Jan. 2010. Knowledge construction and legal discourse: The interdependence of perspective and visibility of characteristics. *Journal of Pragmatics* 42(2010). 48–63.
Eriksson, Lars D. 1999. Oikeuden polyfonia. In Antero Jyränki (ed.), *Oikeuden kielet. Oikeus ja oikeudellinen ajattelu monikielisessä maailmassa* [The polyphony of justice. In Languages of law. Law and legal thinking in the multilingual world]. Turku: Turun yliopiston oikeustieteellisen tiedekunnan julkaisuja.
Fairclough, Norman. 1992. *Discourse and Social Change*. Cambridge: Polity Press.
Finland's Disability Policy Programme. 2010. *Vahva pohja osallisuudelle ja yhdenvertaisuudelle.* [A Strong Basis for Inclusion and Equality]. Suomen vammaispoliittinen ohjelma VAMPO 2010–2015. Sosiaali- ja terveysministeriön julkaisuja 2010:4.
Foucault, Michel. 1972. *The Archaeology of Knowledge*. London: Routledge.
Gee, James Paul. 1999. *An Introduction to Discourse Analysis. Theory and Method*. London: Routledge.
Gibbons, John. 1994. Introduction: language constructing law. In John Gibbons (ed.), *Language and the law*, 3–10. London and New York: Longman.
Goodrich, Peter. 1990. Attending the hearing: listening in legal settings. In Graham McGregor and R. S. White (eds.), *Reception and Response. Hearer Creativity and the Analysis of Spoken and Written texts*, 11–36. London: Routledge.
Gunnarsson, Britt-Louise. 2009. *Professional discourse*. London and New York: Continuum.
Heikkinen, Vesa, Outi. Lehtinen, and Mikko Lounela. 2001. Kuvia kirjoitetusta suomesta. [Features of written Finnish]. *Kielikello* 3(2001). 12–15.
Hiidenmaa, Pirjo. 2000. Poimintoja virkakielen rekisteristä. [Excerpts from the register of administrative language]. In Vesa Heikkinen, Pirjo Hiidenmaa and Ulla Tiililä (eds.), *Teksti työnä, virka kielenä*, 35–62. Helsinki: Gaudeamus.
Iedema, Rick. 1997. The language of administration. Organizing human activity in formal institutions. In Frances Christie and J. R. Martin (eds.), *Genre and institutions. Social processes in workplace and school*, 73–100. London and Washington: Cassell.
Johnson, Alison and Malcolm Coulthard. 2010. Introduction. Current debates in forensic linguistic. In Malcolm Coulthard and Alison Johnson (eds.), *The Routledge Handbook of Forensic Linguistics*, 1–15. London and New York: Routledge.
Juhila, Kirsi. 2006. *Sosiaalityöntekijöinä ja asiakkaina. Sosiaalityön yhteiskunnalliset tehtävät ja paikat.* [As social workers and as clients. The societal functions and sites of social work]. Tampere: Vastapaino.
Kääriäinen, Aino. 2003. *Lastensuojelun sosiaalityö asiakirjoina. Dokumentoinnin ja tiedonmuodostuksen dynamiikkaa.* [Documentation in social work concerned with child protection]. Sosiaalipolitiikan laitoksen tutkimuksia 1/2003. Helsingin yliopisto, Helsinki.
Kalliomaa-Puha, Laura. 2007. *Vanhoille ja sairaille sopivaa? Omaishoitosopimus hoivan instrumenttina*. Sosiaali- ja terveysturvan tutkimuksia 90 [Suitable for the old and sick? Informal care agreements as an instrument for organising care. Helsinki: The Social Insurance Institution, Finland, Studies in social security and health 90]. Helsinki: Kelan tutkimusosasto.
Karvonen, Pirjo. 1996. Sitä ja tätä komiteakielestä. Rinnastukset, luettelot ja sanaparit. [This and that about committee language. Appositions, lists and collocations]. In Ritva Liisa Pitkänen, Helena Suni and Satu Tanner (eds.), *Kielen kannoilla* (Kotimaisten kielten tutkimuskeskuksen julkaisuja 86), 30–40. Helsinki: Edita.
Karvonen, Pirjo. 1997. *Suomi eurooppalaisessa kieliyhteisössä*. [Finnish in the European language community]. Helsinki: Opetusministeriön koulutus- ja tiedepolitiikan osaston julkaisusarja.
Koivisto, Ida. 2011. *Hyvän hallinnon muunnelmat. Julkisoikeudellinen tutkimus* [Varieties of Good Governance. Finnish Lawyers' Association]. Helsinki: Suomalainen Lakimiesyhdistys.
Kuronen, Marja-Liisa. 2004. *Vakuutusehtotekstin uudistamisprosessi. Matkalla alamaisesta asiakkaaksi.* [The process of revising insurance terms and conditions]. Helsinki school of economics. Acta universitatis oeconomicae Helsingiensis A–231.

Lassus, Jannika. 2010. *Betydelser i barnfamiljsbroschyrer. System-funktionell analys av den tänkta läsaren och institutionen*. [Meanings in brochures to families. A systemicfunctional analysis of the conceivable reader and the institution]. Helsinki: University of Helsinki.

Lyons, John. 1977. *Semantics 2*. Cambridge: Cambridge University Press.

Maley, Yon. 1994. The language of the law. In John Gibbons (ed.), *Language and the law*, 11–50. London and New York: Longman.

Mattila, Heikki. 2002. *Vertaileva oikeuslingvistiikka*. [Comparative Legal Linguistics]. Helsinki: Kauppakaari, Lakimiesliiton kustannus.

Mäenpää, Olli. 2000. *Hallinto-oikeus*. [Administrative law]. Porvoo: Werner Söderström Lakitieto Oy.

Niemi-Kiesiläinen, J., P. Honkatukia and M. Ruuskanen. 2006. Diskurssianalyysi ja oikeuden tekstit. [Discourse analysis and legal texts]. In J. Niemi-Kiesiläinen, P. Honkatukia, H. Karmaand M. Ruuskanen (eds.), *Oikeuden tekstit diskursseina*. Helsinki: Suomalainen Lakimiesyhdistyksen julkaisuja E-sarja N:0 13. 21–41.

Nordman, Lieselott. 2009. *Lagöversättning som process och produkt. Revideringar och institutioner vid lagöversättning till svenska i Finland*. [Translation of laws as process and product. Revisions and institutions in legal translation into Swedish in Finland]. Helsinki: University of Helsinki.

Ohlsson, Claes. 2009. Komplext och komplicerat. In Eva Ohlsson (ed.), *Service på nätet.* [Service on the Internet]. *Rapport från en konferens om myndigheters webbplatser*, 52–64. Oslo: Språkrådet.

Paikkala, Sirkka. 2010. Fimeasta Stroke Unitiin – julkisten palvelujen nimet. [From Fimea to Stroke Unit: names of public services]. *Kielikello* 3(2011). 17–19.

Paikkala, Sirkka. 2011. Fimea och Stroke Unit – om språken i myndighetsnamn. [Fimea and Stroke Unit: names of public services]. *Språkbruk* 1(2011). 4– 6.

Parliamentary Ombudsman. 2011. Decision of the Parliamentary Ombudsman on the Trafi and Carea complaints: Record No 2745/4/10, 2995/4/10, 3581/4/10 and 3706/4/10.

Piehl, Aino. 2006. The Influence of ED Legislation on Finnish Legal Discourse. In Maurizio Gotti and Davide S. Giannoni (eds.), *New Trends in Specialized Discourse Analysis* (Linguistic Insights. Studies in Language and Communication 44), 183–194. Bern: Peter Lang.

Piehl, Aino. 2008. Finland Makes Its Statutes Intelligible: Good Intentions and Practicalities. In Anne Wagner and Sophie Cacciaguidi-Fahy (eds.), *Obscurity and Clarity in the Law. Prospects and Challenges*, 151–163. Farnham/Burlington: Ashgate.

Pietikäinen, Sari and Anne Mäntynen. 2009. *Kurssi kohti diskurssia*. [A course towards discourse]. Tampere: Vastapaino.

Rasmussen, Kirsten Wølch and Jan Engberg. 1999. Genre Analysis of Legal Discourse. *Hermes, Journal of Linguistics* 22. 113–132.

Sacks, Harvey, Emanuel A. Schegloff and Gail Jefferson. 1974. A Simplest Systematics for the Organization of Turn-Taking for Conversation. *Language* 50(4), Part 1 (Dec. 1974). 696–735.

Salmi-Tolonen, Tarja. 2008. Forensista lingvistiikkaa – kielentutkimuksen juridisia sovelluksia. [Forensic linguistics – legal applications of linguistics]. In Richard Foley, Tarja Salmi-Tolonen, Iris Tukiainen and Birgitta Vehmas (eds.). *Kielen ja oikeuden kohtaamisia*, 375–393. Helsinki: Talentum.

Sarangi, Srikant and Stefaan Slembrouck. 1996. *Language, bureaucracy and social control*. London and New York: Longman.

Sechi, Silvia. 2003. *Verständlichkeit und Höflichkeit in der deutschen Verwaltungssprache der Gegenwart*. Bochum: Ruhr-Universität Bochum dissertation.

Shuy, Roger W. 2001. Discourse Analysis in the Legal Context. In Deborah Shiffrin, Deborah Tannen and Heidi E. Hamilton (eds.), *The Handbook of Discourse Analysis*, 437–452. Oxford: Blackwell Publishing.

Solin, Anna. 2001. *Tracing texts. Intertextuality in Environmental Discourse* (PIC Monographs 2. Department of English). Helsinki: University of Helsinki.

Solomon, Nicky. 1996. Plain English: from a perspective of language in society. In Ruqaiya Hasan and Geoff Williams (eds.), *Literacy in society*, 279–307. London and New York: Longman.
Tiersma, Peter. 2005. Some myths about legal language. *Loyola Law School LA. Legal Studies* 26(2005).
Tiililä, Ulla. 2007. *Tekstit viraston työssä. Tutkimus etuuspäätösten kielestä ja konteksteista* [Texts and text production in a city department: A study of the language and context of benefit decisions]. Helsinki: SKS.
Tiililä, Ulla. 2010. Kielipolitiikka – tietoisten ja tahattomien toimien summa. Julkishallinnon kieli vaatimusten ristipaineessa. [Language politics: the sum total of intended and unintended measures. Conflicting demands on administrative language]. In Hanna Lappalainen, Marja-Leena Sorjonen and Maria Vilkuna (eds.), *Kielellä on merkitystä. Näkökulmia kielipolitiikkaan*, 158–175. Helsinki: SKS.
Trosborg, Anna. 1992. The Performance of Legal Discourse. *Hermes, Journal of Linguistics* 9, 9–18.
Tuori, Kaarlo. 2006. Self-description and external description of the law. *No foundations, Journal of extreme legal positivism* 2. 27–43.
Viinikka, Jenni. 2011. *Kuoleman kielissä*. [The language of death]. Helsinki: University of Helsinki MA thesis.
Vuori, Jaana. 2001. Äidit, isät ja ammattilaiset. Sukupuoli, toisto ja muunnelmat asiantuntijoiden kirjoituksissa [Mothers, Fathers and Professional. Gender, Repetition and Variety in Expert Texts]. Tampere: University of Tampere (Department of Sociology and Social Psychology).
Walker, Sue. 2001. *Typography and language in everyday life. Prescriptions and practices*. London: Longman.
Witczak-Plisiecka, Iwona. 2007. *Language, law and speech acts. Pragmatic meaning in English legal texts*. Lodz: Wyższa Szkoła Studiów Międzynarodowych w Łodzi.

Web source

www.thl.fi. https://www.thl.fi/fi/tilastot/tilastot-aiheittain/aikuisten-sosiaalipalvelut/toimeentulotuki/toimeentulotuki (last accessed 29 March 2017).

Legislation

Hallintolaki (6 June 2003/434) (Administrative Procedure Act). https://www.finlex.fi/fi/laki/ajantasa/2003/20030434 (last accessed 21 May 2018)
Laki sosiaalihuollon asiakkaan asemasta ja oikeuksista (22 September 2000/812) (Act on the Status and Rights of Social Welfare Clients). https://www.finlex.fi/fi/laki/ajantasa/2000/20000812 (last accessed 21 May 2018)
Laki toimeentulotuesta (30 December 1997/1412) (Act on Social Assistance). https://www.finlex.fi/fi/laki/ajantasa/1997/19971412 (last accessed 21 May 2018)
Laki vammaisuuden perusteella järjestettävistä palveluista ja tukitoimista (3 April 1987/380) (Act on Services and Assistance for the Disabled). https://www.finlex.fi/fi/laki/ajantasa/1987/19870380 (last accessed 21 May 2018)
Kansaneläkelaki (11 May 2007/568) (National Pensions Act). https://www.finlex.fi/fi/laki/ajantasa/2007/20070568 (last accessed 21 May 2018)
Kuntalaki (17 March 1995/365) (Local Government Act). https://www.finlex.fi/fi/laki/ajantasa/kumotut/1995/19950365 (last accessed 21 May 2018)
Sosiaalihuoltolaki (17 September 1982/710) (Social Welfare Act). https://www.finlex.fi/fi/laki/ajantasa/kumotut/1982/19820710 (last accessed 21 May 2018)

Marie J. Myers

21 LSPs as instruments for science communication

Abstract: The purpose of this article is to provide insights into the state of the art in science communication looking at the ever-increasing complexity we are faced with today. With the inherent fluidity in all we undertake, it is difficult to provide a thread across themes, not aiming to freeze notions in context but rather to give a sense of direction and a heads-up for things to come.

After an outline of the background against which the topic is delineated I widen the horizon to situate the topic within the global context, narrowing it down to science communities. Next, I investigate aspects having to do with interpretation following which I project the topic against the backdrop of the concept of change. Then I turn around 360 degrees to address the issue of knowledge in scientific communities with a final section on the role of instruction for science communication.

I explore new aspects characterizing LSPs in science communication such as: the impact of globalization on 'truth' with its tentative aspects and the need to take into account 'fluidity' i.e. the fact that information changes over time with new discoveries on a given topic; the fact that knowledge dissemination requires constant adjustments, facilitation, facing competition, more dialogue and choice-making; the importance of cultural re-alignments by taking into account different judgments, signs and meanings as well as interpretations; a necessary change due in part to our fast paced new knowledge economy and interpretative processes; and various aspects having to do with diversity, competition, knowledge distribution and modes of communicating and instructing.

1 Introduction: background

Needless to say, communication in scientific fields has to be considered of utmost importance and requires all our attention in our fast evolving world. Therefore, the aim of this article is to present new insights with the intention to include as vast as possible an array of 'objects' for our consideration while at the same time hoping to imprint a sense of direction and a capacity for the anticipation of things to come.

In *Truth and Method*, Gadamer [1960] "investigates the tension between a hermeneutic understanding of truth as 'disclosure' ... and the 'method' of the natural sciences" (1986: 243). Interpreting these words, to start with, we know that there is a need to take a position as regards findings in science. Through experience we tend

Marie J. Myers, Kingston, Canada

https://doi.org/10.1515/9783110228014-021

to come to understand science better as we uncover more notions and shed light on more themes. The knowledge gained has to be disseminated. Furthermore, we need to be cognizant of the ongoing reevaluation of data through the use of different methodologies, everything is at best only tentative. Keeping in mind such aspects of science helps uncover additional insights involved in the communication process of scientific information and impacts the use of LSPs as instruments.

1.1 Language and communicating in science

Duranti (1997: 334) contends that 'our linguistic products are constantly evaluated, recycled or discarded'. This may be even more apparent in science communication. Moreover, scientific claims also have to be questioned in a variety of contexts of language, culture and society. The diversity of forms through history, with competing views presented, were often a result of science communication approached through different cultural perspectives. In addition, across various scientific disciplines, methods for linking observations to theoretical findings differ. These are also contingent on the special set of beliefs involved.

1.2 The quest for 'truth'

Kuhn (1962) and Quine (1953) see science communication as requiring adherence to a set of beliefs with its own criteria of 'truth', progress, theoretical consistency and evidential warrant as noted by Payne (1999). Rorty (1991) looks at an interpretation model corresponding to a people's way of seeing science. So if according to these researchers, 'truth' is only a product of local beliefs, science will not only be 'demythologized' (Feyerabend 1975) by the impact of globalization but will be scrutinized through various cultural contexts, professional interests, childhood experiences, religious convictions, career motives and all other such aspects that are part of the metaphor of self with its biological, conventional, contextual and poetic or creative sides (De Gramont 1990). Whether the beliefs come from the high ground of knowledge, in a sense, knowledge imparted at education institutions, or from the social construction of reality, science communication could be seen as just another language game (Lyotard 1984). On the other hand, in a globalized economy, scientific habits of thought could be globally defined and popularization would facilitate science communication. However, this could not happen without a unified concept of scientific reality, referring to people taking charge and coming to their own understanding of notions, devoid of the power influences, usually controlling the way information is released. Gadamer's work proposes that our entire existence as humans is imbued with interpretation and (mis)understanding, a reality that we are incapable of escaping. As a result, great transformative learning can occur when we choose to embrace

and work within this tension, rather than fight against it – an idea which Gadamer expresses under his conception of "philosophical hermeneutics" (seeking ways in which to infuse opportunities for transformative learning into everyday praxis). Fowler (1981), on the other hand, sees knowledge attached to control issues or the balance of power between those in dialogue. The field of LSP allows to transform utterances from one discursive context to another also showing multi-discursive perspectives in current situations. Looking at LSP documents across fields can help with awareness-raising showing how certain scientific artefacts are taken from everyday life as is the case for metaphors and appropriated by different discourse communities. For instance, in medicine there is talk of infected cells, in technology we have infected programs and along the same lines we speak of virus attacks both in medicine and for computers. Some expressions come to operate within different discourses at the same time. This entails a more urgent need today more than ever before to carry out analyses of cross-fertilization between LSP fields.

2 Science communication in the globalizing economy

Olson's (2003) concept of "a coming together of minds" and Lave and Wenger's (1991) model of "communities of practice" also legitimizing participation at the periphery in "affinity spaces", as Gee (2005) put it, recognizing that with technologies everyone does not need to be at the centre of attention to participate, make us express the need to require re-alignments and point to dialogue where organizational impacts are felt.

2.1 Various Influences

Scientific language is the language of a discourse community with the research article as an important representative example (Basturkmen 2010). A discourse community has to be seen as a group of people who understand the same basic values and assumptions in the discourses they share. These communities have common goals and communicate to achieve them, including in texts and practices. Where crossovers and distinctions exist, it is important to look at barriers and to keep in mind the possibility to import across fields where borders are blurred while at the same time attempting to reach accuracy in language use, coherence and cohesion. Concern expressed over increasing amounts of fraud and plagiarism in scientific publications leads to the thought that considerable collaboration is required between discipline specialists and language specialists. Consultations and collaboration around language use will help convey specialized knowledge.

There clearly is a need to develop effective skills, not just reading competence which may only lead to learning by imitation, but transferable skills have to be developed. In certain fields there already exist ethical guidelines like the *Vancouver Protocol Criteria for authorship* (International Committee of Medical Journals, 2009). For writing support and development, cross-departmental cooperation is helpful with embedded and integrated language development (Arkoudis and Starfield 2007). Today we have literacy brokers and scientists negotiating the publishing process in English with fees for service for authors' editors.

Pre-emptive measures should be put in place: for instance meet the range of demands with the range of expertise available and create a repository with such information in a central location under the supervision of a quality control team.

With fast-paced globalization, we are confronted with ways of life and cultural practices till now unfamiliar to us that lead us to question our arrangements in contextualizing, stressing and repressing, in choice making, our decisions to place at the centre or relegate to the periphery, in our own characteristic way of doing things (Hawkes 1995). Science communication would also be subjected to our socialized ways of writing science articles. With postmodernism, we came to re-examine what we thought was natural only to discover that it was cultural. So, when in science communication we interact on the premise that discourse is 'a system of relations between parties engaged in communicative activity' (Sekula 1982: 84) based on shared meaning, we are somewhat misled unless we acknowledge existing power relations.

As far as written communication is concerned, sub-texts like short snippets on discoveries, or headlines followed by short paragraphs, are also transmitted through lay-out, fonts, etc. In science communication it is paramount to not only look at sentence meaning but also at pragmatic meaning, especially keeping in mind other systems for signaling meaning including graphs, charts, tables, that can be used to manipulate our interpretation. We have to be aware of this multimodality in science communication. For instance when I participated in reviewing research proposals, one scientist basically submitted an elaborate graph showing what his theory added to previous knowledge by contrasting two graphs. However when asked to describe his findings in words before his submission was accepted, the person could not describe and substantiate the supposed new developments. The use of multiple means would allow keeping track of and aligning meanings. It would help identify uncertain relationships and highlight ambiguities. Hence the most important multi-discursive dynamics i.e. the many ways writers try to make an impact, through charts, use of fonts, various strategies borrowed from graphic design, could be revealed. This diversity would help to show us how to engage in different discourses, and how to pull them together, perhaps starting from the already known, or what has been allowed, to what corresponds to what makes sense today, and what is fundamental in a given culture, thus permitting multi-discursive interactions. This communication is facilitated by competence in Web navigation. For instance in the

case of "stellar pancakes", an expression used to allude to flattening in astrophysics, when looking up the words one is directly connected to pancakes as in food, meaning they are wonderful (Rossi 2015). Among the first page entries on Internet there is also the heading "big black holes cook flambeed stellar pancakes" with the following text and a link "According to two astrophysicists from Paris Observatory, the fate of stars that venture too close to massive black ..." (https://www.obspm.fr/spip.php?page=imprimer&id_article=2039&lang=fr; accessed 8 June 2018).

Similarly, in the case of "spaghettification", one finds one explanation on the Web, i.e. that the term is used to express vertical pull and horizontal compression on objects in a strong gravitational field, with a drawing next to the definition, and in following entries, there are also illustrations included which bring to mind the representation of spaghetti.

During interactions, for choice making, some aspects only catch our attention while others, according to Sperber and Wilson (1986), are filtered out at a sub-attentive level, i.e. subconsciously. In the use of LSPs for science communication the intentions expressed have to be clear and the intentionality and variability in people's discourses have to be identified. The objective is to help make better choices.

2.2 Constant updating

Needless to say that in our increasingly complex world ways of learning have to be re-visited. To communicate serious ideas in science, one needs to be ready to deal with 'new truths' and new possibilities with the globalizing of the learning economy (Archibugi and Lundvall 2002). Cultures of organizational learning are embedded in complex systems. With LSPs as instruments for science communication, the objective is to meet the challenge of finding ways to create the desired results. It is important to realize that there will be new learning with new 'kinds of people' according to Gee (2002: 47) and people will have to see themselves as a flexibly rearrangeable portfolio of the skills, experiences and achievements they have acquired through 'project space', a term Gee uses to describe people interacting in problem solving. In light of these questions important decisions have to be made when communicating with the 'new kinds of persons' future interlocutors will be.

Relationships, with people and with knowledge, are built in new ways and different ways of being have emerged, which also require new alignments for interactions.

In order to initiate both large and small changes to realize a new vision in science, often people from very diverse backgrounds and a wide spread of skills are brought together. Thus the question of change management becomes crucial if change is meant to be sustaining and transformational, and for this all to happen new learning is required. As science communication characteristically takes place within an organization, contextual factors are also essential.

2.3 Organizational aspects

Senge's (1994) MIT Model presents the three domains that according to the author create organizational learning: results, actions and change. First, around a given issue one has to concentrate on establishing clearly stated results that are also agreeable to the group of people concerned so as to make them convinced that the efforts required are worthwhile and that they subscribe to carrying them forth by making the concern their own. After this is achieved, the concentration is on actions, given that the group of people that strives the most at meeting the objectives, will find out that they can be successful. When considering the question of change, Senge suggests a concentration on ways that guarantee the required participation, based on both people's feelings and intellectual power. The idea is to create environments that appeal to people so that they participate, if one intends to create changes that will last. For instance, the Zurich Google office and the new MIT play room for researchers (*Newscast, BBC Dec 12, 2011*) are environments created to be conducive to active participation.

Lundvall (2002) believes that people in the new knowledge economy will be more learning oriented and the market will become change-oriented. In addition, it is believed that there will be further accelerated innovation and change.

In new contexts, talking with colleagues is recommended as a catalyst for engaging in hermeneutic enterprise and attempting to gain understanding through interpretative models. Science communication specialists have to consult among themselves. The assumption that talking only will inevitably create meaningful information for all participants is erroneous and perhaps stems from a misguided perspective on scientific language learning as engaging in scientific dialogue entails many complex questions related to any dialogue. For example, are only recognized scientists' voices invited to participate in the dialogue, and which scientists, are post-docs and Ph.D. students included, if not all are included, who is left out? Whose voice is being privileged either from an assumed knowledge level perspective or a cultural one, and whose is left unheard for similar reasons (whether we are conscious of it or not)? What are power-dynamics then? Is anyone being favoured (obviously or inadvertently)? When dealing across scientific concepts and interpretations are there dangers for the hermeneutic enterprise?

2.4 Dialogue

Jones (1955), asks us to consider a similar cautionary note where the need for dialogue is concerned. She refers to humans' natural tendency to be drawn toward seeking understanding through dialogue as the "talking cure". While we realize that people are drawn to attempting to understand and learn from the stories and experiences of *others*, if dialogue is used as a tool for learning, we cannot forget to question the very

nature of why we are choosing such a tool in the first place. Jones cautions us to not automatically buy into this idea that the cure for misunderstanding in dialogue, is through more dialogue, and this needs to be examined in the context of science communication. The answer may lie in the idea that knowledge can only truly advance when all voices have equal value, and that other representations have to be given fair acknowledgement. In the case of a meeting around a given situation a group 'bought into', according to Senge (1994), those expanding the most energy towards attaining the anticipated goal will find out that they can reach the goal. So as regards implementation of change he recommends on working on how to enroll participation by appealing to people's emotions as well as their intellectual capabilities. With this knowledge one can quickly realize that extreme caution has to be taken to maintain as much objectivity as possible by enlisting the necessary number of intellectuals to set off a possible imbalance.

3 Meaning-making

In science communication, perhaps more so than in any other domain, languages for special purposes are the way to interactions across different scientific communities.

3.1 Judgment and choices

Lacan [1929] (1975) states that a chosen object is not unconnected to speech. It was already partially present in the objectifying or 'objectivation' system, where one has to take into account the sum of the prejudices that constitute a cultural community, up to and including the hypotheses made. Even starting from the most elaborate psychological prejudices to the most naïve and spontaneous, all impact our work. The way we perceive a situation has an impact on our attitude towards it. This is true for scientists too. Cultural and personal constraints make us see what we expect to see as we select information close to our expectations. So, in a way, faced with new investigations, scientists have to put on 'new lenses' and try to accommodate in their minds' eye. Knowledge bases should be connected when LSPs are used as instruments. LSP specialists need to be able to access the same representations as the scientists in order to fully convey meanings after careful consideration of wording. A typical example is the use made in medicine where medical conditions are often described based on a common word thus establishing a comparison that leads to a mental representation, in a sense within shared experiences; for example the metaphor "popcorn calcifications" which in fact, despite the use of a popular consumer item in the expression, denotes a fairly serious condition. However such designations are bound to change across cultures based often on very superficial parameters.

Solutions will have to come about through work on a re-adjustment of knowledge which will require more flexibility, yet a very sound knowledge basis is needed when attempting to understand the different fields and markets, their demands and their multi-faceted possibilities. For instance the term a "hit-and-run" corresponds in my mind first to a car accident, where there was a victim that was hit, but the perpetrator did not stop the car to check on the accident victim but continued going. This expression is also used in baseball and the world of finances to refer to a fast gain through a strategy in baseball or in a financial or banking operation aiming at taking advantage of a good opportunity. "hit-and-run" nevertheless implies a certain amount of risk involved as in the car accident situation where the police can catch the guilty driver. The French "Commissions Ministérielles de Terminologie" opted for the translation "action-éclair", conveying the pace appropriately but leaving out the risk. In a hit-and-run, the victim, if not being attended to swiftly if no one witnessed the incident, could also die at the scene of the accident, hence the semantic area of "action éclair" is far from covering the whole concept. Similarly in both baseball and in banking there is risk involved in hit-and-run, so the "action-éclair" expression has to have a connotation of danger.

Overall, however, keeping in mind Luhmann's (1984) research on social systems, we can feel assured that new science systems can be created if need be, without anything being lost; he believes that systems are just being rearranged. We also need to keep in mind that each group of scientists functions like a system with a distinctive identity that is constantly reproduced in its communication and depends on what the group considers meaningful and what may not be needed.

3.2 Competence

First and foremost when LSPs are used as instruments in science communication the question of competence has to be raised. In his meta-analysis of competence, Jonnaert (2002) draws important conclusions that can also be applied to the use of LSPs in the context examined here. He sees 'competence' as an activation or 'actualizing' of knowledge, ways of knowing how to be, how to do things and how to become or develop in a given situation. Hence as a 'competence' is always attached to a given situation, it is bound by the representation a given person generates of the situation. The other major point is that, in this process, the person concerned draws on a series of relevant resources tied to the situation, whether cognitive, social or contextual, with efficiency and effectiveness. This relies from the very beginning on the quality of the judgment that can be arrived at. It implies selection and coordination as the activation requires that an operational network be put in place. For efficient use of LSPs, tasks can be completed successfully by finding the best way to articulate the outcomes of the diverse tasks in an effective way, which adds a social component to acceptability and judgment-ability. Efficient and effec-

tive competence in the use of LSPs for science communication implies that all the prior necessary adjustments have been made.

3.3 Efficiency and efficacy

The first question to ask oneself in LSPs for science communication is what happens when content words are used with meanings different from everyday use. To further add complexity, meaning associations for scientists are also subject to socio-culturally defined experiences and the practices of the groups of scientists they belong to (Gee 2002). Knowledge communication patterns come from experience but as they are not static, they have life changing qualities; as well, transformation comes from experience and in turn new experience is stemming from this, giving meaning to certain things and not others in terms of the economy in systems (Luhmann 1984). Luhmann also points out that in meaning-making, especially during its operation, there is a selection of a limited amount of information for the purpose of reducing complexity whereby new meanings emerge. In scientific interactions, additional mindfulness has to be exercised and careful verification has to take place.

To be efficient and effective one has to internalized the specific scientific knowledge in an integrated way, and develop the ability to understand the conditions in which to select an output through choice-making. The person also has to demonstrate the necessary evaluative ability tied to the selection and understanding of intakes. This all has to do with expertise (Le Moigne 1999).

3.4 Situational contexts

As communication is placed in situational contexts, it implies, especially in science, a necessary verification of the interpretation of meanings when moving across scientific fields, especially in trans-disciplinary work. There are many components to situational contexts: they are placed in a sign system (Kress and van Leeuwen 1996) and these may be different. They are also confronted to different ways of knowing and taken together, these give us access to what is assumed to be scientific knowledge. Situational contexts are against a backdrop of an activity aspect, as sequences of actions are presupposed (Leontiev 1981; Wertsch 1998) as well as a physical aspect that is concerned with the material context (Latour 1993, Levinson 1997). Needless to say that the sociocultural aspect involved, stemming from the community of practice (Barton and Tusting 2005; Scollon and Scollon 1981; Sperber and Wilson 1986), also includes a political component (Fairclough 1989, 1992, 1995; Luke 1995), mostly due to representations and educational approaches inherent in the culturally constituted scientists' backgrounds.

3.5 Challenges

The intricate interrelatedness of the aspects mentioned above is all part of an all-encompassing system, as pointed out in system's analysis (Luhmann 1984). As the author writes, nothing is ever lost in a system, systems renew themselves with more or less variation over time. Science communication can also be taken in that light. These events take place in the context of institutions that see to it that they are carried through by repetition and rituals. Such contextual influences impact science communication. Languages used in such institutionalized networks become deeply intertwined, woven together very tightly.

3.6 Forms of communication

Despite the many attempts to improve current workplace situations to come to a better understanding, one should keep in mind some basic considerations about language as expressed by Lacan [1929] in Miller (1975). He saw two levels of communication in human speech, the one having to do with recognition of the other, in which words tie speakers to a pact that transforms them, and makes them communicating human subjects, that is, as part of a given group of two or more. The other level has to do with the content of what has been communicated, level at which there exist different steps, the first call, the discussion, the knowledge, the information given and received, but whose ultimate goal aims at reaching an agreement about an object which is external to the conversation (1975: 126). In science communication there is both a need to belong to a group of researchers and the need to draw scientific conclusions about an 'object'.

4 Aspects of multilanguaging in scientific communities

Questions aimed at facilitating communication in such complicated contexts, require a coming together of cultures, ways of being and of doing, possibly through increased joined intentionality (Olson 2003). Strategies are needed for increased understanding and awareness-raising. Such issues make it necessary to address the development of knowledge in a new light. Our cultures influences our meaning-making and provide us with a capacity for interpretation, so across communities different valuable interpretations can be added. Crossover possibilities have to be enhanced in science communication.

A further hurdle to overcome might have to be across languages. In LSP often words from the culinary science, from the plant world, the animal kingdom have

made it across to other fields to denote more sophisticated concepts because the basic words from the original usage had already made it across cultures and often had been borrowed across languages. We can ask ourselves nevertheless about the interpretation of results of scientific studies where trans-language and intercultural communication have to take place. Sometimes an everyday word is used as it conjures up a certain mental image and the translation of this word is used across several languages yet it may not carry the same characteristics across the different languages. However the field of socio-terminology (Gaudin 2005) tends to allow taking into consideration descriptive or conceptual variants. Cultural terminology looks at development in order to find the right word for concepts based on cultural linguistic resources and the way culture imprints reality (Diki-Kidiri, 2007). The socio-cognitive stream investigates conceptual categories and contextual factors in order to uncover how strong thematic domains are structured (Temmerman, 2000). With all the linguistic, social and cognitive dynamics involved when working across cultures, there can be extreme difficulty in designating and defining terms and concepts in special languages. Needless to say that this increases across languages. Researchers uncovered both limitations and advantages in bilingual decoding and encoding (Downs 1971; Wiseman and Abe 1986). Careful attention has to be paid to process in order to avoid code switching and code mixing during the activity of blending. Especially when new technology is involved, terms used may come from the country where it was created or an acronym that may be hard to coin differently. With internationalization and a second language as the working language, can diverse groups formulate their thoughts using different words in-keeping with the intended meanings? Do they experience comprehension difficulties during their interactions? Are they paralyzed by anxiety to the point of resorting to avoidance? (Myers 2009)

On the other hand, one could also assume that the special wording used coins thinking in a given scientific community. Re-using the words given in different communities, without checking the originally used concepts (in the originating laboratory context) may not reproduce the contextual situational meaning appropriately. Alternatively, one could also think that there is a need to put much effort into the activity of writing out what is agreed upon on a given topic, and when it comes to summarizing the results of discussions, words are picked from texts that are found to best illustrate conclusions arrived at, although they are approximations. As multiculturalism and multilingualism increase, we might witness more situations similar to this. It may not mean in the latter case that the contents were not thoroughly discussed in research groups with the means the researchers had at their disposal. For example, Brandon and Luminet (1982) published an article entitled *Pancake detonation of stars by black holes in galactic nuclei*, the use of the word pancake later led to *stellar pancake* (Brassard and Luminet, 2008) and the connotation of *flattening* emerged as in "a plane pancaking on the runway" or "a car being pancaked". Several years later, astrophysicists started using clusters around the word, like *stellar pancake*, and *flambeed stellar pancake*, borrowing words from the culinary arts. Diverse ways of doing come

into play. According to Altman (1984), genres achieve solidity when a recognizable semantic (the specific term used) is paired with a stable syntax, i.e. how the semantic components are ordered in a structure. This boils down to how the jargon of a field is established. The researcher recommends using "mechanisms for co-ordinating diverse users" (1984: 208). With increasing awareness of textual concerns, genre distinctions are better established according to him.

Best results are obtained with true interactional partners in the sense as described by Van den Branden (2006: 217). Negotiation of meaning and content has to take place and a rich, relevant and communicative input has to be connected to a particular scientific communication respectful of interpretative activities. Would it be possible for more scientists in the future to have a less narrow focus through training? Teachers are trained and Borg (2003: 81) describes them as "active, thinking decision makers who make instructional choices by drawing on complex, practically oriented, personalized and context-sensitive networks of knowledge, thoughts and beliefs". Could these also be expectations we could have of scientists, with each group also representing a community of practice just as teachers, and especially of those working in LSP? In LSP practice we rely on "accountable talk" (Ardasheva, Howell, Magaña 2016). In a community of practice, activity centers round an open space or forum that allow people to engage each other and create a community of belief. Gee (1990: 142) also refers to taking on a role that others recognize. He points to the need to work within one or more modalities like language, images, equations, symbols, sounds, gestures, graphs, artefacts etc. to express specific types of meaning.

There is a lot of complexity funneled through the mixed reactions between different aspects of scientific communication and the underlying theories. There will be blurred distinctions between personal opinions and thoughts and many inextricably intertwined components.

For Van den Branden (2006) our understanding of interaction comes from an articulation of not only perceptions and actions (in this case science educators and researchers) but also by taking into account and being influenced by peers' actions and their perceptions, whether consciously or not. Peers influence each other, and this has an impact on future research decisions, which in turn influences choices and findings. All this is brought into science communication, with perceptions and actions going back and forth when people work together (Brophy and Good 1986). However scientists in some fields may still be working in too much isolation. This could well be the case of those working at the leading edge, yet these would be the areas where LSP specialists would be needed.

What happens if some participants in scientific discussions experience a "muddled level of operation" (Myers 2011) (when ideas embody many contradictory notions and are so imprecise that they are meaningless, neither comprehensible, nor usable) instead of conveying designed organized thinking in the more popular language? As regards others, what if they have an inability to synthesize in simple language? In one study (Myers) participants used "complex-sounding" discourse to express ideas that in

fact they did not understand. Others showed a high level of selectivity of phrases used directly from texts through choices made, demonstrating a certain reflexivity perhaps indicative of an avoidance strategy so as to not have to deal with sorting out ambiguity and ambivalence while using a second language. Are the meanings expressed through use of the specific jargon a true picture of the intended meanings in science communication? These are concerns to be kept in mind when LSPs are used in science communication as regards dealing with content across scientific communities.

5 Adapting to change

We have to understand that interpretative processes can only be tentative, involving constant fluidity and flux because of different degrees of difference and different amounts of detail involved. We need to be able to deal with complexity. The term fluidity, in language use, refers to flow, an ability to change easily with the underlying idea that language itself is always shifting.

5.1 Fluidity

According to Jusczyk (1997) differences and details have to be weighted accurately. Who decides on the accuracy of an interpretative process? Scientific journals have editorial boards vetting what content is acceptable. Dialogues among scientists and interactive ways of developing awareness and contact with others in their respective fields promote an understanding of very rich complex data. However some specialists are intolerant of different levels of ability or sources of knowledge, as well as different ways of being and doing by those not in the 'main stream'. Today this is in contradiction with the legitimatization of participation at the periphery in a community of practice (Barton and Tusting 2005; Gee 2005; Lave and Wenger 1991), and such a situation needs to be addressed when it is prevalent. In our fast-paced economy, cross-sector understanding with the inclusion of all energies in the mix is crucial for keeping abreast in any field. The issue is that in order to sound like an expert there has to be smoothness in one's communication.

Word meanings change across contexts and hence scientific concepts may be harder to grasp for lay people (Osborne and Freyberg 1985). Moreover, in today's fast evolving global economy everybody should have a good basic understanding of science, hence it would be beneficial and highly economical of time to have a common ground, in order for non-specialists to become familiar with a number of scientific contexts (Bruer 1993; Gardner 1991).

Given the malleability of meanings and the 'on the spot' attribution of characteristics in habitual interactions, it is also clear that as regards science communication, the

need exists to 'coin' specific words and set certain meanings for working purposes. In turn it always necessitates an alignment between scientists of different cultural origins, depending on 'how colonized' the meanings they attribute to 'objects' were.

Scientists develop an ability to view and recognize patterns in their field through experience. However, this also requires a 'weighting scheme' (Jusczyk 1997), extracting from the very specific to the general in order to find a middle ground. In science, it is usual to rely on definitions but across languages and cultures beyond the naming of 'objects' and definitions, the best one can do to define a concept is to attempt a translational process around 'situated meanings', i.e. providing a context. According to Roche (2012), the Wüsterian Terminology Principles as defined in Felber's (1984) manual and the ISO standards remain at the core of traditional terminology. The definition of a term in simple language can allow connotations on its meaning and its use. Furthermore, the definition of a concept in more formal language includes logical characteristics and allows for manipulation and operationalization.

The questioning however should never stop because of the inherent fluidity of concepts with new experiments and new experiences seeing to the re-alignment of knowledge. As scientific communication is on-going, information gets constantly updated. However when switching to teaching or any other situation there has to be a choice made at a given point in time, frozen in a sense, while the world of science continues to evolve. One has to keep in mind potential meanings that could emerge, depending on the situational context, in a sense that is from where new discoveries may stem and also from where errors might be uncovered. Semiotic studies of science communication have much to offer as a tool to the scientific community. When specific types of meanings are expressed with images, equations, symbols, gestures or the drawing thereof, graphs, artefacts etc., genre distinctions can be better established. Semiotic studies of language use across genres also enable a better understanding on how to act, talk, and write so as to take on a particular role that others in the field recognize.

Another crucial aspect in decoding is the obligation to be inclusive. Given different situational contexts, various interpretations along the potentiality axis as per Derrida's (1996) notion of 'différance' would emerge. With various cultural models at the basis, different theories have emerged as a result of reflection of different people over different periods of time. In the past, we observed a 'coming together of minds' (Olson 2003) over a discovery more often, whereas today researchers tend to concentrate on disproving or at least on questioning the value of someone else's new contribution, all due to the pace of communication through new technologies.

5.2 The question of consensus

Why is it that in science communication we seek consensus? Needless to say people in the world today tend to turn to alternative possibilities. After all, our 'histories' still influence the present way of our being and doing.

When a variety of different avenues were discovered and through these different perspectives taken, there emerged rather similar theories, often the same, but accounted for differently, through the way a language allows to articulate a people's experience. Fluidity of experience does thus have a chance to be expressed by ever so slight changes in meanings in language, enabling us to keep current in our world. With so many international collaborations who will engage in quality control or just in comparing different outcomes? Some emerging scientific knowledge communication can be incomplete and lack consistency as well as exactness. A co-construction of meaning might anchor knowledge in a more relevant way, yet if a joint effort is more localized with work only carried out within the same country or culturally similar ones, the views might be more limited. This also applies to work carried out within the limits of any given scientific field.

Great gains can be made through collaborative endeavors although one might have to deal with more difficulties when communicating trans-nationally or across scientific disciplines. To increase such special opportunities, different modes of operation should be established. Protocols would have to be lined-up as to become identical. True attempts at meaning making can emerge through observation because while language is used, it is conditioned by the situational context as it reflects at the same time the contexts in which it is used but also allows new emerging situational characteristics.

Scientists draw from a common basis in their attempts at explaining. As new experiences are gained, scientists continually revise their knowledge base (Edwards and Potter 1992). The theories are shared by the scientists belonging to specific fields. According to Strauss and Quinn (1997) usually one scientist does not have an all-encompassing view of a given research field, rather there is a distribution across areas of expertise. So it must be through a coming together of minds that different viewpoints are shared and in turn a theory is developed or organized schemata emerge. Moreover, scientific theories connect to each other to create ever bigger frameworks, like for instance, what happened with the Periodic Table. In turn, as mentioned before, the concept organization developed helps organize on-going reflection and the practices in a special scientific field. Initially Mendeleev proposed the Periodic table including blanks for the yet unidentified elements. In turn, these were uncovered and added to the Table. Later the Table had to be expanded to include further discoveries and the process is on-going. As well, the blanks that had been left gave directions to scientists prompting them to search for the missing items. So, in a sense, conceptual representations are constantly being reviewed and expanded upon, whether in a conscious way, or unconsciously through 'Eureka' moments.

Perspective-taking plays an integral part in these complex processes (Laing, Phillipson and Lee 1966). It is clear that interactions with others are essential but interactions with texts, other media and the role played by intertextuality, all play a part. Indeed, even when reading, representations result from negotiation of meaning and collaboration with the 'actual writer', the 'assumed writer' and the narrator, in addition to collaboration with other related texts one has read, socio-cultural

knowledge one brings to the text, and prior discussions held on the special topics with other scientists. In light of this latter example, the emphasis should actually be placed on the connections arrived at and all possible connections should be examined (Luhmann 1984).

Furthermore, this very language we feel we master is composed of a diversity of social languages that we are not all familiar with (Bakhtin 1986). In science communication the same applies as miscommunication can become more prevalent if different scientific fields are crossed over.

The importance of language in this process is crucial. There should not be a lag, as often there is, between the time when new terms are coined and their subsequent usage and updating, constant renewal should be aimed for, like through a pendulum swing between language and context, swinging back and forth, each taking and or borrowing from the other. Not only do new technologies allow new investigative methods but new instruments are also created that scientists have to become familiar with. Tools like Wikipedia can play an important role here for instant entries as well as quick verifications.

5.3 Perspective-taking

When new science content knowledge is conveyed to non-scientists a different perspective has to be adopted as 'acculturation' with science communication is required. Ricento (2005) explains acculturation theory as the degree to which an individual identifies with another culture and how it influences his or her motivation to acquire that culture's language. The same applies to acculturation to scientific cultures. By increasing people's familiarity with scientific communication in a field, people will be more likely to succeed in scientific discussion as they will be able to identify with the content.

Prerequisite knowledge for ease in science communication should be viewed as "the community's store of established knowledge" as Fowler (1981: 19) states for cultural contexts. A useful parallel can be drawn along the same lines, considering science as a culture. Fowler continues to describe how reducing concentration on content in the classroom makes space for important general issues, such as the need for empathy and understanding the nature of culture. Inter-scientific communication could also benefit from knowledge gleaned through awareness-raising rather than content knowledge only. Regardless of specific objectives, LSPs are used for science communication to increase awareness and to develop curiosity towards the target science language and one's own, for making comparisons. Old beliefs can only be deconstructed over time by changing habits and behaviours.

It is easy to realize that such actions cannot be limited to a syntagmatic level, that is in a literal way but rather require a multi-faceted paradigmatic articulation that is through substitutions at a given place, keeping in mind "what is otherwise also possible" (Luhmann 1984). This is crucial because science communication is not limited to

identifying the differences and difficulties but going beyond in the exploration to find the elements that are hard to internalize.

If we look at Deardorff's (2006) pyramid model of intercultural competence we can tease out elements applicable to science communication when dealing across scientific fields, which could be deemed most desirable today. A unique element of this pyramid framework is its emphasis on the internal as well as external outcomes of cross-cultural awareness. The internal outcome, which involves an internal shift in frame of reference, although not requisite, enhances the external (observable) outcome of intercultural competence (Deardorff). The external outcome can be described as essentially "behaving and communicating appropriately and effectively in intercultural situations" (Deardorff 2006: 196). This application to science communication becomes obvious. The definitions of "appropriate" and "effective" are taken from Spitzberg and Cupach (1989), appropriateness being the avoidance of violating valued rules and effectiveness is the achievement of valued objectives. The four proposed stages of global competence development generated by the *American Council on International Intercultural Education* (1996) are helpful. They could greatly enhance the use of language for special purposes in science communication as each science domain has its own culture. These stages are the recognition of global systems and their interconnectedness (including openness to other cultures, values, and attitudes), intercultural (or inter-scientific) skills and experiences, general knowledge of history (of science) and world events, and detailed areas studies specialization (i.e. language as attached to a precise scientific domain or in general). For instance, mathematical thinking is different between cultures, in Greece the basis was geometry stemming from a concern for measuring with Thales, Pythagoras, Euclid and Archimedes whereas algebra has its origins in the Arab world concerned with completion and balancing and emerged in Europe in the sixteenth century. As well, mathematical operations are represented differently in France and Canada, for instance, divisions. Another example is the fact that although Canada has adopted the metric system, a pound in the grocery store only corresponds to 453 g.

6 Re-aligning

How can we keep up the pace with the new signs of our constantly evolving cultures corresponding to new scientific ideas and new needs and find a way to prepare for upcoming challenges?

6.1 Signs and meanings

In multicultural group-think, with culturally multifaceted groups, we will no doubt find resources to help seek new meanings. Cross-fertilization will occur and we will be

hearing multiple perspectives in science communication thus increasing scientists' ability to make professional judgments.

The development of knowledge in scientific domains can also be supported by exploring language acquisition theory. Language learners usually need a transformational period when they are learning a new language. Schumann (1976) suggests that students must apply and compare the meanings contained in new information against what they already know and perhaps, as applied in the case of science, learn new scientific words in order to understand patterns.

Also according to him "the smaller the social distance between two cultures, the more likely the learner [will] be successful in acquiring the target language" (Schumann). This "social distance" includes both the individuals' prior knowledge of certain cultures and a focus on teaching culture in second language instruction. This implies that novices have to learn science concepts based on their prior knowledge as well as a general understanding of 'science culture.'

As far as language use is concerned for science communication, Wittgenstein's (1969) comment 'the limits of my language are the limits of my world' certainly rings true. This begs the question of the potential of science for the common good if the language used is not within reach of lay people. Hence the need to bridge the communication gap by developing evaluative judgment. Yet one has to remain open to unexpected views regarding new facts beyond the present knowledge or state of comfort.

6.2 A need for flexibility

Can science communication be adapted to the general educated public? On the one hand there is the theoretical version of communication, with scientists communicating using their jargon and then there is an applied version i.e. scientists acting as informants for the public at large to disseminate their findings. The requirement that scientists show communication ability both demonstrating a deep understanding of the science field at hand and also the ability to give a very practical description makes sense. It is often considered that clear simple explanations help with the crystallization of thought. Nevertheless, over time with a play on words, items of science knowledge can be considered inadequate and a reconfiguration of the explanation will be required. Some notions will also be put forth on a speculative basis, like Mendeleev's periodic table, and their relevance depends on the failure or success in the explanation of a theory. Kripke (1980) states that words go through a chain of transmissions and that at each stage they are related back to the 'first time' the word was coined and this allows for refinement and modification over time.

In science communication 'performativity' is at the forefront, as persuasive language use allows obtaining research grants, acceptance into scientific information networks, which, whether it is deserved or not, also augments the 'ability to be right' (Lyotard 1984). Nonetheless one should scrutinize the use of the institutional order

of discourse that could have been instrumental at making a claim through a strong assent in a given group. The information processing capacity of a scientist's psychological functions are generally assumed and do not come under scrutiny given the pressure exerted by peer groups. The connected cognitive functions include many aspects like perception, memory, reasoning, attention, etc. In addition, in today's context, capacities in areas of social cognition would also have to be relevant, namely as regards attitudes, attribution and group dynamics.

Adopting a critical stance at all times when faced with scientific interpretation is even more important today with information technology prevailing and the strong impact of media coverage. However one cannot ignore the fact that with constant global interactions across scientific communities there is also the inherent fluidity, akin to Derrida's 'différance' ('differ' and 'defer' combined and jumbled up) attached to our perception in the moment with different views bringing about new understanding.

Careful attention has to be given to meanings, requiring communal efforts on the part of scientific communities also involving semiotics specialists, media-literacy experts, to operate in translational i.e. transposing and adapting over time and contexts, and ethical modes.

In a nutshell, Aristotle's principle to be kept in mind is that the correct opinions conform to that which exists (Irwin, 1988), and these opinions have to be crafted carefully with words.

6.3 Networking

When considering a group from across different scientific and other fields in an interdisciplinary sense and hoping to create a culture of learning, it is necessary to have all persons involved reflect upon the ideas they hold that are stemming from their beliefs, pre-ordained group notions and group values. Researchers would allude to one's history and putting on new lenses. Moreover one would concentrate on what was omitted and why, the silence and also the 'othering', in cultural studies it corresponds to the attitude of not being inclusive. All these factors could also come into play in cross-disciplinary dialogue and interactions in science sub-cultures. Only an idea new to all involved will act as a catalyst for the flow of energies. However members of such a group would not necessarily be most effective unless they are provided with theories, methods and tools that are available to them in the public domain. This way the required time to arrive at results will be reduced (Senge 1994) because they are not starting from scratch.

Based on the efficiency of research and information sharing networks, Senge states that, in addition, innovative infrastructures also have to be found. This is because structures impact energy, the time factor, financial considerations, concentration and attention span as well as other necessary resources. This should be

considered of utmost importance in science communication as the domain of change allows a deep learning cycle (Senge). The changes that emerge can be found at the level of aptitudes and capacities, connected to new awareness-raising, to increased sensitivity and will bring about new attitudes and beliefs. Scientific communities are already connected through research networks and information sharing. Adding simple innovations could lead to enormous knowledge gains.

Science communication has specific characteristics. Gee (2002: 43) talks about networks and networking 'distributed systems'. Social class works to create characteristic 'kinds of people' in characteristic 'worlds' and this applies to the different sciences as well. Gee refers to the institutional perspective of identity building. This presupposes a knowledge of the communication practice of a given science community including visual images and symbols having specific significance. The question here is how to set up a new logic across sciences in order to make people cross-functional in lateral ways of thinking. To initiate both large and small changes to realize a new vision, often, people from very diverse backgrounds and a wide spread of skills are brought together.

So what is to be expected for science communication today and in the years to come? In the past, it was believed that people had to come together, that the pressures applied caused a streamlining ending-up in a consensus and problem solving was the result, much along the lines of evolution. Other researchers, in particular Deacon (1997), tend to believe that divergent thinking or de-centering as what Luhmann (1984) would call it, may have aided in our evolutionary process. Deacon suggests that a much generalized kind of relaxed selection might have occurred when a move into a new environment free of competitors took place and caused a process of dedifferentiation which allowed behavioural complexity. More effort is required when crossing over less familiar fields within LSP. Yet in the new economy within the concept of multimodal literacy, which helps facilitate the reading of texts corresponding to different genres, cross-fertilization makes it easier to function.

6.4 Coherence

The difficulty to encode and decode in science communication will lie with articulating all the scientific knowledge bases into a coherent whole.

Along the same line of thinking that a system can emerge from an over-complex environment using and relying on resources from that environment, in the same way scientists in a given group come from various scientific specialties (their environment) and use in the new group situation, resources they are familiar with from that environment. For the sake of an economy of means the control of internal energy is required if one is to expect significant results with a widening of vision. For a group to fully subscribe to change, everyone present has to feel that his or her views are also represented. This entails making dialogue transformational i.e. dialogue with

the power to change people, and yet enabling all the members of a given group to be included, aware of personal positioning as well as possibilities for re-alignment keeping in mind the global perspective of all facets, when confronted with new knowledge and exploring new possibilities. With the fast increase in interaction systems in our globalizing world, the ability to plan socio-culturally appropriate responses in science communication is crucial. The latest research findings on emotional intelligence which, according to Grafman (2009) has both experiential and strategic characteristics, add further interest to the question of diverse representations in science communication, perhaps with a possible linkage through affect.

6.5 Fast paced communication

With globalization, competition intensifies. We have new problems and there is a new momentum. We need new skills. Lundvall (2002) believes that the affect has a part to play in innovation. On his list of important aspects he puts the role of human resources, competent users, demand factors, network building and organizational change. The next factor added is innovation, seen as moving away from a linear analytical literal understanding because it is too limited. He believes in more holistic views and getting out of habitual contexts. The third factor mentioned is community, in the sense that the focus ought to be more inclusive, not only being partial in focus on science and technology, but he believes in a mixture of competition and co-operation as being more effective (Lundvall 2002: 287). These aspects are to be emphasized in programs in Higher Education. New modes for the development of co-ordination regarding information and competence have to be devised for all.

Group activities could be seen as an attempt at solidifying integration of content and at the same time a group effort in negotiating meaning. This would have to occur both at declarative knowledge (i.e. having to do with memorized information) and procedural knowledge (i.e. having to do with knowledge in action) levels (Anderson 1980) and beyond. In turn they could also serve as a means to understand learning and meta-learning challenges. It may require including a prospective aspect and 'provisionality' as additional dimensions.

Another argument could be made around the more strenuous effort entailed in summarizing and critiquing in another scientific language, in which one may not be as used to the economy of words expected, although one might be a fluent user. Going from one language to another requires a different configuration of sentences and of time and action to name a few elements, for instance, *the organisms swam across the liquid*, becomes *les organismes se déplacent dans le liquide en nageant* showing that the direction comes before the action in French. Using the same word differently in one language and then finding the different words corresponding to these uses in another language when this is the case, also requires flexibility of mind. For instance, "porteur de germes" becomes *germ carrier* but "nombre de germes" becomes *microbial*

count. This adjusting constitutes one of the more crucial questions in the use of LSPs. It may be useful to learn to understand and organize phenomena without necessarily looking at language but rather think of behaviour, signs and symbols, to package information, like for instance the skull and crossbones picture to signal danger or a harmful substance. However there is no doubt that over time LSP specialists become literate in new science domains and play the most valuable mediating roles in their fields of expertise.

7 Complexity in scientific communities

Strata of complexity increase with inter-disciplinary, inter-linguistic, trans-cultural communication events becoming the norm as is evidenced by the way we are bombarded with advertisements by major conference organizing industries across the globe.

7.1 Diversity

In the use of LSPs in science communication what is taken for granted is a competence in the special scientific field. This competence cannot be equal among participants in a given situational context. Competence as such refers to a number of components that have to be internalized. Pallascio and Lafortune (2000) make reference to these as dispositions of a cognitive, affective, reflexive and contextual nature. These are also identified as resources (Perrenoud, 1997), ways of being and doing (Raynal and Rieunier 1997), a system of conceptual (at the level of ideas) and procedural (as concerned with processes) knowledges (Gillet 1991), an identified knowledge (Meirieu 1991), capacities (Jonnaert, Lauwaers and Peltier 1990) and as knowing, knowing how-to and knowing how-to-be (D'Hainaut 1988). Furthermore, in the context of LSPs, with necessary interactions in people's additional languages, the other necessary ingredient is "knowing how to be with" other scientists.

Competence does not refer only to the knowledge component without an additional ability to comprehend context appropriate activation of the competence because one has gained that experience. So, is it sufficient to rely on the understanding that the ability to activate the relevant competence in each case is potentially there? In science communication except for D'Hainaut, the previously cited authors think so. Perrenoud, and Meirieu, as well as Raynal and Rieunier, see these elements as potentially there for activation. Pallascio and Lafortune think that the activation will be expressed through the person's disposition or willingness, alluding to the concept of "readiness for it to happen". Gillet and Jonnaert, Lauwaers and Peltier see this 'activationability' as resting on the fact that the knowledges are organized in operational schemata based on underlying capacities for selection and coordination.

When is the use of LSPs in science communication successful? When the activation brings about the correct carrying out of a role or function (D'Hainaut) or effective and efficient action (D'Hainaut; Gillet; Perrenoud; Raynal and Rieunier). Or else it is seen as a putting together or conjuring up the appropriate combination of needed capacities in a given situation (Meirieu). Pallascio and Lafortune add the notion of responsibility and refer to an action one came up with, one managed, one applied or saw through, fully verified by background knowledge. Jonnaert, Lauwaers and Peltier are a little less stringent in saying that the action/activation has to correspond in a more or less pertinent way to the demands seen as been put forth when a person assesses a particular situation. In the context of LSPs in science communication this last way to look at competence is the best working model in today's world considering all the complex aspects brought about by our globalizing economy. It responds to the needs for inclusivity and respects the variation, variety and variability that will be found when different cultures and their languages intersect.

7.2 Competition

Moreover in our globalizing world a linear empirical scientific method may no longer be appropriate nor can the media be left to their typical ways of disseminating information.

With critical thinking and understanding emphasized in new research programs, the media will no longer manage to do the interpreting for new generations as it has done for some in the past. In addition, with persons being increasingly immersed in fast paced multimedia communication there exists an urgent need to strengthen interconnectedness between researchers and at the same time develop their ability to have independent critical mindsets. Knowledge transformation is of the essence.

According to Nyholm, Normann, Frelle-Petersen et al (2002) under the new logic we see the sharing of knowledge in networks and work teams. Companies will focus on core competencies connecting and transposing information. Hierarchy is losing to networking with continuous learning and innovation (258).

We need to train future science professionals to examine key issues for innovation policies in science namely how to use knowledge and innovation. When working for companies LSP specialists are subjected to the pressures applied with modified language expectations. Workplaces are also under constant pressure for a 'change agenda'. One has to be able to localize workplace resources, possess media and presentation skills, know how to use presentation software and be attuned to the cultural sensitivity of a company's website. Scientific communication will be impacted by project management, customer, press and stakeholder relations. In companies, LSP specialists will also have to use their ability to interact in teams, to multi-task, in short, multiple competences are required.

7.3 Instruction

It becomes clear that scientists need to have learned to recognize the patterns in their field. This, in science communication, allows for more efficiency, sort of having access to a short cut as one can skim through recognized patterns. In order to belong to such a group familiar with certain types of situated meanings, one has to be taught. Nevertheless receiving only top-down instruction in a given field is not sufficient, it requires engaging in reflexivity from the bottom-up too. There are difficulties in dealing effectively with the special language features and discourses of the science content as only with a combination of skills, expertise and commitment can one be successful. Only with a given amount of training can one rely on being able to implicitly weigh accurately the key elements, find keyness in words i.e. referring to words that have gained prominence and gain the proper understanding of co-text and context. In addition, in a given text, it is necessary to measure with precision the order of importance of the identified key elements in relation to one another. Some words might have to be considered of equal importance in a text and some might be considered as equivalent. Co-occurrences and also labels for classes of objects have to be taken into consideration and evaluated for the role they play.

In course development one can keep in mind to work on story development for the targeted audience and also develop awareness of the ways of gatekeepers in publishing companies. Course instructors have to maintain a sense of control over the learning environments they create, and ensure that they remain powerful, otherwise only the meaning attached to practical experiences will constitute the backbone of what their students think and believe, when in fact the courses should have a strong impact on their cognition and actions in order to prepare them for the future. While interacting, people influence each other with an effect on future actions and on-going interactions.

The media has played an important part in keeping informed on developments in scientific fields and with new technologies, experiments can often be re-tried for further verification of results, and confirmed or invalidated.

Instructors in LSP courses for science communication have to devise innovative ways not only to convey lexical items appropriately but also be able to have application and use in context evaluated accurately, showing a deep understanding of content. Collaborative teaching between language specialists and content specialists could be effective but not without establishing interconnectivity with other such specialized groups and their teachers.

Only dialogue and interactive ways of developing awareness and contact with others in science communication will promote an understanding of the richness different scientific backgrounds bring about.

In my attempt to encompass the topic, I placed several aspects under scrutiny as I deemed necessary, always with the intention of forward planning. After setting the parameters in the introduction as regards various scientific disciplines and their

approaches to scientific reality, I placed science communication in a global perspective. Next I look at meaning-making and what it entails in terms of judgment and choices, competence, efficiency and efficacy, situational contexts, challenges and forms of communication in scientific communities. Then I examine aspects of multi-languaging and the need to adapt to change, the need for consensus, perspective-taking and to take into consideration upcoming challenges entailing a realignment. Finally I discuss complexity as it affects scientific communities through diversity, competition and required instruction.

References

Altman, Rick. 1984. A semantic-syntactic approach to film genre. *Film/Genre*. 216–225.

Anderson, John R. 1980. *Cognitive Psychology and its implications*. San Francisco: Freeman.

Archibugi, Daniele and Bengt-Åke Lundvall. 2002. *The globalizing learning Economy*. Oxford: OUP

Ardasheva, Yuliya, Penny B. Howell, and Margarita Magaña. 2016. Accessing the classroom discourse community through accountable talk: English learners' voices. *TESOL Journal*. 667–699.

Arkoudis, Sophia and Sue Starfield. 2007. In-course language development and support: A discussion paper, Canberra, Australia: Department of Education, Science and Training, Commonwealth of Australia.

Bakhtin, Mikhail. 1986. *Speech genres and other late essays*. Austin, TX: University of Texas Press.

Barton, David and Karin Tusting (eds.). 2005. *Beyond communities of practice Language, Power and Social Context*. Cambridge, UK: Cambridge University Press.

Basturkmen, Helen. 2010. *Developing courses in English for specific purposes*. Basingstoke UK: Macmillan.

Borg, Simon. 2003. Teacher cognition in language teaching. *Language Teaching* 36(2). 81–109.

Brandon, Carter and Jean-Pierre Luminet. 1982. Pancake detonation of stars by black holes in galactic nuclei. *Nature* 296. 212–214.

Brassard, M. and Jean-Pierre Luminet. 2008. Shock waves in tidally compressed stars by massive black holes. *Astronominal Astrophysics* 481. 259–277.

Brophy, Jere and Thomas L. Good. 1986. Teacher behavior and student achievement. In M. C.Wittrock (ed.), *Handbook of Research on Teaching*, 328–375. New York: Macmillan.

Bruer, John T. 1993. *Schools for thought*. Cambridge, MA: MIT Press.

Cabré, M.T. 2010. Terminology and translation. In Y. Gambier, L. van Doorslaar (eds.), *Handbook of translation studies* 1. 356–365.

Carter B. and Jean-Pierre Luminet. 1982. Pancake detonation of stars by black holes in galactic nuclei. *Nature* 296. 212–214.

D'Andrade, Roy G. 1995. *The Development of cognitive Anthropology*. Cambridge: CUP.

Deacon, Terrence W. 1997. *The Symbolic Species: The Co-evolution of Language and the Brain*. New York: W.W. Norton & Co.

Deardoff, Darla. 2006. The identification and Assessment of Intercultural Competence as a student outcome of Internalization at Institutions of Higher Education in the United states. *Journal of Studies in International Education* 10. 241–266.

De Gramont, Patrick. 1990. *Language and the Distortion of meaning*. NewYork: New York University Press.

D'Hainaut, Louis. 1988. *Des fins aux objectifs en éducation*. 5th edn. Bruxelles: Labor.
Derrida, Jacques. 1996. Semiology and grammatology: interview with Julia Kristeva. In: Paul Cobley (ed.), *The Communication Theory Reader*, 209–224. London: Routledge.
Diki-Kidiri, M. 2007. Éléments de terminologie culturelle. *Cahiers du RIVAL* 26. 14–25.
Downs, James F. 1971. *Cultures in Crisis*. Beverly Hills, CA: Glencoe Press.
Duranti, Alessandro. 1997. *Linguistic Anthropology*. Cambridge: CUP.
Edwards, Derek and Jonathan Potter. 1992. *Discursive psychology*. London: Sage.
Fairclough, Norman. 1989. *Language and Power*. London: Longman.
Fairclough, Norman. 1992. *Discourse and social change*. Cambridge: Polity Press.
Fairclough, Norman. 1995. *Critical discourse analysis: The critical study of language*. London: Longman.
Felber, Helmut. 1984. *Terminology manual*. Paris: UNESCO.
Feyerabend, Paul. 1975. *Against method*. London: New Left Books.
Fowler, Roger. 1981. *Literature as social discourse: the practice of linguistic criticism*. London: Batsford Academic.
Gadamer, Hans-Georg. [1960]1986. *Hermeneutik II. Wahrheit und Methode 2*. Tübingen: Mohr.
Gardner, Howard. 1991. *The Unschooled Mind: How children think and how schools should teach*. New York: Basic Books.
Gaudin, François. 2005. La socioterminologie. *Langage* 157. 81–93.
Gee, James Paul. 1990. *Social linguistics and literacy: Ideologies, discourses, critical perspectives on literacy and education.* London, New York: Falmer Press.
Gee, James Paul. 2002. Literacy learning and the Design of social futures. In Bill Cope and Mary Kalantzis (eds.), *Multiliteracies,* 41–66. London and NY: Routledge.
Gee, James Paul. 2005. Semiotic social spaces and affinity spaces: from The Age of Mythology to today's schools. In David Barton and Karin Tusting (eds.), *Beyond communities of practice: Language, Power and Social Context,* 214–232. Cambridge: CUP.
Gillet, Roland. 1991. Efficience informationnelle du marché boursier, définitions, tests empiriques et interprétation cohérente des résultats. *Brussels Economic Review* 132. 373–413.
Grafman, Jordan. 2009. Seats of emotional intelligence found. *New Scientist* 205(2742). 16.
Hawkes, Terence. 1995. Preface. In Linda Hutcheon, *The Politics of Postmodernism*, vii-viii. London: Routledge.
Irwin, T. 1988. *Aristotle's first principles*. Oxford: Oxford University Press.
Jones, Ernest. 1952. *The life and work of Sigmund Freud*. New York: Basic Books.
Jonnaert, Philippe. 2002. *Comp*étences et socioconstructivisme*: un cadre théorique*. Bruxelles: De Boeck & Larcier.
Jonnaert, Philippe, Anne Lauwaers and E. Peltier. 1990. *Capacités et compétences des élèves au terme de l'enseignement secondaire général.* Louvain-La-Neuve: DIES, rapport de recherche.
Jusczyk, Peter. 1997. *The discovery of Spoken Language*. Cambridge, MA: MIT Press.
Kress, Gunther and Theo van Leeuwen. 1996. Representation and interaction: designing the position of the viewer. ; *Reading Images: A grammar of visual design*. London: Routledge.
Kripke, Saul. 1980. *Naming and necessity*. Cambridge, Ma.: Harvard U. Press, Oxford: Blackwell.
Kuhn, Thomas. 1962. *The structure of scientific revolutions*. Chicago: University of Chicago Press.
Lacan, Jacques. [1929]1975. *Le Séminaire de Jacques Lacan, Livre I,* Paris: Editions du Seuil.
Laing, Ronald D., Hubert Phillipson and A. Russell Lee. 1966. *Interpersonal Perception*. New York: Springer Publishing Company.
Latour, Bruno. 1993. *We have never been modern*. Cambridge, MA: Harvard University Press.
Lave, Jean and Etienne Wenger. 1991. *Situated Learning: Legitimate peripheral participation.* Cambridge: CUP.
Le Moigne, Jean-Louis. 1999. *La modélisation des systèmes complexes*. Paris: Dunod.

Leontiev, Aleksei A. 1981. *Psychology and the language learning process*. Oxford: Pergamon.
Levinson, Susan C. 1997. From outer to inner space: linguistic categories and non-linguistic thinking. In Jan Nuyts and Eric Pederson (eds.), *Language and Conceptualization,* 13–45. (Language, Culture and Cognition 1). Cambridge: Cambridge University Press.
Luhmann, Niklas. 1984. *Social Systems*. Stanford, California: Stanford University Press.
Luke, Allan. 1995. When basic skills and information processing just aren't enough: Rethinking reading in new times. *Teachers College Record* 97(1). 95–115.
Lundvall, Bengt-Åke. 2002. Innovation policy in the globalizing learning economy. In Daniele Archibugi and Bengt-Åke. Lundvall (eds.), *The globalizing learning Economy*, 253–272.Oxford: Oxford University Press.
Lyotard, Jean-François. 1984. *The Postmodern Condition*. Manchester: University of Manchester Press.
Meirieu, Philippe. 1991. *Apprendre … oui mais comment?* Paris: ESF.
Myers, Marie J. 2009. Advances in the Complex of Competence-in-Performance, *Dialogue Analysis* XI(1). 41–56.
Myers Marie J. 2011. Effectiveness in dialogic language use despite deviations. *Procedia-Social and Behavioral Sciences* 12. 248–254.
Nyholm, Jens, Lars Normann, Clauss Frelle-Petersen, Matk Riis and Peter Torstensen. 2002. Innovation Policy in the knowledge-based economy. In Daniele Archibugi Daniele and Bengt-Åke Lundvall (eds.), *The Globalizing Learning Economy,* 253–272. Guilford: Oxford University Press.
Olson, David. 2003. *Psychological Theory and Educational Reform: how school remakes mind and society*. Cambridge, UK: Cambridge University Press.
Osborne, Roger and Peter Freyberg. 1985. *Learning in Science*. Auckland: Heinemann.
Pallascio, Richard and Louise Lafortune (eds.). 2000. *Pour une pensée réflexive en éducation*. Sainte Foy: Presses de l'Université de Québec.
Payne, Michael. 1999. *Cultural and Critical theory.* Oxford: Blackwell.
Perrenoud, Philippe. 1997. *Construire des compétences à l'école*. Paris: ESF.
Quine, Williard van Ormen. 1953. *From a logical point of view: Two dogmas of Empiricism*. Cambridge, MA: Harvard University Press.
Raynal, Françoise and Alain Rieunier. 1997. Pédagogie: dictionnaire des concepts clés. *Apprentissage, formation et psychologie cognitive.* Paris: ESF.
Ricento, Thomas. 2005. Language policy: Theory and practice. An introduction. In Thomas Ricento (ed.), *An introduction to language policy: Theory and method*, 348–368. London: Blackwell.
Roche, Christophe. 2012. Should Terminology Principles be re-examined? Available from: https://www.researchgate.net/publication/282067090_Should_Terminology_Principles_be_re-examined [accessed May 13, 2017].
Rorty, Richard. 1991. Texts and lumps. *Objectivity, Relativism and Truth* 1. 78–92.
Rossi, Micaela. 2015. *In rure alieno. Métaphores et termes nomades dans les langues de spécialité*. Bern: Peter Lang.
Schumann, John H. 1976. Second Language acquisition research: Getting a more global look at the learner. In Douglas. H. Brown (ed.), *Papers in second language acquisition, language learning. Special Issue 4*. Ann Arbor, MI: Michigan State University.
Scollon, Ron and Suzanne B.K. Scollon. 1981. Narrative, literacy and face in interethnic communication. *Advances in Discourse Processes, vol 7.* Norwood, NJ.: Ablex.
Sekula, Allan. 1982. On the invention of photographic meaning. In Victor Burgin (ed.), *Thinking Photography*, 84–109. London: Macmillan.
Senge, Peter, Art Kleiner, Charlotte Roberts, Richard B. Ross and Brain J. Smith. 1994. *The fifth Discipline Fieldbook*. New York: Doubleday.

Sperber, Dan and Deirdre Wilson. 1986. *Relevance, communication & Cognition*. Oxford: Blackwell.
Spitzberg, Brian H. and William R. Cupach. 1989. *Handbook of Interpersonal Competence Research*. New York: Springer-Verlag.
Strauss, Claudia and Naomi Quinn. 1997. *A cognitive theory of cultural meaning*. Cambridge: CUP.
Temmerman, R. 2000. Une théorie réaliste de la terminologie. *Terminologies Nouvelles* 21. 58–64.
Van den Branden, Chris. 2006. *Task-based language education: from theory to practice*. Cambridge: CUP.
Wertsch, James W. 1998. *Mind as action*. Oxford: Oxford University Press.
Wiseman, Richard L. and Hiroko Abe. 1986. Cognitive complexity and international effectiveness: Perceptions in American-Japanese dyads. *Communication Yearbook* 9. 611–622.
Wittgenstein, Ludwig. 1969. *On Certainty*. Oxford: Blackwell.

Part V: Terminology and multilingual domain communication

John Humbley

22 Term formation and neology

Abstract: Term formation is a central part of LSP theory and practice, and the following chapter takes the form of a rapid review of the essential aspects of the question, exemplified by the diverging practices of some Western European languages. This contribution examines the various mechanisms by which new terms come into being and the way they are accounted for by linguistic theories. Important issues addressed include the question of whether (and which) terms are created consciously or spontaneously, and that of the translation or adaptation of terms coined in other languages.

1 Complementary multidimensional approaches

The question of how new terms come into being is a fundamental one. It has been suggested that the number of new terms formed "is impeded primarily by the very limited number of term elements available in any language for naming new concepts" and that there are in fact more new concepts than new terms to express them (Galinski and Budin 1993: 210). This view may be based on the number of single word terms, which for most languages is considered to be far lower than that of multiword terms. As Nakagawa and Mori (2003: 201) claim, "the majority of domain-specific terms are compound nouns, in other words, uninterrupted collocations. They consist of a relatively small number of distinct simple nouns ...". Daille et al. (1996: 208) make the same claim for English. Be this as it may, the number of terms created rises exponentially each year, creating a practical problem of incorporating these new forms in terminological repertoires, term banks in particular. The problem can also be placed on the theoretical level: how can all these new terms be accounted for?

This theoretical question is not relevant for all applications of terminology: for many purposes, it is sufficient to obtain a complete, coherent and explicit terminology of a particular field without knowing which terms are new or how they came into existence. This lack of practical application in many cases has led to the question of term formation being sidelined over the last half century. It has only been brought up within certain specific frameworks, for example in language planning, in the history of sciences and in the initiation of lay persons or future specialists to a new field. There are however a number of very basic questions concerning specialised neology (sometimes called neonymy) which are inherent to any reflection on the nature of terminology: are new terms formed consciously or not, or rather which categories of terms are formed consciously and which are not; are the methods of term formation transferable

John Humbley, Paris (France)

https://doi.org/10.1515/9783110228014-022

from one subject field to another, or from one language to another, are terms formed any differently from ordinary lexical items. i.e. is a specific theory of *term* formation needed with its own particular criteria, rather than one of simply word formation?

The analysis of complex phenomena requires recourse to different methods of analysis, and term formation is no exception in this regard. One way of looking at it is to transpose the theory of everyday word formation onto specialised vocabulary. Another way would be to distinguish between terms formed for the first time in one particular language and terms formed in other languages on the basis of existing terms in the first language. A third method is to look into the motivation of term formation from the point of view of the creators, and, reciprocally from that of receptors. All have been explored by linguists and terminologists, though there have as yet been relatively few syntheses of term formation in general. In the overview that follows, reference is made to Western European languages to the regrettable exclusion of important languages of science and technology such as Japanese (see Coulmas 1992) or Chinese (Feng 2003).

2 Linguistic approach: the mechanisms of lexical formation applied to specialised vocabularies

According to the structuralist view of word formation, a limited number of matrices, or lexical models, can be held to produce the general lexicon of a language. J. Tournier (1985), for example, postulates four main "lexicogenic matrices" for English: affixation, compounding, semantic extension or specialisation and borrowing. This basic model has been developed to account for neology in French by Jean-François Sablayrolles (2000), who illustrates the different models in tabular form. It can be postulated that these matrices are directly applicable to explain how new terms are formed, with a possible difference at the level of multi-word compounds, generally considered as units by terminologist but collocations by lexicologists, reflected in their presentation in dictionaries (Wright 1991). Terminologists generally consider multi-word sequences as instances of compounding and include them in their definition of what a term is (Sager 1990: 76). Although Sager (1990) expressly included multiword compounds as terms, he limits his classification of term formation to new **words** ("Either they are totally new creations or they are borrowings from other languages" (Sager 1997: 38–41)). He also excludes extensions in meaning, including metaphor and metonymy, as well as syntagmatic, multiword constructions. The definition of exactly what constitutes a term is of course determining for defining term formation. Indeed, much work on the automatic detection of terms relies directly on distinctions made between ad hoc collocations and multi-word terms. Estopà Bagot (2001: 223), in view of research on automatic term extraction, suggests broadening the scope of what a term is and taking in other categories not formerly considered to be terms, in particular initialisms, scientific names in Latin, and formulae, which she groups under Units of Specialised Meaning.

The actual forms taken depend on the individual languages concerned, the Romance languages favouring creating of new terms using affixation, whereas the Germanic languages tend to make more intensive use of compounding. The Romance languages usually have a closer relationship to the classical languages (Greek and Latin) and thus turn to learned forms for coining new terms, whereas, in many areas, the Germanic languages continue to rely on compounding. More comprehensive surveys can be found for English (Sager 1990: 38–41), German (Fluck 1996: 47–59), French (Kocourek 1991, L'Homme 2004: 58–62), Spanish (Cabré ([1992]1993), Portuguese (Alves [1990] 2007, 2001) …

Kocourek ([1982]1991) gives a synoptic view of this structuralist viewpoint for French but in fact transposable to other European languages, as illustrated in Figure 1.

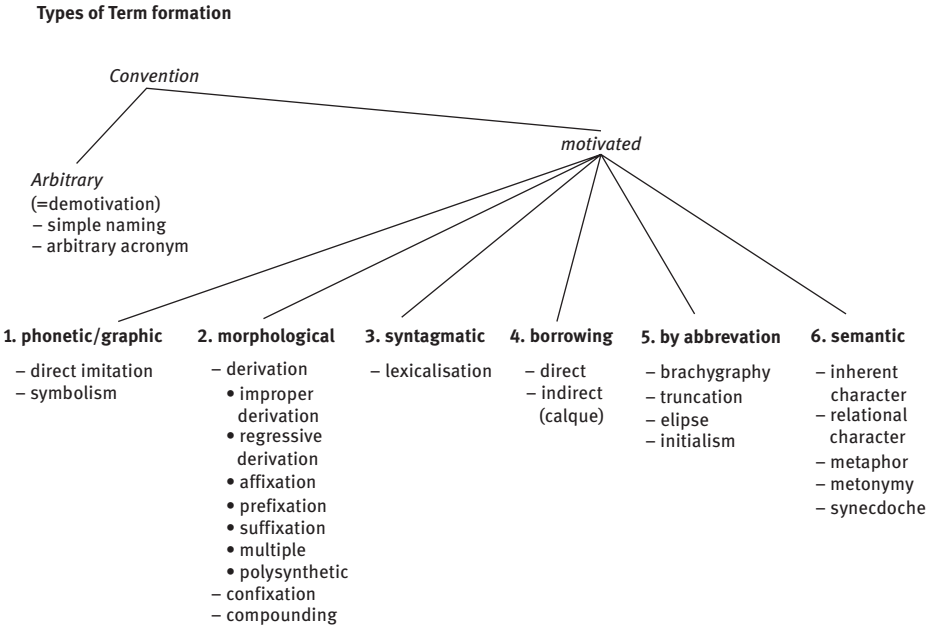


Figure 1: Kocourek 1991 in English.

He first divides into arbitrary and motivated formation, the latter being further subdivided into six categories, similar to those of Tournier (1985). Arbitrary term formation, such as lexical creation *ex nihilo*, is of marginal importance and will not be discussed here. Of the motivated forms, the phonic or graphic level (marked 1 in Figure 1) is only slightly more relevant to this chapter though it has been little studied at least in a linguistic context, with the exception of Lemaire & Muraille (2012), who account for the increasing use made of various graphic and numerical symbols in acronyms. The field of semiotics may indeed be a more relevant context of study, as de Vecchi (2007) suggests, focusing on non-linguistic "terms", made up of images, sounds, even smell. The

morphological category (marked 2 in Figure 1) has been the subject of many studies and is made up of several subcategories, which are taken from lexical analysis, and therefore may reflect different theories or specific languages: for example, the major division into derivation, confixation (use of Greek and Latin roots) and compounding goes back to structuralist linguistics: other theories consider that derivation should simply be considered as affixal compounding: back formation or improper derivation is in fact conversion (change of grammatical category without any affixation), amply pursued by English, is much less common in Romance language, though increasingly used (Picone 1996). Regression is back formation, once again a frequent occurrence in the general lexicon. Affixation (prefixing and suffixing) shows some specificity for term formation. It is possible to take a subject field and examine which suffixes are used, as Zerm (1999: 1418) has done for the English of metallurgy, revealing that what holds for the general language also does for the LSP as well. Thus there are several suffixes which produce nominalisations from verbs *–ing: bend/bending- ion: decarburize: decarburization; -ment: impinge/ impingement;* or from adjectives *-ity: ductile/ductility; ness: hard hardness* and so on. Other suffixes, less terminological in essence, make it possible to use nouns as qualifiers, thus in an adjectival form *-ic: adiabatic, elastic, kinematic ; -al : chemical, mechanical, residual*. A third group produces agents from verbs – *er/-or: burner, happer, recuperator*. More specifically terminological is the use of what some term suffixes, such as *-ite: ferrite, cementite, ledeburite*, but these might better be classified as "confixes" or combining forms, as their use is strictly classificatory: *-ite* places the referent of the stem in the category of ions with a low oxidation state, thereby relegating the concepts concerned to a taxonomy. Both prefixing and suffixing are used concurrently in terminology, frequently one in conjunction with the other, in what is called parasynthetic in French lexicology (Surridge 1997: 343). Surridge notes an appreciable number of what seem to be deverbals of a terminological nature formed using both prefixing and suffixing, but where no corresponding verb form is attested: *délactosage*, *dénitrogénisation*, etc. Many of these are borrowed from English, such as the last example, suggesting that this form of neology is current in other languages (Surridge 1997: 347). What Kocourek calls confixation is generally known in English as learned words made up with combining forms. These are generally consciously crafted terms expressly called into being to designate a new concept. Such classical combining forms have been used in most European languages since the Renaissance or before, and go towards constituting a common basis of terminology, which is more or less developed according to the science or technology concerned: highly developed for anatomy and relatively little for information technology. They are particularly numerous in the Romance languages. Christian Schmitt (1999) notes for French that the new words introduced into the 1988 edition of the *Petit Robert* dictionary mostly come from LSPs and are overwhelmingly based on Greek and Latin roots. This common heritage has prompted some linguists to advocate the use of these classical roots to form a common European specialised vocabulary in the form of internationalisms (Braun 1990). It should be pointed out however that certain

Greek or Latin words are used differently from one language to another and from one field to another. This is even more the case for many specific LSPs**:** Silva (2006: 425) reports the pervasive use of these roots for Portuguese medical imagery. Cottez (1980) and Lurquin (1998) have made dictionaries of classical roots used in French, the former to account for existing terms but also to guide the user in the creation of new ones, the main aim of the latter. For Cottez (1980: xxii), his dictionary had a practical side to it in giving various specialists, theoreticians or technicians of various subject fields a means of coining names efficiently. Gaudin (1993: 135) criticises excessive use of Greek-based forms for French medical terminology, which creates a barrier for the layperson. It has been suggested that the nineteenth and early twentieth century technologies called on classical compounds (*telegraph*, *phonograph*, *television* ...), whereas more modern ones, such as that of information technology, relied more on general language. Raad (1989) claims that this is typical for English term creation in such innovative fields as astronomy (*gravity tunnel*), genetics (*blast cell*), information technology (*wimp*), the nuclear (*body burden*), and space industry (*gravity asset*, *swingby*) and particle physics (*glueball*) (Raad 1989: 128).

Compounding is extensively exploited by terminology in European languages, though more in the Germanic (Sager 1990 for English) than in the Romance. The fact that some languages, such as Arabic, are reluctant to form compounds has been seen as a drawback to its use for terminologies. In terminology work, however, compounding tends to be grouped together with category number 3, syntagmatic term formation. This is probably the most frequent of all the matrices, and one that best characterises work done on automatic term detection: most systems are designed to pick out groups of words on a relatively regular basis which represent subject-area concepts. The many projects carried out with this aim do not set out to determine how terms are created in this way nor to account for their formation, but the experience derived from separating multiword terms from other collocations can shed light on the process of creation. This is not surprising, when it is remembered that term formation is an extremely widespread and prolific phenomenon, though one which is little observed, simply because it is situated on the interface between language and discourse. The proviso given by Kocourek (1991: 138) sets the limit – when a string of words becomes a lexical unit, even one restricted to a group of specialists, though it is obvious that the term formation process starts earlier, in discourse itself. This will be discussed more fully below.

Category 4 is borrowing, further divided into direct borrowing, when a term is taken over directly in the borrower's language, and various forms of loan translations or calques. These are issues of what is generally known in English as secondary term formation, a major issue in language planning, also is discussed below. For an overview of English influence on German terminology, see Viereck (1999), and for French Schmitt (1999).

Category 5 is abbreviation, which is not unknown in the general language, but particularly developed in terminology. Sommant (1996: 185), for example, estimates that a third of the French terminology of the multimedia industry is made up of abbreviations

of various sorts. The reason for economy in terminology is underlined by Wüster ([1979] 1985: 37–51), who points out that syntagmatic term formation (matrix three) is too unwieldy to be used with great frequency. As Møller (1998: 428) points out, however, it is different from the other forms of term formation in that the form changes but the meaning – ideally – remains constant. There are several typologies of abbreviated terms, often specific to a particular language, and the metalanguage used fluctuates between authors. One distinction can be made between strict initialisms, which use only the first letter of each element of the compound and looser ones, often striving at retronymy, a post hoc motivation exercise. Another distinction can be made as to whether the resulting initialism is pronounced as a word or as a series of letters. A third category is that of blends, itself subject to a vast campaign of typology, principally in English, though also in French and Italian (Clas 1987, 2001) and largely the domain of theoretical linguists (Renner, Maniez, Arnaud 2012). The range of abbreviations is expanding with increasing specialisation, and some speak of "new acronyms" (Lemaire & Muraille 2012), who examine the numerous classes of abbreviations mixing letters and numbers, and use of case (upper or lower or extended keyboard). Category 6, specialised semantic neology, comprising all sorts of changes of meaning, in particular metaphor and metonymy, will be examined below in the light of more recent developments in the field of semantics.

3 Primary and secondary formation

The structuralist view of term formation is useful in giving a comprehensive framework for analysing how new terms are coined. Although the typology derived from this approach is superficially easy to understand, the categories postulated are not completely discrete, and some overlapping is to be found, in particular in the case of indirect borrowing, where both the external matrix and one or more of the internal matrices may be involved (Jacquet-Pfau, Sablayrolles, Humbley (2011) give examples of this in everyday French). Moreover, as Temmerman (2000) and others have pointed out, there is little information on why particular forms are chosen rather than others. The question "how?" receives an answer, but not the question "why?". For this a more conceptual approach is needed, and there are several ways of tackling this question.

The Québec linguist, Guy Rondeau, was one of the first to propose a model of term formation in general, which he distinguished clearly from the formation of new words in the general lexicon (Rondeau 1984: 122). For Rondeau, the distinction current at the time between word and term was reflected directly in the way the two were formed. For the latter, Rondeau postulated three major characteristics: that neonyms, as he called them, are characterised by collective awareness of a group of enlightened speakers (i.e. the specialists), usage which can largely be accessed through the literature, and dating the new terms in the latest reference works, mainly specialised dictionaries. It was thus that the heuristic definition of what a new term was came to

be framed in relation an exclusion corpus, a sort of stop list made up of these secondary documents, dictionaries in particular. If a new term was not found in the current dictionaries or databases, it was thus considered a neonym.

One fundamental distinction that Rondeau made concerned the encoding of a new term by a specialist. If the concept was indeed completely novel, the specialists had to use the language resources at their disposal to create a new name to designate the concept: Rondeau called this *néonymie d'origine* (and *néonymie de transfert*), and Sager (1989, 1997) *primary term formation*. If, on the other hand, this new concept already had a name in another language community (where primary term formation had already taken place), the conceptual task of the specialist was rather different, as there was already a model denomination which could be taken as such (a direct borrowing) or recreated in the language of this specialist using the original form as a model, to be followed closely or loosely. This Rondeau termed *néonymie d'appoint* or *néonymie de transfert*, and Sager *secondary term formation*.

In French language research, and more generally in the Romance languages, the focus of specialised neology has been on secondary, to the near exclusion of primary, term formation. Reasons for this focus are not hard to find: French, in particular in Canada, was seen to have a need to catch up with English-language terminology in order to be proficient in research in science and technology. In addition, the terminology commissions, set up in France and in Canada from the 1970s on, had a high profile and dominated much of the reflection on term formation for several decades. There is indeed a large body of research which has been carried out on the uptake of official terms both from within France (Goudailler 1977, 1982, Becherel 1981, Humbley 1988a, b, Depecker & Mamavi eds (1997)) and outside France (Fugger (1979), Beinke (1990), Winter (2005), Jansen (2005), Coy (2012)). These studies give a brief account of how this secondary term formation was put into effect, which matrices were most effective, and evaluate the results, generally critically.

4 Alternative views on term formation

In French-language terminology research, the focus was thus very much on secondary term formation. New theories of this came often from outside the field of terminology and in some notable cases from general linguistics.

4.1 Functionalist view

This is the case of the functionalist linguist M.A.K. Halliday, whose interest in the language of science led him to propose a fundamental concept of the grammatical metaphor, the syntactic means by which the speaker – the specialist in

this case – transforms a proposition into an entity, which can then be examined, measured, in a nutshell exploited for scientific research. The grammatical metaphor consists in turning a clause into a more succinct form, generally a noun form. This had been noted previously in English linguistics by such researchers as Bauer (1983) or Quirk (1985: 1526), who point out how *engines powered by electricity* become after use *electricity-powered engines*, the process being considered more in its sociological context and termed *institutionalization* (Bauer 1983: 33). It should be pointed out that Halliday's intention was not to provide a theory of term formation, this was merely a by-product of his research on how language is used in science, though, as Antia & Kamal (2006: 136) say, his analysis of the process of encoding scientific discourse is directly relevant to the study of term formation.

One fundamental distinction between Rondeau's and Halliday's conception of term formation lies in the process as it unfolds in the specialist's activity: for Rondeau it is an act of conscious creation. For Halliday, it is simply produced in discourse – in speech, or more likely writing – in order to solve some local problem of communication, and the naming function may well only be one reason among several others. He cites Newton's *Opticks* (1704) where new concepts are initially introduced in the form of fully fledged clauses, which the scientist gradually transforms into nominalisations (Halliday [1998] in Webster 2004 (ed): 37).

Halliday's theory of terms emerging from scientific and technical discourse goes some way to explaining why the actual appearance of new terms should be so difficult to document. In fact, those terms which are documented are generally those which are a result of conscious naming and therefore announced as such. The other, far more common uses of new terms generally remain hidden in discourse and only become apparent as new terms when a definition is made for them. Some attempts at using Halliday's theory of the grammatical metaphor were made by Ormrod (2001, 2004) on a small corpus of highly specialised texts, and more recently by Pecman (2014). Studies of how collocations mute into terms have been made in various specialised fields, such as Wendt (1999) in heating technology in German.

Halliday insisted that lexical metaphor was also of primary importance in the development of scientific language, giving as examples *motion, speed, proportion,* which translate processes or quantities into nouns. In other words, they are presented as objects. The same is the case for qualities, *length,* by transcategorisation (Halliday [1998] in Webster (ed) 2004: 65).

4.2 Cognitive view and other contributions

If functionalist linguistics has made a contribution to the understanding of term formation, so has cognitive linguistics, in particular insofar as the metaphor is seen not simply as a means of naming a new concept, but more particularly part of a global approach which the specialist adopts when trying to grasp a hitherto unknown

concept. The role of the metaphor as a means of creating new terms predates cognitive linguistics. Trier (1931) incorporated the concept of *image field* (Bildfeld) as part of his lexical field theory, as the area from which metaphors are taken. Liebert (2002) considers that metaphor is important both for scientific innovation and for popularising science, a theme taken up and studied in detail by Richardt (2005). For the cognitive linguist however a new term can also be seen as a by-product of the cognitive striving to understand and to transmit elements of understanding. This is why Temmerman (2000) prefers to speak of *units of understanding* rather than representations of concepts, calling into question not only assumptions as to the stability of the designation but also of the precision of the definition. The cognitive approach is not the only one to be exploited for the study of metaphors as a means of term formation. Mel'čuk's meaning-text theory is used by Vandaele (2002), who extends her analysis to the verbs and adjectives used with noun terms.

Kageura (2002) addresses a rather different issue in his seminal study on term dynamics. What interests him is not so much how actual terms are formed, but how a terminology grows exploiting which pre-existing patterns, thus his preferred reference to *term growth*. The classifying principles of term formation and the relationships existing between terms were seen as the key to accounting for the phenomenon.

> To capture the collective nature of term formation patterns which, as a whole, is the main aim of the study of term formation. This is attempted by introducing conceptual specification patterns, which reflect the classificatory principles of term formation, and which observe the actual manifestation of these patterns as types of intra-term relations. (Kageura 1997: 110).

He bases his work on the observation that the vast majority of terms are syntagmatic compounds (Daille et al 1996: 204–5 for English and for French Portelance 1987, 1998) and focuses his analyses on these. The relationship between the elements of compound terms are binary and are defined by how the determinants are related to the nucleus, some being domain-specific, others general.

> [...] intra-term relations are binary [...] intra-term relations are recognised as the status of position of the determinants with respect to the nuclei. "subject specific relations, such as representation, are partially introduced, while many relations are general. (Kageura 1997: 106).

First, four major categories, represented in capitals, are postulated as ENTITY, ACTIVITY, QUALITY, RELATIONSHIP, which are in turn subdivided to form a conceptual hierarchy to which the terms are apportioned (Kageura 2002: 65–80). To do this he turns to corpus linguistics and studies an entire subject specific terminology (that of documentation for his handbook (Kageura 2002)) and sets out a comprehensive statistical device to measure the term growth. But as well as accounting for how the terminology as a whole evolves, he provides means of identifying different types of construction, classified on a conceptual basis. This is similar to work previously done by Sager and Kageura (1994/5) and subsequently by Oster (2006), but it is specifically aimed at accounting for how new terms are formed.

One of the lessons which can be drawn from Kaguera's very comprehensive study is the importance of existing term models in the creation of new terms. New terms are formed on old terms, often in an incremental manner, in particular where continuous refinements give a series of more specific terms. This indeed goes back to Wüster's explanation (1959/60: 186) (complemented by Toft (2007: 108), who updates this line of thought) focusing on the adding or modification of a concept feature to characterise a new concept, as illustrated in Figure 2 by (Schmitz 2004 : 441), where relations of hypernymy are put forward : the new concept has more features than the old – conceptualisation by determination.

This phenomenon had already been recognised in other linguistic traditions. In the French specialised lexicological tradition Guilbert (1965: 338) noted how new concepts are typically particularisation by epithet, thus producing numerous compounds. In the Wüsterian tradition, Weissenhofer (1995) underlines the parallel between morphological development of a terminology with its conceptual development: "... morphology and word-formation play an important role in the study of concept theory since there is a direct relationship between derivational and some fundamental conceptual categories" (Weissenhofer 1995 : 69).

It may seem that the different models which set out to account for how new terms come into being are disparate and not directly comparable. This is partly the case inasmuch as the models are taken from very different linguistic theories: structuralist, functional, cognitive, and thus not directly transposable. From a practical point of view, however, the different models can be integrated into a multidimensional approach which account for different aspects of the phenomenon. This is the conclusion to which Becker (2005) came in studying how mathematical terminology evolved over the nineteenth century in the three major languages of research (German, French, English).

1. Maus (mouse)
1.1 (nach Schnittstelle) (classified by interface)
1.1.1 USB Maus (USB mouse)
1.1.2 serielle Maus (serial mouse)
1.1.3 PSZ Maus (PSZ mouse)
1.2 (nach Datenübertragung) (classified by means as transmission)
1.2.1 Kabelmaus (cord mouse)
1.2.2 kabellose Maus (cordless mouse)
1.3 (nach Funktionprinzip) (by principle of function)
1.3.1 Rollkugel Maus (ball mouse)
1.3.2 optische Maus (optical mouse)
(after Schmitz 2004:441)

Figure 2: Neology reflecting conceptual construction. The case of the computer mouse.

5 New terms formed in relation with existing terms

The task of accounting for secondary term formation is somewhat easier, partly because more work has been carried out on this question in particular in the Romance languages, but also because the actual act of creation – in fact that of transposition – is more readily identified. The model put forward by Rondeau is in fact aimed at secondary term formation and underlies much of subsequent practice adopted by language planning organisations, in particular by the *Office de la langue française* (known since 2002 as *Office* ***québécois*** *de la langue française)*, both in the doctrine concerning loanwords and the practice of neology. The techniques of secondary term formation used by the official body in France, the ministerial terminology committees in the last quarter of the twentieth century is explained in detail in Depecker (2001), coordinated by the Délégation générale à la langue française et des langues de France. Other Romance languages have been less proactive on an official level but similar initiatives have been promoted by the REALITER network, and have produced a number of glossaries containing secondary terms (http://www.realiter.net/). One notable exception has been that of Catalan. TermCat was modelled on the *Office de la langue française* and produced both systematic terminologies in areas requiring lexical updating and a large body of theoretical studies and practical advice as to the methods of term formation (http://www.termcat.cat/neoloteca).

The Germanic languages have adopted a largely laissez-faire attitude to secondary term formation, though the DIN (Deutsches Institut für Normung – http://www.nhrs.din.de/) and Deutscher Terminologietag (http://www.dttev.org/) have guidelines on (secondary) term formation. Scandinavian countries have been generally more dynamic, Iceland being particularly proactive (see the chapter by S. Jonsson in Laurén, Myking, Picht (2008), p. 148–175), but Sweden too has an official body, Tekniska nomenklaturkommittén (http: www.tnc.se/), founded in 1936. It has produced both glossaries of recommended terms and guidelines for term formation.

Attitudes to direct borrowing are culturally determined. For some the quest for native equivalents is a means of promoting a national language, whereas for others it may be regarded as a form of purism. Borrowing is currently almost unknown in English, but a major issue for other languages, in particular those with a long tradition of scientific and technical writing. Most language communities take a non-interventionist position, leaving it to the actual users to decide whether to borrow or to adapt. As has been seen, certain Romance languages, French in particular, have favoured organised secondary term formation. Languages without a tradition of scientific and technical writing have been less adamant about limiting borrowings. In Filipino, it has been suggested that terms be taken over directly from English, On the other hand, it may be argued that direct borrowing and indeed close calques amounts to terminological dependency (Humbley & García Palacios 2012).

6 Specific theory of term formation or simply (specialised) word formation

Reading Halliday, the impression is gained that the majority of terms are created as specialists write texts, not as new names but as expressive devices to convey various aspects of exposition, explanation, argumentation.

> This sort of discourse [characterised by nominalisations, author's note] has served well for the natural sciences, where it was important to construe a world of 'things', including virtual entities that could be brought into existence as and when the discourse required them. Some of these virtual entities then remain in existence as theoretical constructs [ie as **terms**, author's note] while others function locally in the argument and then disappear. Halliday [1995] in Webster (ed) 2004: 21

This may be seen to contradict those who look on term creation as a directly conscious act, starting from Wüster (Wüster 1981: 65) and including Gerzymisch-Arbogast (1996: 184) and Fodor (1994: 190), who writes:

> It should be noted that the system of specialized lexicon, the terminology of science, professions and trades, are formed or codified by scientists and specialists, even for those languages whose ordinary vocabulary progressed spontaneously.

A more balanced approach is suggested by Kageura (2002)

> The claim that 'terminologies are deliberate creations' on the other hand, reflects an element of truth .... If, regarding terminology as being close to artificial nomenclatures, the systematic aspect of terms is dealt with in this study, it is useful to adopt the operational characterisation that 'terminologies are deliberate creations' ... The validity of the assumption of deliberateness must indeed be examined with reference to the actual descriptive results of a scientific study. Kageura 2002: 19.

The question of a specific theory for term formation rather than word formation remains open. In practice, terms are generally seen as units expressing specialised concepts, leading to a de facto difference since terminologists classify multi-word units as terms whereas lexicographers tend to regard them as collocations (Wright 1991). But the conceptual basis of terminology is not accepted by many terminologists, especially in Romance language countries, and there the borders between term and word formation tend to be overlooked.

References

Alves, Ieda. [1990]2007. *Neologismo. Criação lexical*. 3rd edn. São Paulo: Ática.

Alves, Ieda. 2001. Terminologia e neologia. *Tradterm* 7. 53–70.

Antia, Bassey Edem and Richard Kamai. 2006. African Issues in Terminology: An Educational Perspective. In Heribert Picht (ed.), *Modern Approaches to Terminological Theories and Applications,* 135–152. Bern: Peter Lang.

Becherel, Danièle. 1981. A propos des solutions de remplacement des anglicismes. *La Linguistique* 17(2). 119–131.
Bauer, Laurie. 1983. *English word formation*. Cambridge: Cambridge University Press.
Becker, Holger. 2005. Semantische und lexikalische Aspekte der mathematischen Fachsprache des 19. Jahrhunderts. Oldenburg University thesis available at http://docserver.bis.uni-oldenburg.de/publikationen/dissertation/2006/becsem05/becsem05.html (last accessed 15 April 2018).
Beinke, Christiane. 1990. *Der Mythos franglais. Zur Frage des Akzeptanz von Angloamerikanismen im zeitgenössischen Französisch – mit einem kurzen Ausblick auf die Anglizismen-Diskussion in Dänemark*. (Europäische Hochschuleschriften, Reihe XIII, Französische Sprache und Literatur, Band 151). Frankfurt am Main: Peter Lang.
Braun, Peter. 1990. Internationalismen – Gleiche Wortschätze in europäische Sprachen. In Peter Braun, Burkhard Schaeder and Johannes Volmert (eds.), *Internationalismen. Studien zur interlingualen Leixikologie unde Lexikographie*, 13–33. Tübingen: Niemeyer.
Cabré, Maria Teresa. 1992. La *terminologia*, *la teoria, els mètodes, les aplicacions*. Barcelona: Editorial *Empuries*. Translated into Spanish by Carles Tebé as Cabré, Maria Teresa. [1992]1993. La *terminología*. *Teoría, metogología, aplicaciones*. Barcelona: Editorial Antártida/*Empuries. Translated into English as* Cabre, Maria Teresa. [1992]1999. *Terminology*: *Theory, Methods, and Applications*. Amsterdam/Philadelphia: John Benjamins.
Clas, André. 1987. Une matrice terminologique universelle: la brachygraphie gigogne. *Meta* 32(3). 347–355.
Clas, André. 2001. Abelle' et 'Rose-épine' ! Mots-valises et méronymie. *Cahiers de lexicologie* 78. 99–106.
Cottez, Henri. 1980. *Dictionnaire des structures du vocabulaire savant. Éléments et modèles de formation.* Paris: Le Robert, Les Usuels du Robert.
Coulmas, Florian. 1992. *Die Wirtschaft mit der Sprache*: *Eine sprachsoziologische Studie*. Frankfurt.M.: Suhrkamp Taschenbuch Verlag.
Coy, Charlotte. 2012. Les recommandations officielles des Commissions de Terminologie et leur rapport à la langue commune: indices pour un profil lexicologique du français. *Neologica* 6. 177–189.
Daille, Béatrice, Benoît Habert, Christian Jacquemin and Jean Royauté. 1996. Empirical observation of term variations and principles for their description. *Terminology* 3(2). 197–257.
Depecker, Loïc. 2001. *L'invention de la langue. Le choix des mots nouveaux*. Paris: Larousse, Armand Colin.
Depecker, Loïc and Gina Mamavi (eds.). 1997. *La mesure des mots : cinq études d'implantation terminologique*. Rouen: Publications de l'Université de Rouen.
Estopa Bagot, Rosa. 2001. Les unités de signification spécialisées: élargissant l'objet du travail en terminologie. *Terminology* 7(2). 217–237.
Feng, Zhiwei. 2003. La normalisation terminologique en Chine. *Revue de l'aménagement linguistique* 106. (Aménagement linguistique en Chine) 27–46.
Fluck, Hans-Rüdiger. [1976]1996. *Fachsprachen*. 5th edition. Tübingen/Basel: Francke Verlag.
Fodor, Istvan. 1994. Quelques traits de la modernisation des langues européennes. In Claude Truchot (éd.), *Le plurilinguisme européen*, 187–202. Paris: Champion.
Fugger, Bernd. 1979. Les Français et les arrêtés ministériels: Etude sur l'impact de la loi linguistique dans l'Est de la France. *La Banque des mots* 18. 158–170.
Galinski, Christian and Gerhard Budin. 1993. New trends in Translation-Oriented Terminology Management. In Sue Ellen Wright and Leland D. Wright, Jr. (eds.), *Scientific and Technical Translation*, 209–215. (American Translators Association Scholarly Monograph Series VII). Amsterdam/Philadelphia: John Benjamins.
Gaudin, François. 1993. *Pour une socioterminologie. Des problèmes sémantiques aux pratiques institutionnelles*, Rouen: Université de Rouen.

Gerzymisch-Arbogast, Heidrun. 1996. *Termini im Kontext. Verfahren zur Erschliessung und Übersetzung der textspezifischen Bedeutung von fachlichen Ausdrücken*. (Forum für Fachsprachen-Forschung Band 31). Tübingen: Gunter Narr Verlag.

Goudailler, Jean-Pierre. 1977. A nouveau les puristes contre la langue. *La linguistique* 13(2). 85–98.

Goudailler, Jean-Pierre. 1982. Sprache und Macht: wie ein Gesetz in Frankreich die Sprache reinigen will. *Dialect* 6. 28–37.

Guilbert, Louis. 1965. *La formation du vocabulaire de l'aviation (1861–1891)*. Thèse en deux volumes. Paris: Larousse.

Halliday, M. A. K. 2004. Language and the Reshaping of Human Experience. In M. A. K. Halliday (ed.), *The Language of Science*, 7–23. Edited by Jonathan Webster. (The Collected Works of M.A.K. Halliday, Vol. 5). London/New York: Continuum.

Hoffmann, Lothar, Hartwig Kalverkämper and Herbert Ernst Wiegand (eds.). 1999. *Fachsprachen/ Languages for Special Purposes,* Volumes. 14.1/2. Berlin: Walter de Gruyter.

Humbley, John. 1988a. La traduction dans la terminologie informatique en français et en allemand. *Actes du IIº colloque du Groupe d'Etudes sur le plurilinguisme européen*, *Strasbourg* 1986. 6–14.

Humbley, John. 1988b. Comment le français et l'allemand aménagent la terminologie de l'informatique. Banque des Mots. Numéro spécial. 85–148.

Humbley, John and Joaquin Garcia Palacios. 2012. Neology and terminological dependency. *Terminology* 18(1). 59–85.

Jacquet-Pfau, Christine, Jean-François Sablayrolles and John Humbley. 2011. Emprunts, créations, sous influence et équivalents. In Marc Van Campenhoudt, Teresa Lino & Rute Costa (eds.), *Passeurs de mots, passeurs d'espoir. Lexicologie, terminologie et traduction face au défi de la diversité, Actes des 8è Journées scientifiques du Réseau de chercheurs Lexicologie, terminologie, traduction*, *Lisbon 2009,* 325–340. Paris: Editions des Archives Contemporaines/ Agence universitaire de la francophonie.

Jansen, Silke. 2005. *Sprachliches Lehngut* im world wide web. *Neologismen in der französischen und spanischen Internetterminologie*. (Tübinger Beiträge zur Linguistik 484.) Tübingen. Gunter Narr Verlag.

Kageura, Kyo. 1997. A preliminary investigation of the nature of frequency distribution of constituent elements of terms in terminology. *Terminology* 4(2). 199–223.

Kageura, Kyo. 2002. *The dynamics of terminology*. *A descriptive theory of term formation and terminological growth*. Amsterdam/Philadelphia Benjamin.

Kocourek, Rostislav. [1982] 1991. *La langue française de la technique et de la science. Vers une linguistique de la langue savante*. Wiesbaden. Otto Brandstetter Verlag.

Laurén, Christer, Johan Myking, Heribert Picht and Sigurdur Jonsson. 2009. *Insikter om insikt: Nordiska teser om fackkommunikation*. Oslo: Novus Forlag.

Lemaire, Nathalie and P. Muraille. 2012. Sigles et acronymes graphiques en langue de spécialité: typologie, variabilité, enjeux. *Neologica* 6. 161–175.

Liebert, Wolf-Andreas. 2002. Bildfelder in synchronischer Perspektive. In Alan Cruse et al. (eds.), *Lexikologie/Lexicology*, 771–783. (Handbücher zur Sprach- und Kommunikationswissenschaft 21.1). Berlin: Mouton de Gruyter.

L'Homme, Marie-Claude. 2004. *La terminologie : principes et méthodes*. Les Presses universitaire de Montréal.

Laurén, Christer, Johan Mycking, Heribert Picht with Sigurdur Jonsson. 2008. *Insikter om insikt* : *Nordiska teser om fackkommunikation*. Oslo: Novus Forlag.

Lurquin, Georges. 1998. *Dictionnaire Elsevier des constituants grecs et latins, affixes grecs et latins, mots et racines utilisés en allemand, anglais, espagnol, français, italien et néerlandais*. Amsterdam: Elsevier.

Møller, Bernt. 1998. À la recherche d'une terminochronie. *Meta* 43. 426–438.
Nakagawa, Hiroshi and Tatsunori Mori. 2003. Automatic term recognition based on statistics of compound nouns and their components. *Terminology* 9(2). 201–219.
Ormrod, Janet. 2001. Constructions discursives de noms composés dans des textes scientifiques anglais. In David Banks (ed.), *Le groupe nominal dans le texte spécialisé*, 9–23. Paris: L'Harmattan.
Ormrod, Janet. 2004. Creation and subsequent usage of terms for discourse purposes in the scientific research article. *Actes de GLAT-Barcelona 2004*. 51–60. Universitat Politecnica de Catalunya, Barcelone.
Oster, Ulrike. 2006. Classifying domain-specific intraterm relations: A schema-based approach. *Terminology* 12(1). 1–17.
Pecman, Mojca. 2014. Variation as a cognitive device. How scientists construct knowledge as a rhetorical device through term formation. *Terminology* 20(1). 1–25.
Picone, Michael. 1996. *Anglicisms, neologisms and dynamic French*. (Lingvisticae investigationes supplementa 18). Amsterdam/Phildelphia: John Benjamins.
Portelance, Christine. 1987. Fertilisation terminologique ou insemination terminogénique artificielle. *Meta* 32(2). 356–360.
Portelance, Christine. 1998. Figement lexical et flexibilité paradigmatique des vocabulaires spécialisés. Salah Mejri et al. (eds.), *Le figement lexical*, 259–270. Tunis: Ceres.
Quirk, Randolph, Sidney Greenbaum, Geoffrey Leech and Jan Svartvik. 1985. *A Comprehensive Grammar of the English Language*. London and New York: Longman.
Raad, B. L. 1989. Modern Trends in Scientific Terminology: Morphology and Metaphor. *American Speech* 64(2). 128–136.
Renner, Vincent, François Maniez and Pierre J. L. Arnaud. 2012. *Cross-disciplinary perspectives on lexical blending*. Berlin/New York: De Gruyter Mouton.
Richardt, Susanne. 2005. Metaphor in Language for Special Purposes. *The Function of Conceptual Metaphor in Written Expert Language and Expert-lay Communication in the Domains of Economics, Medicine and Computing*. Bern: Peter Lang.
Rondeau, Guy. [1981]1984. *Introduction à la terminologie*. Chicoutimi: Gaëtan Morin éditeur.
Sablayrolles, Jean-François. 2000. *La néologie en français contemporain*: *Examen du concept et analyse de productions néologiques récentes*, Paris: Champion.
Sager, Juan Carlos. 1989. Term Formation. *Lebende Sprachen* 34. 159–61.
Sager, Juan Carlos. 1997. Term formation. In Sue Ellen Wright and Gerhard Budin (eds.), *Handbook of Terminology Management*, vol 1, 25–41. Philadelphia: John Benjamins.
Sager, Juan Carlos. 1990. *A Practical Course in Terminology Processing*. Amsterdam/Philadelphia: John Benjamins.
Sager, Juan Carlos and Kyo Kageura. 1994/1995. Concept classes and Conceptual Structures: Their Role and Necessity in Terminology. *ALFA (Actes de langue française et de linguistique)* 7. 191–216.
Schmitt, Christian. 1999. Die Rolle von Fachsprachen im Kontakt vom Einzelsprachen II: Englisch-Französisch im 20. Jahrhundert. In Lothar Hoffmann, Hartwig Kalverkämper and Herbert Ernst Wiegand (eds.), *Fachsprachen/Languages for Special Purposes,* Volumes 14.1, 771– 784. Berlin: Walter de Gruyter.
Schmitz, Klaus-Dirk. 2004. Terminologiearbeit, Terminolgieverwaltung und Terminographie. In Karlfried Knapp et al (eds.), *Angewandte Linguistik; ein Lehrbuch,* 435–456. Tübingen/Basel: A Francke Verlag.
Silva, Raquel. 2006. Morphologie de spécialité : regard(s) sur le(s) contexte(s). In D. Blampain, Ph. Thoiron and M. Van Campenhoudt (eds.), *Mots, termes et contextes*, *Actes des septièmes Journées scientifiques du réseau de chercheurs Lexicologie Terminologie Traduction,* 421–427. AUPELF UREF.

Sommant, Micheline. 1996. Les termes de langue anglaise et l'usage des formes contractées (sigles et mots-valises) dans le langage des multimédias (informatique, audiovisuel et télécommunications). In José Manuel Abreu (ed.), *Multimédia et multilinguisme. Actes des 6e journées ERLA-GLAT*, 179–190. Brest: ERLA-GLAT.

Surridge, Marie. 1997. Encore des préfixés curieux: les création parasynthétiques traditionnelles et innovatrices en français contemporain. In Lise Lapierre, Irène Oore and Hans R. Runte (eds.), *Mélanges de linguistique offerts à Rostislav Kocourek*, 343–350. Halifax: Les Presses de l'Alpha.

Temmermann, Rita. 2000. *Towards New Ways of Terminology Description. The sociocognitive approach*. Amsterdam/Philadelphia: John Benjamins.

Toft, Birthe. 2007. Concept formation and indeterminacy in the LSP of Economics. In Bassey Edem Antia (ed.), *Indeterminacy in Terminology and LSP*: *Studies in Honour of Heribert Picht*, 107–117. Amsterdam, Philadelphia: John Benjamins.

Tournier, Jean. 1985. *Lexicogénétique de l'anglais*. Paris: Champion.

Trier, Jost. 1931. *Der deutsche Wortschatz im Sinnbezirk des Verstandes. Die Gesichte eines sprachlichen Feldes*, Heidelberg: C. Winter.

Vandaele, Sylvie. 2002. Métaphores conceptuelles en traduction biomédicale et cohérence. *TTR* 15(1). 223–239. Also available at www.erudit.org/revue/ttr/2002/v15/n1/006807ar.html (last accessed 15 April 2018).

Vecchi, Dardo de. 2007. La nomination et son suivi: entreprises et pragmaterminologie. *Neologica* 1. 49–63.

Viereck, Wolfgang. 1999. Die Rolle von Fachsprachen im Kontakt vom Einzelsprachen II: Englisch-Deutsch im 20. Jahrhundert. In Lothar Hoffmann, Hartwig Kalverkämper and Herbert Ernst Wiegand (eds.), *Fachsprachen/Languages for Special Purposes,* Volumes 14.1, 764– 771. Berlin/New York: Walter De Gruyter.

Weissenhofer, Peter. 1995. *Conceptology in terminology theory, semantics and word-formation*. (IITF Series 6). Vienna: TermNet.

Wendt, Susanne. 1999. Die Fachsprache im Bereich der Wärmetechnik/Feuerungstechnik. In Lothar Hoffmann, Hartwig Kalverkämper and Herbert Ernst Wiegand (eds.), *Fachsprachen/Languages for Special Purposes,* Volumes 14.1, 1188–1192. Berlin/New York: Walter De Gruyter.

Winter, Esme. 2005. Zum Verhältnis sprachkontaktinduzierter Innovationen, lexikalischer Entlehnungen und fremder Wörter – zugleich ein Beitrag zu 'Lehnschöpfung' und 'Scheinentlehnung'". *Romanistisches Jahrbuch* 56. 31–61.

Wright, Sue Ellen. 1991. Lexicography Versus Terminology. *ASTM Standardization News*. 40–45.

Wüster, Eugen. [2001]1959/60. Das Worten der Welt, schaubildlich und terminologisch dargestellt. Leo Weisgerber zum 60. Geburtstag. Sprachforum ¾. In: Heribert Picht, Schmitz (eds.), *Terminologie und Wissensordnung – Ausgewählte Schriften aus dem Gesamtwerk von Eugen Wüster*, 21–51. Wien: TermNet.

Wüster, Eugen. [1979]1985. *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie*. Vienna/Copenhagen: Infoterm/Handelshojskolen i Kobenhavn.

Wüster, Eugen. 1981. L'étude scientifique générale de la terminologie, zone frontalière entre la linguistique, la logique, l'ontologie, l'informatique et les sciences des choses. In Guy Rondeau and Helmut Felber (eds.), *Textes choisis en terminologie. 1 Fondements théoriques de la terminologie*, 55–114. Sous la direction de V.I. Siforov, Québec: Girsterm.

Zerm, Gudrun. 1999. Die englische Fachsprache der Metallurgie unter besonderer Berücksichtigung des Teilgebietes Schwarzmetallurgie. In Lothar Hoffmann, Hartwig Kalverkämper and Herbert Ernst Wiegand (eds.), *Fachsprachen/Languages for Special Purposes,* Volumes 14.1, 1414–1419. Berlin/New York: Walter De Gruyter.

Anita Nuopponen

23 Terminological concept systems

Abstract: Concept systems are a central element in terminology work and terminological research since concepts are not independent, discrete elements but belong to networks of other concepts, which are related to them in different ways. In order to understand even a single concept one has to acquire knowledge about various other concepts in the same concept system before being able to define the concept reliably. Terminology work normally restricts itself to concept systems that structure the knowledge that specialists of a field share. Finding out and structuring these concept systems are seen as a prerequisite for achieving clarity in concepts and terms of special fields. In the following, concept systems are discussed from the point of view of terminology work and terminological concept analysis.

1 Introduction

Concept systems are in the core of terminology work and terminological concept analysis. They were introduced as a part of terminology work from the beginning. When formulating the principles of the General Theory of Terminology Eugen Wüster stressed the importance of concept orientation as well as the role of concept systems, and recommended that concepts should be investigated as a part of the concept system of the special field they belong to (e.g. Wüster [1979] 1985: 5). Since then international and national standards, handbooks, and textbooks have emphasized the role of concept systems in terminology work. Furthermore, the ideas and principles have found new areas of application e.g. in building ontologies and other knowledge organizing systems. This article deals mainly with concept systems as objects and tools of terminology work, i.e. when analyzing and representing special field knowledge shared by specialists of a special field. This is a slightly more restricted and practice-oriented approach than when systems of concepts are seen e.g. from philosophical or psychological point of view. Thus the term *terminological concept system* in the title.

2 Defining (terminological) concept systems

Concept system is defined as a "set of concepts structured according to the relations among them" by ISO 1087–1 (2000). Concepts can be regarded as units constituting the basis of knowledge, while concept systems organize this knowledge. There are

Anita Nuopponen, Vaasa (Finland)

https://doi.org/10.1515/9783110228014-023

differences between concept systems of individuals and groups of people, but a common ground for understanding can be – and in many cases has to be – formed in a way or another. Specialists of a field have more detailed and further developed concept systems than what nonprofessionals have because of their more field-specific knowledge. Concept systems are not static cognitive structures, but change just like the world and the knowledge change. Furthermore, every area of knowledge sees the world from its own perspective and structures it with concepts and concept systems of its own.

Terminological literature and terminology work are generally interested in certain aspects of concept systems and restrict their object accordingly, why it is motivated to narrow down to the concept of *terminological concept system* in this context. Firstly, practical terminology work is interested in those concept systems that structure special field knowledge, why concept systems behind general language are not normally in the scope of terminology work. For a researcher, however, it would be interesting to compare them with those of specialists' concept systems. Secondly, the focus is often on concept systems shared by specialists of a special field. Terminological methods – including principles for terminological concept systems – were developed in the first place for normative terminology work and standardization. The purpose of these activities is to negotiate unified or harmonized concept systems, definitions, and term usage, and to record and disseminate these in order to promote mutual understanding in the special field. For other purposes (e.g. research, education, and product information), it is relevant to focus also on concept systems introduced by an individual or a company; e.g. Figures 2 and 3 show analyses of how different authors organize concepts in their writings.

Thirdly, instead of covering changes in concepts and concept systems during a longer period, practical terminology work defines and describes concepts and concept systems at a certain time and focuses on present or near future usage. In some fields and for some purposes it is relevant also to cover historical changes in concept systems, e.g. in history of science. Freezing a concept system in a specific time is a solution for communication and other practical purposes, and therefore e.g. terminological standards or other terminological products should be and are revised from time to time in order to correspond the prevailing usage. Sometimes it may be relevant to give also historical information on concept systems in terminological products explaining the development of concepts and concept systems caused by e.g. changes in laws, practices and technological progress.

Fourthly, from the point of view of a terminology project, concept systems are treated as something that are to be structured or constructed for a specific purpose, from a certain point of view, and with a specific target group in mind (see Picht and Draskau 1985: 62–65). This implies that the concept systems are not always clear and ready but terminologists have to reconstruct them, make them visible with the help of authentic material and specialists of the field. The system(s) of the field may be undeveloped or fuzzy. Concept systems corresponding the same part of reality may also look different depending on the point of view. Different special fields, culture spheres, countries, organizations, etc. have formed more or less differing concept

systems when dividing the same part of reality. Even inside the same special field, there are alternative approaches to the field on the bases of different goals and needs etc. In a terminology project, it is purposeful to analyze alternative concept systems separately in order to avoid mixing up them. This is a necessary step not only in a descriptive terminological analysis but also in any normative effort before agreeing on concept systems and definitions to be recommended.

3 Functions of concept systems in terminology work

Concept systems can be seen as important tools for terminological concept analysis and terminology work for many reasons. The main reason is that concepts are not independent, discrete elements but belong to networks of other concepts, which are related to them in different ways. Wüster (1956: 416) stated that each concept can be determined only by demarcating it from neighboring concepts, i.e. by defining its position within a concept system. Concept systems form thus the context for single concepts. Therefore, in order to understand even a single concept one has to acquire knowledge about a larger field of knowledge and clarify other concepts before being able to define one single concept reliably.

Concept system oriented approach presented a breakthrough for specialized or LSP lexicography and marked the beginning of Terminology Science. Instead of alphabetically organized massive dictionaries, it was possible to cover smaller and more homogenous areas one at time (Felber 1984: 28). The focus on central concepts and concept systems of the field made it possible to delimit the scope of glossaries and concentrate in a certain field and to their most central terminology at a time. Opposed to the semasiological approach, which takes linguistic expressions as the point of departure and clarifies their various meanings, concept system approach takes a set of central concepts of the field in focus and clarifies the relations between them and detects the concept system(s) they form. Concepts are defined in relation to each other. In this process terms designating the concepts play an important role when extracting field specific concepts. In addition to cases of synonymy and polysemy, elaboration of concept systems also may reveal concepts that do not have a designation (in the language in question), but may need to be distinguished from related concepts with a designation of their own.

Concept systems are seen as tools for guaranteeing the quality of terminology work, and "not a goal in itself, or an intellectual pastime" as Picht and Draskau (1985) express it. Analysis of concept relations, structuring concept systems and systematic elaboration of the material are seen as prerequisites "for the successful drafting of definitions" (Suonuuti 1997: 11) since they prevent such inconsistencies in definitions that are found in alphabetically compiled dictionaries (Wüster 1974a: 73). They create internal coherence of a vocabulary and prevent contradictory relationships between

the concepts, definitions and terms. Clear concept systems also help the end user to better understand the concepts and their definitions even though the entries would have been eventually organized alphabetically or separated otherwise from each other in a terminological product.

In printed terminological vocabularies, concept systems and relations can be expressed with systematical or thematic arrangement of the entries, numbering, diagrams of concept systems, definitions, explanations, references between entries, systematic lists in indexes, tables, etc. In digital products, hyperlinks and other means serve additionally this purpose. Systematic or thematic ordering makes a terminological vocabulary a versatile source of knowledge and even an educational tool. It is not necessary to know the term or the right orthographic form of the term in order to find the concept. However, it is understood that an alphabetical access to the entries is additionally needed. In vast terminological (translation oriented) databases, the results of a single project with a clearly defined scope are usually merged with other terminological data records. It is a challenge to preserve the valuable information on concept systems acquired during the elaboration process, and to make it accessible for the user. Already early on, systematic ordering was also seen as a solution for any "serious multilingual specialized vocabulary", because it makes the vocabulary independent from a selection of a primary language (Wüster 1979: 5). A common framework has to be elaborated for the concept systems of all the languages included in the vocabulary. This kind of work is possible for instance in international terminology standardization or other types of terminological projects where domain specialists come together to agree on common framework or a shared concept system. (See e.g. ISO 704-2009) However, depending on the field, purpose, context, task, etc., the separate concept systems often live side by side with the shared one (e.g. concept systems of international vs. national practices).

Terms as linguistic designations of concepts form *term systems* that represent concept systems in communication (see e.g. Picht and Draskau 1985: 97). In terminology work a recommendation is that the elements of new or preferred terms should express something on the systematic characteristics of the respective concepts and thus something about the relationship between concepts, e.g. *simultaneous interpreting – consecutive interpreting*. In computer-aided corpus terminology, this is one of the means to extract relations between concepts in order to elaborate concept systems automatically. However, terms are sometimes coined without taking into consideration the concept systems the concepts belong to (e.g. *mouse* referring to a pointing device for computers).

4 Types of concept systems and concept relations

There are various classifications of concept systems. The relation type(s) that forms the system determines the type of a system; for instance, Wüster (1975) distinguished

between two main types of concept relations: logical and ontological concept relations and accordingly *logical* and *ontological concept systems*. Wüster motivates the choice of terms *logical* and *ontological* with the fact that logical concept relations originate in logic and logical reasoning in the same way as ontological concept relations have been borrowed from ontology (Wüster 1974a: 92).

> W 639 Wü/Re 1975-02-19, 19h, 2
>
> 3 Logische und ontologische Begriffssysteme
>
> Begriffssysteme, die durch logische Beziehungen zwischen den Gliedern des Begriffssystems bestimmt sind, sind „logische Begriffssysteme"; auch genannt „Abstraktionssysteme", „Ähnlichkeitssysteme", „generische Begriffssysteme".
>
> Begriffssysteme, die durch ontologische Beziehungen zwischen den Gliedern des Begriffssystems bestimmt sind, sind „ontologische Begriffssysteme".
>
> (Wüster (1975) on logical and ontological concept systems)

In this article, the term usage of Wüster is followed as to the main division of concept relations and concept systems. In addition to Wüster's dichotomy, it is also usual to distinguish between three main types of concept relationships in terminological literature. For instance, ISO 1087-1 (2000) defines *generic*, *partitive* and *associative* relations. *Generic relations* correspondent Wüster's logical concept relations referring to relations in abstraction hierarchies, typologies and taxonomies, while *partitive relations* are based on the relationships between wholes and parts. All the other relations are often treated as *associative relations* (e.g. temporal and causal relations). In Wüster's classification partitive and associative relations belong to ontological concept relations (e.g. Wüster 1974a, 1975). The following presentation of various types of concept systems and relations is based on Nuopponen 1994, where Wüster's classifications were taken as a point of departure, modified and extended. Influences were taken among others from the writings of Ingetraut Dahlberg and Heribert Picht.

4.1 Logical concept systems

Logical relations are also known as *generic relations*, *abstraction relations*, *categorial relations*, and *genus-species relations*. The term *generic relation* has been recommended by ISO 1087-1 (2000) and utilized widely today. Sometimes they are also called *type relations* or *is-a relations* especially when terminologists are involved in ontology work or conceptual modeling (see e.g. Madsen and Thomsen 2009). Here the term *logical (concept) relation* is preferred. These relations form levels of abstraction or generalization, i.e. a logical concept system (syn. *generic concept system*, *abstraction system*). In them, concepts are organized hierarchically from the most abstract on the top, e.g. *mammal*, down to the most concrete ones on the bottom, e.g. *Siamese cat*. Concepts referring to almost any type of entity (e.g. objects,

methods, types, procedures, properties, actions) in any field of specialty may form logical concept systems. Important elements in them are division criteria i.e. types of ordering or distinguishing characteristics (e.g. *origin, function, size, purpose*). When concepts are compared as to their abstraction level, three types of logical (generic) relations can be distinguished: (1) *logical/generic superordination* and (2) *subordination* depending on if the relation is seen from the superordinate or from the subordinate concept, and (3) *logical/generic coordination* which is the relation between concepts on the same level of abstraction and thus *subordinate concepts* to the same superordinate concept.

In a logical concept system, a superordinate concept covers more objects in its *extension* than its subordinate concepts (e.g. *air mass – tropical air mass* etc.). The *intensions* of the subordinate concepts (*tropical air mass – polar air mass*) are larger, i.e. they contain all the characteristics of their superordinate concept and some extra characteristics that distinguish them from each other (e.g. origin, humidity, temperature, etc.). Logical concept systems have a central role when writing definitions, since the key questions in most cases are "What kind of entity we are dealing with?" which leads to the question "What is the *superordinate concept* of this concept?". Furthermore, we need to find out the *co-ordinate concepts* in order to delimit their contents and find the distinguishing characteristics.

A logical concept system is *polydimensional* in the case where the objects of reference can be divided into classes according to two or more different criteria, e.g. *air masses* can be divided in addition to *source region* also according to *type of surface* where they develop (*continental, maritime*). If both criteria are applied at once we get a further level of classification (e.g. *continental polar air mass*). This type of presentation is called *combinatory*. There are often some restrictions on the object level and not all the concept combinations can be made (Nuopponen 1994; Picht and Draskau 1985: 68).

Sometimes logical relations are also called *relations of similarity* since they can be detected by comparison of the similarity between intensions and extensions of concepts. This refers to an alternative classification of logical concept relations (see Figure 1). Following four types of logical relations can be distinguished (see: Nuopponen 1994; Dahlberg 1987; cf. Picht and Draskau 1985: 66–67). (1) *Inclusion*: one of the compared concepts includes all the characteristics of the other, and has some additional characteristics (e.g. the concept *Siamese cat* includes the concept *cat*). This relation is found between a superordinate concept and its subordinate concepts in a logical concept system. (2) *Disjunction*: the concepts are on the same level of abstraction and exclude each other. They may have common characteristics but they cannot have common objects of reference, e.g. *tropical air mass – polar air mass*. This relation is found between coordinate concepts in a logical concept system. A form of disjunction is (3) *negation*, where one concept has a characteristic that is an opposite of a characteristic in other concept's intension, e.g. *online browsing – offline browsing*. (4) *Overlapping*: concepts have common characteristics but both have also a varying

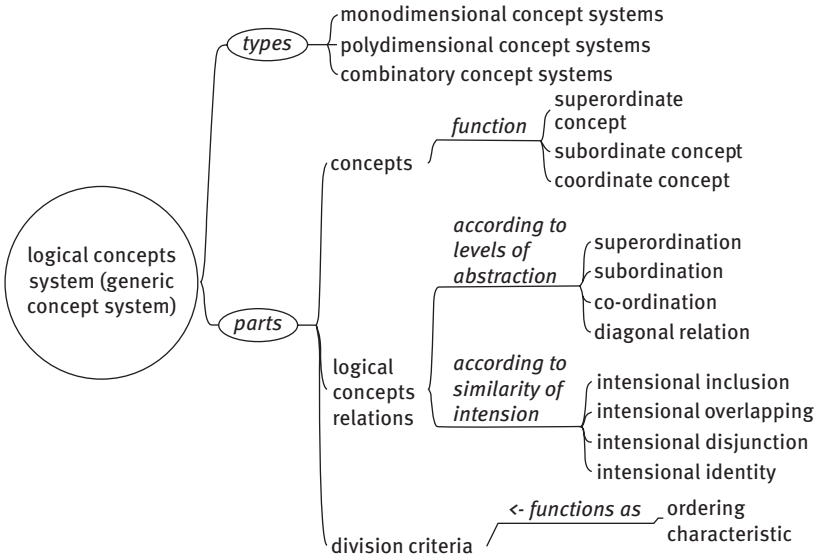


Figure 1: Types of logical concept systems and their parts.

amount of specific characteristics. In addition, the concepts can have overlapping objects of reference, e.g. *continental air mass – polar air mass* (i.e. an air mass could be both continental and polar). Overlapping concepts can also be on different levels of abstraction (e.g. *bus – freight train*) but not directly super- or subordinated to each other.

(5) *Identity*: the compared concepts have the same characteristics and thus identical intension, i.e. there is only one concept. Testing the degree of identity of two or more concepts is what is needed to detect synonymy when comparing various sources in one language (e.g. *freight train, goods train*) or equivalence in different languages or language varieties (enUK *driver* vs. enUS *engineer,* "operator of a railway/railroad locomotive").

4.2 Ontological concept systems

> 2.2 Ontologische Beziehungen. – Ontologische Begriffsbeziehungen sind alle, die nicht logisch sind. Die ontologischen Beziehungen sind aus ontischen Beziehungen, d. h. aus Beziehungen zwischen Individuen, abstrahiert.
>
> (Wüster (1975) on ontological concept relations)

When analyzing concepts of a field, it is impossible to order the entirety of the concepts in a single hierarchy formed solely on the basis of logical (generic) relations (Picht and Draskau 1985: 78), since it would exclude various core concepts that refer to e.g. parts, properties, (development) phases, origin, and material of the concerned entity. Many

central concepts remain outside logical concept systems. Furthermore, different logical concept systems are isolated from each other unless other types of concept relations are used to tie them together (e.g. types of cars, types of car parts). It is sometimes said that only the logical concept systems are concept systems while e.g. partitive systems are systems of objects. However, it is concepts that are to be analyzed, organized and defined. Therefore Wüster (e.g. 1974a: 95) made a distinction between ontological (concept) relations/systems and ontic relations/systems. The former arising "from the fact that relationships that exist between individuals in the real world ('ontic relations') are abstracted from the individual relationships (sort of relationship individuals) [...] to concept relations" [transl. AN]. The ontic relations give rise to ontological concept relations that are relations between concepts. They are thus based on different types of criteria than logical concept relations. In his published and unpublished writings, Wüster presents varying classifications of ontological concept relations. A summary of three of them is in Figure 2. The main division in his writings is between contiguity relations (contact in space and time) and effect relations (*Wirkbeziehung*; causality, instrument use and descent: genealogic, phylogenetic, ontogenetic, descent between stages of material). These categories appear also as parts of the classifications in Nuopponen 1994, 2005 and 2011 (a simplified version of the classifications in Figure 3).

Most of the ontological concept relations in Figure 3 are productive in establishing (micro) concept systems of their own or they can be combined in a (macro) concept system of the field. Partitive concept relations may be partitive superordination (e.g. *car – steering system*), subordination (e.g. *steering wheel – steering system*), or coordination (e.g. *steering wheel – steering column*). *Enhancement* relations (e.g. *car – car navigation system; car – trailer*) and *locative* concept relations (e.g. *car – passenger; tea – teapot*) may be attached to partitive concept systems, but could in some cases form micro systems of their own, too. Material component relation (e.g. *olive – oil; coffee – caffeine*) is based on an entity and a material that forms a "part" of it. When analysing concepts that refer to abstract phenomena, no difference between partitive and material component relations cannot necessarily be made (e.g. *friendship – trust*).

Property relation is based on an entity and its properties (e.g. *silicone – heat-resistant*) while *rank* relation on evaluation and ordering objects according to a certain type of property (e.g. *business class – tourist class*). *Ownership* relation is sometimes impossible to distinguish from partitive relation (e.g. *university – university library*), but e.g. the relation between the concepts *car owner – car* could be described as such. *Temporal* concept systems contain simultaneous and consequent relations based on division of a process, an event, or an action in its phases/stages; or they can be based on succession of persons or things.

Causal concept systems may contain concepts that refer to producing cause, explanatory cause, causal agent; resulting event, resulting state, resulting product; complications, counteracting forces etc. and relations between these concepts. *Developmental* relations are based on stages of a development process of a *species* (e.g. *analogical computer – digital computer*), an individual (e.g. *child – adult*), a family (e.g.

Figure 2: A combination of Wüster's classifications of concept systems and relations.

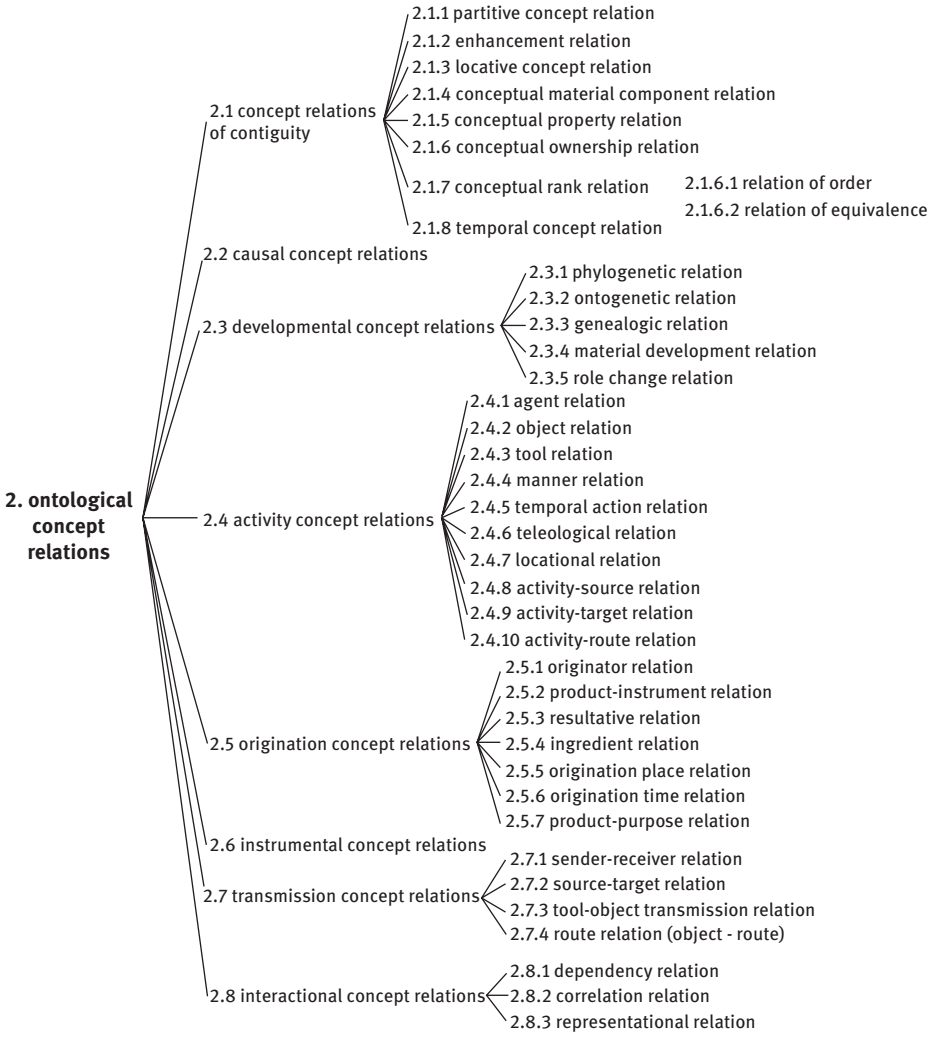


Figure 3: Classification of ontological concept relations (based on Nuopponen 1994, 2006 and 2011).

father – son), or *material* (e.g. *water – ice*). *Role change* relation is based on changing or developing roles of the same individual (e.g. in a discussion: *speaker – listener*). An *activity* concept system is made of relations that are based on a connection between an activity concept and different phenomena involved in the activity (*activity – agent, object/patient, tool, time of action, reason, location, source, target and route*); see more in Nuopponen 2006; see also Madsen et al. 2001.

Origination relations exist between a concept that refers to a concrete or an abstract entity and concepts that refer to the origin of the object (e.g. *producer, instrument or method, result, original material, place of origin, time of origin, purpose,* etc.). Together

they make an *origination* concept system. *Instrumental* relations (*instrument – activity, object, result, user, location, purpose, way of using* etc.) form also a group of relations that could be part of various types of concept systems.

Transmission relation is based primarily on the relationship between agents in a process of transmission where someone or something gives, sends or transmits something to someone or something (e.g. *speaker – audience, interpreter – audience*). In addition, e.g. *source* (*sender/place – entity*) and *target* (*entity – receiver/ place*) relations can be found in concept systems of transmission. *Dependency* relations are based on various types of economic, legal and other similar relationships which may exist between different parties (e.g. *employer – employee*). *Correlation* relation is based on a reciprocal relationship between entities (variables) that change or move together. *Representational* relations are abstractions of relationships between entities and their representatives (e.g. *concept – term*, *people – parliament*).

5 Graphical presentation of concept systems

At different phases of terminology work from the planning phase to presenting the results in the end product, concept system representations are needed. Already during the material compilation phase, various types of graphical and other presentations found in the documentation give information on relationships between concepts. Visual presentations – typically concept system diagrams – function as communication tools between a terminologist and the specialists of the field and make concept systems visible to the project members so that these can discuss them more easily. A concept system diagram illustrates more clearly than any lengthy texts or any written definitions what the project group is talking about (Nykänen 1999: 16).

Various types of graphical concept system representations have been listed and exemplified in the literature (e.g. Felber 1984; Picht and Draskau 1985; Wright 1997). Dedicated concept system diagrams that have been suggested include tree diagrams with diagonal lines between nodes for logical concept systems (see Figure 3) and bracket diagrams with vertical and horizontal lines between the nodes for partitive concept systems (see Figure 4) (see e.g. ISO 1087-1 (2000): 16–27). Both of these diagram types could be presented either with subordinate concepts arranged horizontally (Figure 4) or vertically (Figure 3). Since it is customary to write terms in singular in terminology work, ISO 1087 recommends using double lines to symbolize several similar parts conceptualized with the same concept. E.g., the example in Figure 4 can be interpreted so that the corresponding whole, which here is a logical concept system, consists of this type of elements: several concepts, several logical concept relations as well as several ordering criteria (cf. a human has two legs, two hands etc.). Concepts have also several characteristics as their elements. Sometimes the terms are written in plural instead (see e.g. Wright 1997) which refer more clearly to the ontic system behind the partitive concept system.

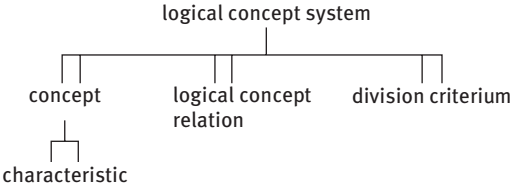


Figure 4: A fragment of a partitive concept system.

ISO 1087-1 (2000) uses arrow lines to mark other types of relations (associative relations) and dashed lines those concept relations that are not explicitly shown in definitions. Time-related concept systems (e.g. temporal, developmental and causal) could be visualized with flowcharts (see Wright 1997). In addition, various types of field diagrams, charts, (thesaurus-style) lists and tables have been listed as possibilities.

Since there have not been any established ways for visualizing various types of ontological concept relations and systems, Nuopponen 1994 (see also e.g. 1997; 2011; 2016; Nuopponen and Pilke 2010) introduced a multipurpose visual presentation form called *satellite model*. It is a mind map-like graphical presentation, which can be utilized to represent either one type of concept system or to combine several or all types of concept relations and systems in a single representation (see e.g. Figure 5). In satellite model approach, one concept is taken in focus at time as the core concept (e.g. *terminological concept system* in Figure 5). It may be a concept on a higher abstraction level or a concept that otherwise is central to the field in question and is able to link together the selected concepts and concept systems. The main satellites represent the main elements of the reference object in question. Each of the main satellite nodes may get its own satellite nodes around it. They can even serve as core concepts in their own satellite models when more thorough analyses are needed. Satellite model solves the need to establish and to learn a dedicated representation form for each type of concept relation and concept system (Nuopponen 1997).

In order to make the presentation illustrative and clear, (auxiliary) nodes between the concepts proper should contain information on the relationships, e.g. meta-concepts: *parts*, *types*, *functions*, *instruments*, or alternatively more precise expressions for the concept relations: *generic relation, partitive relation, or temporal relation*. These auxiliary nodes can be left out, when the type of the relation is either obvious or difficult to define – depending on the stage of the analysis. In order to facilitate system oriented concept analysis, and offer alternative starting points for a satellite model presentation, Nuopponen (2011) has grouped the relations in Figure 3 as *concept relation models* (typologies, structure, origination, activity, development, causation, transmission etc.). The models can be used as a core system in an extensive satellite model when elaborating concept systems of the field depending on the point of view taken (Nuopponen 2011). The representation can be expanded, modified and specified during the analysis process. When carefully crafted, a satellite model presentation complies with the principles that Picht and

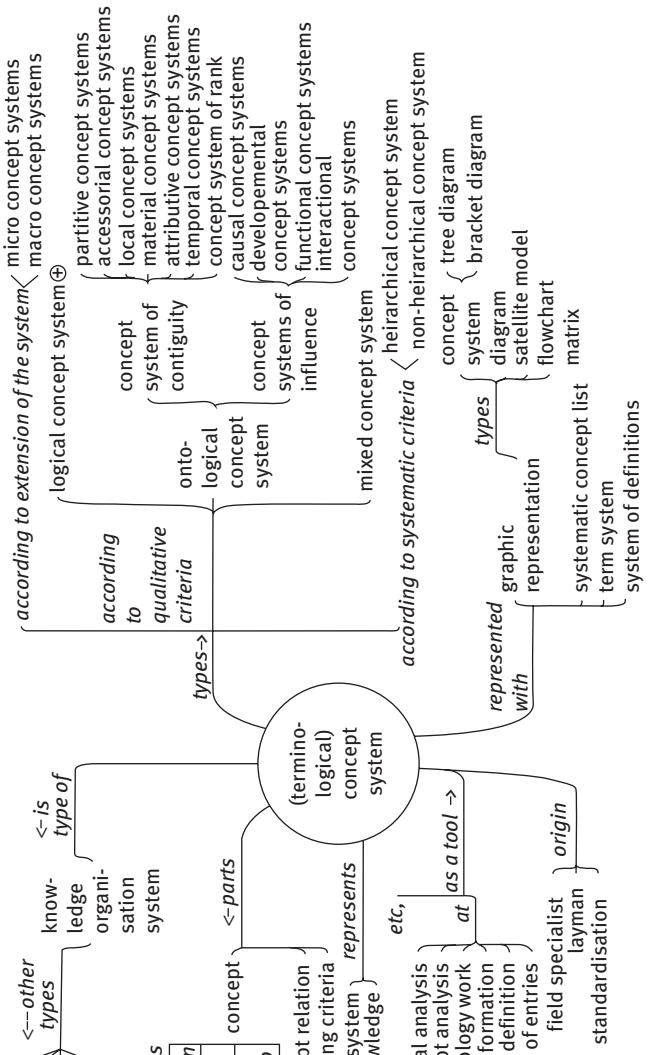


Figure 5: A satellite model of terminological concept systems.

Draskau (1985: 64) list for the form of concept systems: (1) *clarity* (a quicker or more thorough idea of a special subject field – even for a non-expert); (2) *intelligibility* (user-friendly presentations avoiding excessive complexity by limiting number of concepts and relations); (3) *transparency* (clearly understandable relation types and the classifying criteria); and (4) *potential for amplification* (extendable without requiring overall revision). Satellite model is meant to be used at various phases of terminological analysis and it can handle even larger amounts of concepts as well as combine various types of concept relations or whole concept systems. The presentation can be done by hand or with any mind mapping software. (Nuopponen 2011; 2016)

6 Concluding remarks

Concept system thinking is an integrative part of terminology work and the theory of terminology. When reading terminological literature it is, however, important to keep in mind that handbooks and textbooks on terminological methods, standards (e.g. ISO 704, ISO 1087-1), and especially the early writings are targeted to field specialists and terminologists participating in normative terminology work. In this context, the term *concept system* mostly refers to the *terminological concept systems* as specified above. Concept systems are often seen as something that is to be structured or constructed for a specific purpose, from a certain point of view, and with a specific target group in mind. An emphasis also lies on the instrumental value of concept systems and their representations. For terminology work – especially for normative purposes – it is often necessary to focus in concept systems that reflect the knowledge of the field at a certain time (synchronic analysis). These practices do not, however, exclude applying terminological methods and principles more flexibly, e.g. to describe changes in concept systems over time (diachronic analysis), or to describe and compare alternative concept systems (descriptive analysis). Descriptive analysis is also the first step of a project pursuing a unified conceptual basis for a domain, while in some other cases finding out and describing the various usages of terminology and concept systems is the goal itself.

In addition to various types of terminological practices and goals, the methods are applied also for many other purposes. Terminologists are more and more involved and needed in building various types of information and knowledge systems. As an example could be mentioned ontology work. Madsen and Thomsen (2009) even use the term *terminological ontology* as a synonym to *concept system* when discussing application of terminological methods in ontology work. Knowledge specialists of various fields are making efforts to organize special field knowledge, concepts and terminology in hierarchies, networks, ontologies, frames, scripts, semantic relations, semantic networks, semantic fields, taxonomies, library classifications, controlled

vocabularies, thesauri, and so on. These knowledge organization systems and terminological concept systems share many features, and they may benefit from each other in many ways.

References

Cabré, M. Teresa. 1999. *Terminology*. Amsterdam and Philadelphia: John Benjamins.

Dahlberg, Ingetraut. 1978. *Ontical Structures and Universal Classification*. Bangalore: Sarada Ranganathan Endowment for Library Science.

Felber, Helmut. 1984. *Terminology Manual*. Paris: Unesco, Infoterm.

ISO 1087-1. 2000. *Terminology work – Vocabulary – Part 1: Theory and application*. Geneva: International Organization for Standardization.

ISO 704. 2009. *Terminology work – Principles and methods*. Geneva: International Organization for Standardization.

Madsen, B. Nistrup, B. Sandford Pedersen and H. Erdman Thomsen. 2001. Defining semantic relations for OntoQuery. In A. Jensen and P. Skadhauge (eds.), *Proceedings of the First International OntoQuery Workshop, Ontology-based interpretation of NP's*. Kolding: Department of Business Communication and Information Science, University of Southern Denmark.

Madsen, Bodil Nistrup and Hanne Erdmann Thomsen. 2009. CAOS – A tool for the Construction of Terminological Ontologies. In K. Jokinen and E. Bick (eds.), *17th Nordic Conference of Computational Linguistics NODALIDA 2009*, 279–282. http://dspace.utlib.ee/dspace/handle/10062/9807 (accessed 23 July 2017).

Nuopponen, Anita. 1994. *Begreppssystem för terminologisk analys* [Concept systems for terminological analysis]. Vaasa: University of Vaasa, Acta Wasaensia.

Nuopponen, Anita. 2005. Concept Relations v2. An update of a concept relation classification. In B. Nistrup Madsen and H. Erdman Thomsen (eds.), *Terminology and Content Development*, 127–138. Copenhagen: Association for Terminology and Knowledge Transfer.

Nuopponen, Anita. 2006. A model for structuring concept systems of activity. In Yuli Wang, Ye Wang and Ye Tian (eds.), *Terminology, Standardization and Technology Transfer,* 83–113. Beijing: Encyclopedia of China Publishing House.

Nuopponen, Anita. 2008. Causal concept systems. In B. Nistrup Madsen and H. Erdman Thomsen (eds.), *Managing ontologies and lexical resources. Proceedings of the 8th International Conference on Terminology and Knowledge Engineering, TKE 2008*, 17–28. Copenhagen Business School, Copenhagen.

Nuopponen, Anita. 2010. Methods of concept analysis – towards systematic concept analysis (part 2 of 3). *The LSP Journal – Language for special purposes, professional communication, knowledge management and cognition* 1(1). 5–14.

Nuopponen, Anita. 2011. Methods of concept analysis – tools for systematic concept analysis (part 3 of 3). *The LSP Journal – Language for special purposes, professional communication, knowledge management and cognition* 2(1). 4–15.

Nuopponen, Anita. 2016. Satellite System as a Visualization Tool for Concept Analysis. In *Term Bases and Linguistic Linked Open Data: Proceedings of the 12th International conference on Terminology and Knowledge Engineering*, 190–200. Copenhagen Business School.

Nuopponen, Anita and Nina Pilke. 2010. *Ordning och reda. Terminologilära i teori och praktik* [Order and Method. Terminology Science in Theory and Practice]. Stockholm: Norstedts.

Nykänen, Olli. 1999. Sanastoprojektin vaiheet [The phases of terminology projects]. In K. Kuhmonen (ed.), *Toimikunnista termitalkoisiin*, 62–71. Helsinki: Tekniikan Sanastokeskus.

Picht, Heribert and Jennifer Draskau. 1985. *Terminology: An Introduction*. Surrey: University of Surrey.

Suonuuti, Heidi. 1997. *Guide to Terminology*. Helsinki: Tekniikan Sanastokeskus.

Suonuuti, Heidi. 1999. Käsiteanalyysi työmenetelmänä. [Concept analysis as a working method]. In K. Kuhmonen (ed.), *Toimikunnista termitalkoisiin*, 29–42. Helsinki: Tekniikan Sanastokeskus.

Wright, Sue Ellen. 1997. Representation of Concept Systems. In Sue Ellen Wright and Gerhard Budin (Compiler), *Handbook of terminology management,* 89–97. Amsterdam and Philadelphia: John Benjamins.

Wüster, Eugen. 1956. Das Internationale Elektrotechnische Wörterbuch. Die Mitarbeit im deutschen Sprachgebiet. *ETZ-A*, Band 77, Heft 13 (1 July 1956). 415–418.

Wüster, Eugen. 1974a. Die allgemeine Terminologielehre – ein Grenzgebiet zwischen Sprachwissenschaft, Logik, Ontologie, Informatik und den Sachwissenschaften. *Linguistics* 199, January 1. 61–106.

Wüster, Eugen. 1974b. Die Umkehrung einer Begriffsbeziehung und ihre Kennzeichnung in Wörterbüchern. *Nachrichten für Dokumentation* 25(6). 256–263.

Wüster, Eugen. 1975. *Der Unterschied zwischen den logischen und den ontologischen (z. B. partitiven) Beziehungen*. Unpublished. W 639, Wü/Re 1975-02-19, Wüster-Bibliothek, Vienna.

Wüster, Eugen. [1979] 1985. *Einführung in die Allgemeine Terminologielehre und Terminologische Lexikographie.* 2nd edn. Copenhagen: Fachsprachliches Zentrum, Handelshochschule.

John Humbley

24 Socioterminology

Abstract: This chapter is a survey of work done in socioterminology since its inception in the 1980s. There is firstly a discussion on what socioterminology consists of and secondly an outline of its historical development, in particular in French-speaking countries. Thirdly, a section is devoted to presenting methods used and fourthly some examples are given of research projects undertaken in the field, in particular those challenging official terminology policy. In conclusion it would appear that socioterminology does not constitute a branch of terminology in its own right, but that it has been a useful excursion.

1 Introduction

The term *socioterminology* can be attributed to the Quebec linguist and lexicographer Jean-Claude Boulanger. He coined it in 1981 as *socioterminologie* in a review of a study by Jean-Claude Corbeil on language planning (Boulanger 1995: 197). Though the first projects highlighting the social dimension of terminology work were carried out in Quebec, the theoretical underpinning was largely left to French linguists, in particular Louis Guespin and François Gaudin and those working with them. It has since remained a French speciality, with major impact on terminology work in only a few countries. François Gaudin, the principal proponent of socioterminology (Gaudin 1993: 67), gives a useful history of early attestations of socioterminology in French sources.

2 Definitions

Several definitions of socioterminology have been put forward, the most official being that proposed by ISO, which link it to technolects, glossed as LSPs.

> **Socioterminology**: approach of terminology work based on the sociological, cultural and sociolinguistic characteristics of a linguistic community, aiming at the study and development of its technolects in accordance with those characteristics. ISO TR: 22134 (2007)

This definition implicitly places socioterminology within the sphere of language planning and standardization (both also defined in this standard). A more academic definition is provided by Barite's online dictionary [our own translation]

John Humbley, Paris (France)

https://doi.org/10.1515/9783110228014-024

> 1. Branch of terminology dealing with the analysis of terms (their appearance, formation, consolidation and interrelations) from a linguistic perspective in social interaction.
>
> 2. Very practical discipline in terminology work which is founded on the analysis of the social and linguistic conditions of the circulation of terms (Barite 2000)

As time goes on, the definition of socioterminology becomes so broad as to include any form of terminology work including a social dimension, thereby at least partially fulfilling Guespin's prediction (Guespin 1993: introduction to Gaudin 1993) that socioterminology **is** terminology. Myking (2001b: 60) points out that certain features of Wüster's approach, in particular taking into account the "norm as it is" (*Ist-Norm*), could be qualified as sociolinguistic.

For the purposes of this chapter those who claim to be socioterminologists are included as are those works corresponding to the criteria listed below.

3 Historical development

Socioterminology as it is known today came into being largely through interaction between Quebec and French terminologists. Many of the themes broached in the formative years would be taken up in other French-speaking countries, Belgium and Africa in particular, and in rather different forms elsewhere in the world, especially in Scandinavia. For the sake of clarity, the initial developments of socioterminology will be described country by country.

3.1 Quebec

It was not by chance that the practice of socioterminology originated in Quebec, and it could be claimed that it was here that it was effectively and extensively practiced for the first time. Boulanger (1995) indeed remarks that the methods of what was to become socioterminology were used implicitly in language planning actions and evaluations in Quebec from the 1970s on, even though they were not termed "socioterminological" at the time. As was usual in these stages of language planning in Quebec, action preceded theoretical considerations. As Myking (2000, 2001a, 2001b) points out, it is significant that the socioterminological actions were carried out in the field of language planning, since this component was later to be found in other language communities.

> Socioterminology was for long behind the very idea of language planning (as *aménagement linguistique)*. The first terminological field surveys took place in Quebec from the start of the 1970s (Boulanger 1995: 15 [our translation]).

As can be seen in the extract above, *aménagement linguistique* was preferred by the principal architect of language policy in Quebec, Jean-Claude Corbeil (1980: 112–115) to the rather impersonal though widely accepted *language planning*. This was for sociological reasons: the steps to be taken in instituting a language policy must be grounded on a thorough knowledge of the sociological situation of the speakers, and must win their support.

The work on terminology in society was part of the vast movement known as the Quiet Revolution (Gaudin 1993: 31), aiming at enhancing the status of French in Quebec and making it not only the official language but the effective language of the workplace (a process termed *francisation*). To do this, legislative and administrative measures (in particular the Charte de la langue française 1977) were taken to enable the Office de la langue française to develop the terminology necessary to rise to this challenge.

The methods used in these pioneering works carried out by or for the Office were partly inspired by William Labov's work in sociolinguistics, notably the role of surveys. These were corpus-based and quantitative. They showed at least one notable innovation with relation to Labov's practice, in that instead of focussing on phonetic and morphological variables, they concentrated on lexical variation. For example Maurais' study of 1984 examined uptake of officially coined terms in French in food advertising. Although this survey concentrated on variation within a written corpus, variables such as age, sex, socio-economic status were also taken into consideration. Maurais (1993) also saw this process as a language planning project in similar terms to Haugen (1972, 1983), notably in the implementation stage, and differentiated between modernisation in a general sense and terminology planning (*aménagement terminologique*).

Heller et al. (1982) and Daoust (1987), using methods borrowed from the field of marketing (Daoust 1987: 10), went a step further, and carried out full-scale sociolinguistic surveys in industry to find out if and how official French-language terminology was actually adopted by staff, investigating not only usage but also attitudes, once again invoking the usual sociological criteria of age, sex, and socio-economic status. Focus was on the perception by those involved in the terms used in the business (written and oral), their attitudes on the whole business of introducing or reintroducing French as the working language and the data on actual use of terminology (written and oral), all cross-checked. The results showed that, as in sociolinguistic research on the general language, age and education were determining in both attitudes and actual use and that women were indeed the agents of language – here – terminological – change (Daoust 1987: 76).

These grass roots studies were later used to draft language planning policy at the Office (québécois) de la langue française (Loubier 1993, 2008). It is significant that Loubier (2008) places her study in a broad sociolinguistic framework and does not limit herself to terminology, and several lines of research retain the organic link with the parent discipline.

3.2 France

Interest in the sociological implications of terminology did not stem directly from language planning activities in France, at least in academic circles – indeed it was used as an arm to resist certain aspects of the official language policy during the 1980s and 1990s (Lerat 1993: 12). It should be stressed from the outset that French linguistics, even on embracing structuralism, never abandoned a sociological approach to language description. This tradition, going back to Antoine Meillet and his pupils, was particularly apparent in the French school of lexicology, which grew out of historical studies of political and social vocabulary, soon took a more terminological turn with the study of the creation of French railway terminology (Wexler 1955) and was extensively developed with Louis Guilbert's studies of the vocabulary of aviation (Guilbert 1965) and space travel (Guilbert 1967). Louis Guespin (in Gaudin 1993: 9) and Gaudin (1993: 68) both explicitly name Guilbert, together with the work carried out in Quebec since the 1970's, as the precursors of socioterminology. And indeed the method used by Guilbert, which consisted of examining how terms were formed in specialised and non-specialised discourse, provided one strand of sociological study. The other strand, represented by research based on empirical surveys and focusing on spoken exchange, came together in the revolutionary university of Nanterre in the 1960s and 1970s, where Guilbert taught together with the founders of a French sociolinguistic tradition, glottopolitics, Jean-Baptiste Marcellesi. The younger generation of doctoral students or teaching assistants profited from this cross fertilization to form the various directions of socioterminology.

Most influential in this regard was probably Louis Guespin, who not only wrote extensively on the subject, but also stimulated research on the subject and supervised the research of the younger generation, in particular François Gaudin. Activities shifted in the 1980s from Nanterre to Rouen, where contact was kept up between the sociolinguists, whose focus was on minority language situations (Corsica, North and Sub-Saharan Africa) in the form of what was called glottopolitics, and the terminologists, who continued the discursive approach inherited from Guilbert, giving rise to what would be termed the Rouen school of socioterminology.

From the late 1980's, research in socioterminology took on a more militant attitude, best illustrated by a French scholar, trained in Rouen, but who soon took up a posting in Finland, Yves Gambier. His first attack on what he saw as traditional terminology (Gambier 1987) was made at a conference devoted to the terminological fertilisation of the Romance languages (Algardy, Van Deth, Lerat 1987), where his contention was that in order to account for the terminology of a current issue – that of acid rain – the precepts of Wüster's method were no longer applicable, and that a resolutely discursive and sociological approach was needed. The implications of both the rejection of traditional terminology and the method proposed in its place were spelt out in a special edition of the Rouen journal *Les Cahiers de linguistique sociale*, which Gambier (1991) not only coordinated but also wrote the main broadside for.

The principles of socioterminology were both synthesized and given a broader and more solid theoretical basis thanks to the work of François Gaudin, in particular his two monographies (Gaudin 1993, 2003). In these books, though the opposition to what is seen as traditional terminology, portrayed as being the "dominant" view, is still a theme running through other topics, the overarching aim is to establish a programme of research for this new field. The programme includes research on the relations between terminology and knowledge, the role and importance of standardization, terminology as a result of interaction, in particularly in the negotiation of meaning and issues of popularizing science. Themes particularly developed are how language is used in the research laboratory and in scientific publications. In the latter, direct influence from sociolinguistics is shown up in the study of linguistic insecurity (Gaudin 1993: 33; 2003: 102). The glottopolitical dimension is particularly present in the themes of language minorisation and the role of standardization.

Inspired by their glottopolitical forefathers (Guespin and Marcellesi 1986), French socioterminologists devoted considerable study to the effects of official terminology and neology policy in France. Their evaluation of this work was generally speaking negative: in their eyes, too little attention was paid to what happened to the new terms launched by the Ministerial commissions of terminology – a lack of what was called *implantation* – especially in comparison with similar language planning actions in Quebec (Gaudin 1993: 51–61). This eventually led to Jean-Michel Eloi, at the time working at the Délégation générale à la langue française, taking the initiative of organising surveys to evaluate just how effective the action of the terminology committees was, and this was entrusted to various linguists, several of whom espoused socioterminological views. Five of the studies were published in Depecker and Mamavi (1997) and the various methods used came to be adopted for evaluating the effectiveness of language policies, though less in France than in Quebec (Quirion 2003).

Before leaving the French contribution to socioterminology, mention should be made of a group of sociolinguists, *Langage et Travail*, who from the 1980's on developed an important line of research on use of language in the workplace, published in *Cahiers Langage et Travail* 1991–1997 – nine volumes issued, including one on terminology, though the main orientation was that of discourse analysis. Another group, based at the university of Strasbourg, *Groupe d'étude sur le plurilinguisme européen* (http://lilpa.unistra.fr/gepe/), also investigated language policy in companies and other organisations, though terminology was a relatively minor concern.

3.3 Catalonia

The only other Latin language community to take up not only socioterminology but the Quebec version of language planning (*aménagement linguistique*) was that of the only large non-national language, Catalan. This was largely due to the work of Maria

Teresa Cabré, whose experience in Quebec had convinced her that a linguistically unfavourable situation of a majority in a non-sovereign or only partly sovereign geographical area could be turned around with language policy, of which terminology was a key element. It was at her initiative that a term planning organisation, TermCat, was set up in 1985 on the express model of the *Office (québécois) de la langue française*, and that a research centre on applied linguistics, centring on terminology, was launched first at the University of Barcelona then at Pompeu Fabra University (IULA http://www.iula.upf.edu/).

As in Rouen, and indeed in North America, there was a solid sociolinguistic foundation to be built on, also concerned with the linguistic minorisation of Catalan, and the theme of linguistic insecurity. This had been built up from the 1960 by such authors as Ninyoles (1969), who theorized self hatred and linguistic insecurity continuing into the present day with such sociolinguists as Strubel i Trueta (cf. Webber and Strubel i Trueta 1991) taking more than a nodding interest in terminology (Kremnitz 1980).

3.4 Scandinavia

Socioterminology is said to be practiced in Scandinavia (Gaudin 2005), in particular in Norway, where, as in French-speaking countries, it was linked with language planning and the status of Norwegian as a marginalised language in the context of the oil industry. Owing to its international nature, the Norwegian North Sea oil industry had used English as its working language. Terminol, the terminology project designed for use in the Gullfaks oil and gas field was set up in the 1980s to give Norwegian the terminological infrastructure it needed to be used the official language. The experience of providing adequate terminology which was at the same time acceptable to the users and which corresponded to Gullfaks stringent standardization requirements proved to be a living laboratory to test socioterminological principles and methods. Among other issues that had to be dealt with in secondary term formation in Norwegian, Myking (1989: 265–266) recounts how many of the syntagmatic terms formed in Norwegian using a prepositional phrase had to be restructured, calling for close collaboration between engineers and linguists.

More generally, this experience showed the importance of studying language use and attitudes to the languages (English and Norwegian) in the oil industry – workers and management, similar preoccupations to those of socioterminologists in Quebec (Sæbøe 1996).

Other important works setting up a Norwegian terminology concerned medical vocabulary (Myking 2000: 106). Myking in fact is one of the few Norwegian terminologists to come to grips with the French sociotermiological approach, and concluded in 2000 that the two approaches were still very much part of a language-specific, culture-specific context.

The experience of the North Sea oil terminology project was also the opportunity to theorize the possibility of adapting the francophone experience to the Scandinavian context, and this may be the greatest contribution to socioterminology as a whole.

3.5 Morocco

The Moroccan linguist, Leïla Messaoudi, has long been studying LSP, including terminology, in hitherto neglected social settings, focusing in particular on oral communication in bilingual and diglossic situations, as is typical of North Africa. She explicitly explores how modern and traditional techniques coexist and how the various languages in contact cope with the communicative challenges (Messaoudi 2010: 132). In a collective work (Messaoudi (ed.) 2012), the author suggests that technolects can indeed be split up into different levels according to cognitive but also sociological criteria. She illustrates this with a series of case studies in fields as varied as automobile mechanics, banking and business, farming and masonry, automobile mechanics, even touching on such specialised but widely accessible fields of sport and journalism, and outlines various methodological means to analyse these extremely varied sociolinguistic situations.

3.6 Synopsis

Boulanger (1991: 18) summed up the relations between terminography, terminology and the just emerging socioterminology (at the time) in the table below.

This early table does not yet reflect the theorization that was to come, drawing on the results of sociolinguistics, as will be presented below.

Table 1: Relationships between terminology, terminography and socioterminology Boulanger 1991.

Terminography	Terminology	Socioterminology
Individual or collective practice	Theorization, methodolization and training/eduction	Analysis of *rapports de force* in socioprofessional environment
Spontaneous or planned instrumentalisation (terminological dictionaries, databanks)	Linguistic documentarization (books, articles, theses …)	Discursive integration of terminology, terminography (how it is used)
Long history	Since around 1970	Since around 1990

4 Methods in socioterminology

As socioterminology was initially defined in relation – and in opposition – to the Wüsterian, concept-based approach terminology, it is useful to focus on methods used in contrast with this (see also Myking 2000, 2001).

4.1 Text analysis

The starting point of socioterminology is the study of discourse, either oral or more frequently, for practical rather than theoretical reasons, written sources. Conceptual analysis was not a priority. It was considered too complex to be consigned to such structures as tree diagrams (Gambier 1991: 33), a widely used discovery tool in classical terminology. Discourse analysis was considered a more appropriate tool since the aim was to discover not only the technical concepts conveyed by the terms but more particularly the social relations of specialists and their environment, including with their readership. One situation which was studied in particular was when specialists, scientists in particular, hesitated in using a direct loan term or a translated one, in particular one suggested by a language planning authority (Gaudin and Guespin 1993: 24, Gaudin 2003: 173–204). In some cases, the scientists were observed to make semantic differences between an English loan term (adapted or not) and the official French equivalent (*recombinant* and *recombiné*) (Gaudin and Guespin 1993: 26; 31).

4.2 Sociological surveys

Use of language and more particularly terminology in the workplace has been a favoured method of investigation used by sociolinguists. This only entails actual surveys in relatively few cases, apart from the pioneering work by Heller et al. (1982) and Daoust (1987), which helped to identify the key workers who were crucial in adopting the French terminology proposed The results commented on above were gained through interviews with specialists (see Gaudin and Guespin 1993 and more generally Depecker and Mamavi (eds.) 1997).

4.3 Diachronic dimension

Reacting to the principal of only dealing with a terminology as it is here and now, socioterminologists investigated how specialised vocabularies were formed, in particular in relation to the interplay of theories, dominating ideas. As Gambier put it, the conditions in which terms are elaborated, how concepts and terms are

actually defined is part of the writ (Gambier 1991: 33, Gaudin 2005: 90). This aspect came to be developed later by such terminologists as Faulstich (2000) and Dury (1999, 2000, 2005, 2006), the latter setting herself the task of explaining the terminology of a particular subject field with regard to how it was actually formed, this being in her opinion essential knowledge for future specialists. More recently, Resche (2013), in a book aimed at subject specialists, has investigated how a diachronic approach to terminology can characterize the evolution of the subject field in question.

4.4 Domain specific terminology

Whereas traditional terminology focused on domain specificity, socioterminology stressed the overlapping of subject fields (Gambier 1991: 33), both in the formation of terminology and in its use in concrete professional situations. Gaudin (1993: 83) preferred to study the way terms are used in the framework of an activity, rather than in a particular subject field, thus paving the way for a continuum of usages from the sciences to the technologies. Subject fields were indeed held to be divided up on an ideological basis, and by limiting terminology work to narrowly defined fields, no light is shed on how terms pass from one field to another. This idea of "migrating concepts" (Stengers 1987) was taken up in the framework of socioterminology, terms which were used, usually metaphorically (Gaudin 1993: 105–109), as the phoneme was adapted from structuralist linguistics to the social sciences in general. In this, socioterminologists have refused to consider terms as being monosemic in one particular field, but creatively polysemic, thus lending themselves to innovation.

4.5 Corpus linguistics

Gaudin (2005: 81) saw corpus linguistics as the tool with which socioterminology could study specialised discourse, enabling studies to embrace both quantitative and qualitative data, and he recommends theses written in the late 1990s which pioneered the method of making up a significant corpus in order to study the social implications of term use in particular through a close observation of variation, anther theme dear to socioterminology. The 2007 ISO standard defines a well-constructed corpus in terms of the "actuality of the texts [i.e. texts should be up to date], representativeness of the communities of speakers of the technolect under study and relative exhaustivity." More generally speaking, sociolinguistics has taken onboard the use of corpora (written and spoken) not just as a tool but as a means to track the way terms circulate in a scientific but at the same time social context.

4.6 Terms as actually used – refusal of prescriptivism

Standardisation was seen by the socioterminologists as the major aim of Wüsterian terminology. As their own aim was to observe how terms are actually used by specialists, scientists in particular, in both oral and written modes, standardization as such was not part of the research project. In addition, it was felt that standardization, imposed on scientists by some higher authority, was detrimental to the scientist's own terminological – and thus scientific – creativity. What was put forward as an alternative to standardization was termed *normaison* (Guespin 1993: 217), a form of harmonisation which its proponents suggested emerged more or less naturally in the community concerned as it was needed. Gaudin (1993: 173) assimilated standardisation with official French language policy, and preferred a social, community-based control in the emergence of a norm and (1993: 36) points to the success of making French the effective language of the workplace in Quebec from the 1970's on, attributed to the involvement of all the players in a company. This should not be interpreted as a laissez-faire attitude: action was theorized in the form of "glottonomy", action to be taken within a particular linguistic setting to solve communication problems (Guespin 1985). This approach has underpinned the work carried out by such researchers as Holzem and Baudouin (2006).

It should be noted that in French, *standardization* is known as *normalisation*, at least in the context of industrial standardization, as practised by ISO and its French member AFNOR. *Normaison* reflects this, but sets it in the context of a limited group, and evokes the expression *terminologie maison*, or *in-house terminology*.

5 Object of research in sociolinguistics

The characteristics of socioterminology – defining or not – have been sketched out above. In this section some of the areas where socioterminology has been active are briefly reviewed.

5.1 Settings: research laboratories; businesses

The research laboratory and how terminology was used in this setting, is one of the major focuses of the Rouen school of socioterminology (Gaudin 1993: 153–156). Arguing that the main contact between the laboratory and the outside world is written and generally in the form of the research article, socioterminology concentrates on this form for its investigation into the use of terms, but also as a polyphonic place, where written and spoken language input is as important too. The programme of research includes finding out how new terms arise in the laboratory situation, and stress the need for study into the interaction of written and spoken forms in this respect.

Everything starts with spoken exchanges, there is an oral expression of science which has been little studied; every laboratory has its jargon, often far removed from the polished form of communication typical of conference paper (Guespin 1991: 63). In a more popular form, the humorist, Pierre Perret (2002) published a dictionary of oral expressions from 145 different professions, partly taken from existing lexicographical work, but also based on surveys of actual oral usage.

5.2 Medium: written: research papers (editology); oral exchanges

The medium through which terminology is exchanged has been particularly focused on by socioterminology, both in the written and spoken modes. In the written mode, the research article has been the subject of some study, in particular in conjunction with theory of editology (Baudet 1995). Baudet held that the scientific status of a text – including the terminology used – can be defined by the conditions in which it is edited, and in particular in which journal. These journals being more and more exclusively English-language publications, the terminology in English acquires a legitimacy denied to that in other languages. This ties in with the socioterminological theme of critical research into language use in a minority situation. Gaudin and Guespin (1993: 11) use three part interview: terms used spontaneously by researchers, extent to which the researchers used English, inquiry into official terminology: was it known, was it used?

More recently, a European project on wine terminology, Vinolingua (http://ec.europa.eu/languages/news/2013/20130225_fr.htm), has put the oral aspect of terminology in the centre of its research, in particular in the course of wine-tasting.

5.3 Time scope: synchronic/diachronic

Since terminology is viewed as a part of language, with terms, just as other linguistic elements, changing over time, socioterminologists consider that a diachronic approach is necessary to give a complete description. As has been mentioned, this has been particularly investigated by Pascaline Dury (1999, 2000, 2005), focusing on the history of a subject field and the terms that constitute it as an introduction for future specialists or for translators who are to undertake a translation project in a new field. This insistence on change over time is in fact a constant of French lexicological studies: Guilbert (1973) insisted on neology being at once synchronic and diachronic, which holds true to term formation as well. Another implication of the changing terminological make-up of a field is not simply the importance of the new terms which come into being, but those which drop out, and Dury and colleagues (Dury and Drouin 2009 Dury and Picton 2009) have also been investigating terminological obsolescence and death.

5.4 Role of experts: the differing roles of scientists, engineers, etc.

Early work in terminology relied on experts at most levels. By the 1970s, most terminological work was being done by language experts rather than subject specialists, who prepared lists of term candidates, which were then validated or rejected by "experts". Socioterminologists soon pointed out that the definition of what experts were could and indeed should be very broad, and that it was illusory to hope for an unambiguous answer from them (Otman 1993). Maryvonne Holzem (1997) and Gaudin (2003: 185) have been studying new terms used by doctoral candidates in French theses, not only giving an idea of how new knowledge is expressed, but also how French, as a minority scientific language, fares in the creation of new terms to express research. Gaudin (1993: 126) calls for a social vision of the way expert knowledge can be extracted, through terms, from texts, and Holzem and Baudouin (2006) theorize the notion of an (invisible) **college** of experts.

5.5 Minority language situations

As Pierre Lerat (2000) pointed out, socioterminology is essentially a francophone speciality and one which focuses on terminology as used by a minority, either French in scientific contexts or Arabic or African languages in competition with French (or English). It has also been the focus of both preliminary and follow-up work in implementing language – and in particular terminology – planning policy in Quebec and Catalan in Catalonia.

Lipou (2007) makes a distinction between minorisation and minoration, distinguishing between the numerical strength of a language community and its psychological impact on speakers.

5.6 Evaluation of language policies

Following on the interest in terminological usage in language minority situations, official bodies such as the Office (québecois) de la langue française has taken onboard principles and developed methods for estimating how successful these policies have been in implementing French terminology. Over the years, a series of principles have been laid out, both from within the organisation (Loubier 2008) and from outside (Quirion 2003). Loubier (2008: 32) rejects the traditional dichotomy of corpus planning and status planning, and instead prefers to speak of self regulation and official regulation of language use.

A notable difference can be seen between Quebec and France. The sociolinguistic view of official term policy in France has been viewed from a negative viewpoint (Gardin 1974: 68).

5.7 "Vulgarisation"/"divulgation "popularizing specialist subjects

The role that terminology plays in permitting non specialists to gain some insight into specialised knowledge has been one of the more recent themes of socioterminological research. Guespin (see Gaudin 2003: 50) spoke of *interface discourse*, though this was used to characterise the communication between specialists of different disciplines. Gaudin (1993: 129, 2003: 126), in surveying the techniques used in popular science, most of which are linked to journalism, points to terminology as the key issue in conveying specialised knowledge, in particular in relation to the way it ties in to text structure. In spite of the social importance of this function, terminology has not been studied extensively from this viewpoint, the main thrust being to determine the use and meaning among specialists. D. Jacobi (1999: 136) points out that terms, which are excellent vectors for conveying specialised information ... between specialists, can turn out to be formidable obstacles to understanding outside the circle of the initiated. Gaudin (2003: 120) suggests ways in which terms can be demonstrated to take on meaning within an exchange, in other words, ways in which terms can be negotiated, i.e. provided with a paraphrase which enables the reader to reconstruct the meaning and thus home in on the concept. Information such as the origin of a term, whether it is motivated or not (it may be useful to the learner to know from the start that there is no use trying to link the composition of a word to its meaning). On the other hand, if a term is semantically motivated, it can be used in various forms (the verb corresponding to the nominalised term, for example). The role dictionaries of science can play is also examined, in the tradition of the great nineteenth century French encyclopaedias (*Grand Dictionnaire Enclyclopédique Larousse*, for example), which were intended to put science at Everyman's grasp. The techniques used by these popularizing dictionaries involve pointing out such linguistic features as para-synonymy, hypernymy and part-and-whole relationships. Gaudin (2003: 148) specifically recommends comparisons with day-to-day language usage, so as to avoid isolating the new reader within the new speciality.

The complementary view of how lay people actually use specialised terminology seems to have been little studied, with two interesting exceptions. One is a study by Bowker and Herrera (2004) who investigated by analysing a corpus of email messages how cancer patients with no medical background used and modified the medical vocabulary related to their condition and its treatment, and made it theirs. Delavigne (2013) also investigates how patients acquire semi-expert status and takes the reasoning a step further (Delavigne 2012) to design a dictionary for cancer sufferers.

5.8 Localisation

Among the new challenges for socioterminology, the ISO standard (2007) focuses on localization, the linguistic and non linguistic adaptation of IT products to specific

cultural and linguistic communities. Terminology is the "king pin" (Quirion 2003) to the success of this operation, as the choice of terms needs to reflect the cultural preferences and language habits of the target community. This is portrayed as the "horizontal axis" of localization, whereas the complementary, vertical axis is simply the consistency of the terminology used over the entire scope of the documentation used for a product or family of products, thus emphasizing the need for standardization, even within the framework of socioterminology. The rapid changes in both technology and consumer tastes, in both local and cyberworld, mean that the localizers need to be acutely aware of the trends in using terms in both local and global contexts. The language needs of localization can be met through making terminological dictionaries which reflect local usage but assure harmonization throughout the documentation.

6 Other critiques of official French language planning action

Socioterminologists were generally critical of the official language planning actions, and participated actively in evaluations of the uptake of official terminology. But they were not the first by any means to make a critical appraisal of French terminology planning, nor was their use of sociological methods completely innovative. Fugger (1979) carried out a survey which showed the limited uptake of 18 terms of the official audiovisual terminology. Out of the 483 responses he received he was able to determine that

- 15% knew both the English term and the official replacement term;
- 21% agreed with the official action;
- 15% were willing to use the official terms.

Becherelle (1981) and Goudailler (1977, 1982), using similar methods, came to similar conclusions, the latter encouraging the official body to do its own survey work. A further survey was ordered by the authority (Délégation générale à la langue française) and entrusted to university researchers, who assessed the efficacy of official terminology policy, using methods at least partly inspired from sociolinguistics (Depecker and Mamavi (eds.) 1997).

7 Further developments

Among the developments which owe at least part of their orientation to socioterminology, mention should be made of the sociocognitive approach, as exemplified by Rita

Temmerman (2000a and 2000b) and those working in her research group. A second approach which has grown out of socioterminology is the branch of cultural terminology developed by Marcel Diki-Kidiri (2007). A third continuation is found in the field of work-place terminology management, which furthers the Langage et Travail's programme in the form of de Vecchi's pragmaterminology (de Vecchi 2002, 2007), draws on the work by this group with its emphasis on communication problems in professional contexts, and more directly on the terminology used, since it retains the lexicon as the privileged approach.

Socioterminology has left its mark not only on terminology theory, but also on terminography, in particular in the willingness to tackle subject fields previously felt to be outside the scope of terminology, in particular in the tertiary field. Exemplary in this regard are the works of Jeanne Dancette (2007, 2009a, 2009b, 2011a, 2011b), in particular her two dictionaries: the first with Christophe Réthoré, the second the web-based *Analytical Dictionary of Globalization and Work*. The authors of the first dictionary explicitly recognize their debt to socioterminology (Dancette and Réthoré 1997: 239) inasmuch as they stressed the importance of primary documentation (what the specialists themselves said and wrote), The terms they found were rarely unambiguous and synonymy was rife. The dictionary itself simply indicated the variation which was encountered, without indicating any hierarchy or preference.

8 Concluding remarks

Mortureux (2000) expressed her perplexity concerning the need for the specific category of socioterminology: why, she asked, there is no socioterminography or no sociolexicology? She points out that other linguists who do not identify as socioterminologists also work on specialised vocabularies in socially diversified corpora, in particular in the Cediscor research group at Université Paris III Sorbonne –Nouvelle http://syled.univ-paris3.fr/cediscor.html. She remarks (2000: 34) that for one thing, lexicology has always dealt with variation and how it can be accounted for (in terms of domains, registers, etc.) and on the other hand, it is similar to the development of sociolinguistics in opposition to (Chomskian) linguistics. She points out another distinction: that socioterminology work, unlike terminological work, does not directly lead to a terminography, though Faulstich (1995) recommends socioterminological guidelines for glossary making.

Mortureux concludes that there should be no necessity to impose the overprecise term ***socio****terminology*, since terminology should by all rights be able to deal with social variation (Mortureux 2000: 38). It has however been a useful excursion, which has enriched terminology, even if it has not created a genuine new field of study.

References

Algardy, Françoise, Pierre Lerat and Jean-Pierre Van Deth. 1987. *La fertilisation terminologique dans les langue romanes. Actes du colloque d'octobre 1986, Meta* 32/3.

Barite, Mario. 2000. *Diccionario Organización y Representación del Conocimiento: Clasificación, Indización, Terminología*. Universidad de la República (Uruguai): Universidad de la República Oriental del Uruguay. http://archivos.liccom.edu.uy/diccionario/Diccionario%20Definitivo%20%5B3-11-13%5D.html (latest accessed 22 November 2017).

Baudet, Jean-Claude. 1995. Éditologie: une sociolinguistique de la science. *Meta* 40(2). 216–223.

Becherel, Danièle. 1981. A propos des solutions de remplacement des anglicismes. *La Linguistique* 17(2). 119–131.

Boulanger, Jean-Claude. 1991. Une lecture socioculturelle de la terminologie. *Cahiers de linguistique sociale 18: Terminologie et sociolinguistique*. 13–30.

Boulanger, Jean-Claude. 1995. Présentation: Images et parcours de la socioterminologie. *Meta* 40. 194–205.

Bourigault, Didier and Monique Slodzian. 2000. Pour une terminologie textuelle. *Terminologies Nouvelles* 19. 29–32.

Bowker, Lynne and Caroline Herrera. 2004. A new Internet-based Communicative Setting/ Exploring its Impact on Language for Special Purposes. *Lexicographica* 20. 33–55.

Corbeil, Jean-Claude. 1980. *L'aménagement linguistique du Québec*. Montréal: Guérin.

Dancette, Jeanne. 2008. Questions sociolinguistiques et terminologiques de la mondialisation du travail. In François Maniez and Pascaline Dury (eds.), *Hommage à Henri Béjoint*, 319–335. Lyon: Travaux du CRTT.

Dancette, Jeanne. 2009a. Langage mondial? Un dictionnaire ontologique et encyclopédique de la mondialisation, économique. *Réseau Realiter* July 2009. http://www.realiter.net/spip.php?article1725 (last accessed 3 August 2017).

Dancette, Jeanne. 2009b. Un dictionnaire encyclopédique plurilingue sur thésaurus. In *Passeurs de mots, passeurs d'espoir: lexicologie, terminologie et traduction face au défi de la diversité, LTT*, 161–176. Lisbonne, 15–17 octobre 2009. http://www.ltt.auf.org/IMG/pdf/titre_TDM.pdf (last accessed 3 August 2017).

Dancette, Jeanne. 2011a. *Dictionnaire analytique de la mondialisation et du travail / Analytical Dictionary of Globalization and Work / Diccionario analítico de la globalización y del trabajo*. http://www.crimt.org/damt.htm (last accessed 3 August 2017).

Dancette, Jeanne. 2011b. L'intégration des relations sémantiques dans les dictionnaires spécialisés multilingues: du corpus ciblé à l'organisation des connaissances. *Meta* 56(2). 284–300.

Dancette, Jeanne and Christophe Rethore. 1997. Le dictionnaire bilingue (Anglais-Français) de la distribution: entre dictionnaire de langue et encyclopédie. *Meta* 42(2). 229–253.

Daoust, Denise. 1987. *Le changement terminologique dans une entreprise de transport: l'étude de quelques facteurs sociolinguistiques déterminants*. Montréal: Office de la langue française.

Delavigne Valérie. 2012. Peut-on "traduire" les mots des experts? Un dictionnaire pour les patients atteints de cancer. In Michaela Heinz (ed.), *Dictionnaires et traduction*, 233–266. Berlin: Frank & Timme.

Delavigne, Valérie. 2013. Quand le patient devient expert: usages des termes dans les forums médicaux. In *Actes des dixièmes rencontres, Terminologie et Intelligence artificielle TIA 2013*, 163–169. Paris, 28–30 October 2013. https://lipn.univ-paris13.fr/tia2013/Conference_Proceedings.html (last accessed 3 August 2017).

Delisle, Jean. 2008. *La terminologie au Canada*: *histoire d'une profession*. Montréal: Linguatech éditeur.

Depecker, Loïc. 2001. *L'invention de la langue. Le choix des mots nouveaux*. Paris: Larousse, Armand Colin.
Depecker, Loïc and Gina Mamavi (eds.). 1997. *La mesure des mots*. *Cinq études d'implantation terminologique*. Mont-Saint-Aignan: Publications de l'Université de Rouen.
De Vecchi, Dardo. 2002. *Vous avez dit jargon …* Paris: Eyrolles/Les Echos.
De Vecchi, Dardo. 2007. La nomination et son suivi: entreprises et pragmaterminologie. *Neologica* 1. 49–63.
Diki-Kidiri, Marcel. 2007. Eléments de terminologie culturelle. *Cahiers du RIFAL 26. 14– 25*.
Dury, Pascaline. 1999. Etude comparative et diachronique des concepts Ecosystem et Ecosystème. *Meta* XLIV-3. 484–500.
Dury, Pascaline. 2000. Les variations sémantiques en terminologie: étude diachronique et comparative appliquée à l'écologie. In Valérie Delavigne and Myriam Bouveret (eds.), *Sémantique des termes spécialisés*, 17–32. Mont-Saint-Aignan: Publications de l'Université de Rouen.
Dury, Pascaline. 2005. Terminology and specialised translation, the relevance of the diachronic approach. *LSP and Professional Communication* 5(1). 31–40.
Dury, Pascaline. 2006. La dimension diachronique en terminologie et en traduction spécialisée: le cas de l'écologie. In Danielle Candel and François Gaudin (eds.), *Aspects diachroniques du vocabulaire*, 109–124. Mont-Saint-Aignan: Publications des Universités de Rouen et du Havre.
Dury, Pascaline and Aurélie Picton. 2009. Terminologie et diachronie: vers une réconciliation théorique et méthodologique? *Revue française de linguistique appliquée*. 31–41.
Dury, Pascaline and Patrick Drouin. 2009. L'obsolescence des termes en langues de spécialité: une étude semi-automatique de la 'nécrologie' en corpus informatisés, appliquée au domaine de l'écologie. In Jan Engberg (ed.), *European Symposium* LSP 2009, *Aarhus*. http://bcom.au.dk/fileadmin/www.asb.dk/isek/dury_drouin.pdf (last accessed 22 November 2017)
Faulstich, Enilde. 1995. *Base Metodológica para Pesquisa em Socioterminologia. Termo e Variação*. Brasilia: Centro Lexterm.
Faulstich, Enilde. 2000. Principes formels et fonctionnels de la variation en terminologie. *Terminology* 5(1). 93–106.
Freixa, Judit. 2003. *La variacio terminologica*. Barcelone, IULA, Universitat Pompeu Fabra, Sèrie Tesis 3.
Fugger, Bernd. 1979. Les Français et les arrêtés ministériels: Etude sur l'impact de la loi linguistique dans l'Est de la France. *La Banque des mots* 18. 158–170.
Gambier, Yves. 1987. Problèmes terminologiques des pluies acides: pour une socioterminologie. *Meta* 32(3). 314–320.
Gambier, Yves. 1991. Présupposés de la terminologie: vers une remise en cause. *Cahiers de linguistique sociale* 18. 31–58.
Gambier, Yves. 1997. La 'vache folle': lecture terminologique. In Lapierre, Oore and Runte (eds.), *Mélanges de linguistique offerts à Rostislav Kocourek*, 125–135. Halifax: Les Presses de l'Alpha.
Gardin, Bernard. 1974. La néologie. Aspects sociolinguistiques. *Langages* 8(36). 67–73.
Gaudin, François. 1993. *Pour une socioterminologie. Des problèmes sémantiques aux pratiques institutionnelles*. Mont-Saint-Aignan: Université de Rouen.
Gaudin, François. 1994. De la francisation à l'insécurité linguistique. *Terminologies nouvelles* 12. 67–72.
Gaudin, François. 1996. Droit aux mots, droit au savoir. Approche glottopolitique de la loi Toubon. *Cahiers de lexicologie* 69. 43–61.
Gaudin, François. 2003. *Socioterminologie, une approche sociolinguistique de la terminologie*. Bruxelles: Duculot De Boeck.
Gaudin, François. 2005. La socioterminologie. *Langages*. *La terminologie: nature et enjeux* 39(157). 80–92.

Gaudin, François. 2007. La révolution dénominative en chimie. Un coup de force? *Neologica* 1. 65–74.
Gaudin, François. 2007. Quelques mots sur la socioterminologie. *Cahiers du RIFAL* 26. 26–35
Gaudin, François and Louis Guespin. 1993. Etude d'implantation des arrêtés de terminologie. Domaine: génie génétique. In Loïc Depecker (ed.), *La mesure des mots: cinq études d'implantation terminologique*, 1–46. Mont-Saint-Aignan: Publications de l'Université de Rouen.
Goudailler, Jean-Pierre. 1977. A nouveau les puristes contre la langue. *La linguistique* 13(2). 85–98.
Goudailler, Jean-Pierre. 1982. Sprache und Macht: Wie ein Gesetz in Frankreich die Sprache reinigen will. *Dialect* 6. 28–37.
Guespin, Louis. 1985. Matériaux pour une glottopolitique. *Cahiers de linguistique sociale* 7. 13–32.
Guespin, Louis. 1990. Socioterminology facing problems in standardization. *TKE* 90(2). 642–647.
Guespin, Louis. 1991. La circulation terminologique et les rapports entre science, technique et production. *Cahiers de linguistique sociale*. 59–80.
Guespin, Louis. 1993. Normaliser ou standardiser? *Le Langage et l'Homme* 28(4). 213–222.
Guespin, Louis and J.-B. Marcellesi. 1986. Pour la glottopolitique. *Langages* 83. 5–34.
Guilbert, Louis. 1965. *La formation du vocabulaire de l'aviation (1861–1891)*. Paris: Larousse.
Guilbert, Louis. 1967. *Le vocabulaire de l'astronautique. Enquête linguistique à travers la presse d'information à l'occasion de cinq exploits de cosmonautes*. Mont-Saint-Aignan: Publications de l'Université de Rouen.
Guilbert, Louis. 1973. Théorie du néologisme. *Cahiers de l'Association internationale des études françaises* 25. 9–29.
Haugen, Einar. 1972. *The ecology of language.* Stanford: Stanford University Press.
Haugen, Einar. 1983. The implementation of corpus planning theory and practice. In Juan Cobarrubias and Joshua Fishman (eds.), *Progress in language planning: International perspectives,* 269–289. *(*coll. Contributions to the sociology of language 31). Berlin and New York: Mouton de Gruyter.
Heller, Monica, Jean-Paul Bartholomot, Laurette Lévy and Luc Ostiguy 1982. *Le processus de francisation dans une entreprise montréalaise: une analyse sociolinguistique*. Québec: Editeur officiel du Québec.
Hermans, Adrian. 1989. Quelques caractéristiques du vocabulaire de la sociologie. In C. de Schaetzen (ed.), *Néologie diachronique*, 48–55. Bruxelles: CILF.
Holzem, Maryvonne. 1998. La thèse et son auteur: Voie d'une nouvelle complémentarité terminologie-documentation. *Terminologies nouvelles* 18. 28–35.
Holzem, Maryvonne and Nathalie Baudouin. 2006. Rôle de la terminologie dans l'appropriation des savoirs. In W M El Hadi (ed.), *Terminologie et accès à l'information (Collection Traité des Sciences et techniques de l'information)*, 51–70. Paris: Hermès Sciences publications, Lavoisier.
ISO/TR 22134. 2007. *Practical guidelines for socioterminology.*
Jacobi, Daniel. 1999. *La communication scientifique: discours, figures, modèles.* Grenoble: Universitaires de Grenoble.
Kremnitz, Georges. 1980. Démarches et particularités de la socio-linguistique catalane. In B. Gardin, J. B. Marcellesi and GRECO Rouen (eds.), *Sociolinguistiques. Approches, théories, pratiques*, 21–33. Paris: PUF.
Laroussi, Foued. 2001. L'arabe et les nouvelles technologies. *Terminogramme* 99–100 *Géostratégies des langues*. 295–313.
Lerat, Pierre. 1993. Préface. In François Gaudin, *Pour une socioterminologie. Des problèmes sémantiques aux pratiques institutionnelles*, 11–13. Mont-Saint-Aignan: Presses universitaires de Rouen et du Havre.
Lerat, Pierre. 2000. Le sens terminologique. In Valérie Delavigne and François Gaudin (eds.), *Actes de la journee en hommage* à *Louis Guespin terminologue*, 17–25. Mont-Saint-Aignan: Presses universitaires de Rouen et du Havre.

Lipou, Antoine. 2007. Interventionnisme terminologique et langues en situation minoritaire. *Cahiers du RIFAL* 26. 48–57.
Loubier, Christiane. 1993. L'*implantation du français* comme langue de travail au Québec: Vers un processus de changement linguistique planifié . In André Martin and Christiane Loubier (eds.), *L'implantation du français. Actualisation d'un changement planifié*, 57– 111. Office de la langue française, Québec.
Loubier, Christiane. 2008. *Langues au pouvoir: politique et symbolique*. Paris: L'Harmattan.
Maurais, Jacques. 1993. Terminology and language planning. In H. B. Sonneveld and K. Leunig (eds.), *Terminology. Applications in interdisciplinary communication*, 111–125. Amsterdam, Philadelphia: John Benjamins.
Messaoudi, Leïla. 2010. Langue spécialisée et technolecte. Quelles relations? *Meta* 55(1). 127–135.
Messaoudi, Leila (ed.) 2012. *Sur les technolectes*. Kénitra, Morocco: Publications du laboratoire Langage et société.
Mortureux, Marie-Françoise. 2000. Terme, (socio)terminologie et lexicologie. In
Valérie Delavigne and Myriam Bouveret (eds.), *Actes de la journée en hommage* à *Louis Guespin terminologue*, 27–39. Mont-Saint-Aignan: Publications de l'Université de Rouen.
Myking, Johan. 1989. Complex noun phrases as a Problem of Terminological Practice. In Christer Laurén, Marianne Nordman (eds.), *Special Languages: from humans thinking to thinking machines*, 265–274. Clevedon and Philadelphia: Multilingual Matters LTD.
Myking, Johan. 2000. Sosioterminolgi – ein modell for Norden? La socioterminologie: un modèle pour la Scandinavie. In Anita Nuopponen, Bertha Toft, Johan Myking (eds.), *I terminologins tjänst.* , 92–109. Vaasa: Vaasan Yliopisto.
Myking, Johan. 2001a. Wüster: den forste "socioterminologen" [Wüster, le premier "socioterminologue"]. In Johan Myking and Christer Laurén (eds.), *Fran terminologisk teori till vetenskaplig kommunikation*, 76–85. Vaasa: Vaasan Yliopisto.
Myking, Johan. 2001b. Against Prescriptivism. The 'Social-critical' challenge to Terminology. *Terminology Science and Research* 12(1–2). 49–64.
Ninyoles, Rafael Lluís. 1969. *Conflicte lingüístic valencià*. Valencia: Tres i Quatre.
Otman, Gabriel. 1993. Le talon d'Achille de l'*expertise* terminologique. *La banque des mots* (numéro spécial). 75–87.
Perret, Pierre (with Gabrielle Quemada). 2002. *Le Parler des métiers vocabulaire de 145 professions*. Paris: Laffont.
Quirion, Jean. 2003. *La mesure de l'implantation terminologique: proposition d'un protocole. Étude terminométrique du domaine des transports au Québec*. (Langues et sociétés 40). Montréal: Office québécois de la langue française.
Quirion, Jean and Jacynthe Lanthier. 2006. Intrinsic qualities favouring term implantation. In Lynne Bowker (ed.), *Lexicography, Terminology, and Translation. Text-based studies in honour of Ingrid Meyer*. Ottawa: University of Ottawa Press. 107–118.
Reboul Sandrine. 1995. Télématique et socioterminologie. *Meta* 40(2). 296–307.
Resche, Catherine. 2013. *Economic Terms and Beyond: Capitalising on the Wealth of Notions. How Researchers in Specialised Varieties of English Can Benefit from Focusing on Terms* (Linguistic Insights). Frankfurt am Main: Peter Lang.
Sæbøe, Randi. 1996. Norsk språk i møte med en anglo-amerikansk kultur. En sosiologisk analyse av språksituasjonen i norsk petroleumsvirksomhet [The Norwegian language in contact with Anglo-American culture. A sociological analysis of the linguistic situation of a Norwegen business]. In Christer Laurén and Marianne Nordman (eds.), *Trykt i Fackspråk i olika kontexter*. Vaasa: Proceedings of the University of Vaasa 13.
Stengers, Isabelle (ed.). 1987. *D'une science à l'autre. Des concepts nomades*. Paris: Éditions du Seuil.

Temmerman, Rita. 2000a. *Towards New Ways of Terminology Description. The sociocognitive approach*. Amsterdam and Philadelphia: John Benjamins.

Temmerman, Rita. 2000b. Une théorie réaliste de la terminologie: le sociocognitivisme. *Terminologies nouvelles* 21. 58–64.

Webber, Jude and Miquel *Strubell* i *Trueta. 1991. The Catalan Language: Process to Normalisation*. Glasgow: The Anglo-Catalan Society. http://www.anglo-catalan.org/downloads/acsop-monographs/issue07.pdf (last accessed 22 November 2017).

Wexler, Peter. 1955. *La formation du vocabulaire des chemins de fer en France (1778–1842)*. Geneva: Droz.

Thorsten Roelcke

25 Technical terminology

Abstract: Technical Terminology is a highly important aspect of language for specific purposes (LSP) which has been the subject of much intense discussion. After defining what technical terminology means in a narrow sense, the way both single terms and whole terminologies are made up is discussed with respect to the three main ways that LSP have been thought of, i.e. the system-linguistic inventory model, the pragma-linguistic context model, and the cognitive-linguistic function model. In doing so, these three modes of observation come to very different results with respect to terminological properties and strategies of terminologization.

1 Definition and concepts of technical terminology

Following Collins Cobuild "English Dictionary" (1995: 1714), *technical language* "involves using special words to describe the details of a specialized activity. *The technical term for sunburn is erythema* ...". In this sense technical terminology is not the vocabulary of technology alone but also of any given science or institution. We may thus define *technical terminology* as the vocabulary of LSPs – or in other words simply vocabulary used in specialized human activities.

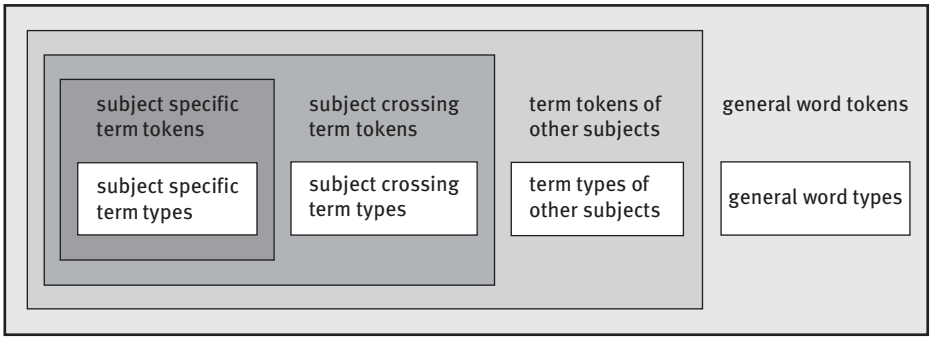


Figure 1: Classes of technical terminology on system and text level (Roelcke [3]2010, 56).

In texts used within specialized activities not all vocabulary is technical in a narrow sense (see Roelcke [3]2010: 55–58). Thus it is necessary to take into account at least four classes of words, each on system level (term types) as well on text level (term tokens); these four classes are (see Figure 1):

Thorsten Roelcke, Berlin (Germany)

https://doi.org/10.1515/9783110228014-025

- subject specific terminology (e.g. from biology: *genome*, *phytoplankton*, *mitochondria*);
- subject crossing terminology (e.g.: *structure*, *analysis*, *classification*);
- terminology of other subjects (e.g.: *species protection*, *global warming*, *environmental pollution*);
- general vocabulary (e.g.: *human*, *solution*, *target*).

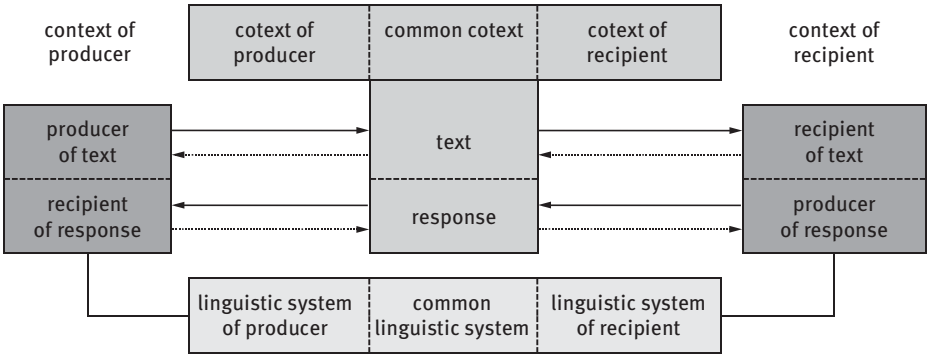


Figure 2: Model of (linguistic) communication within (specialized) human activity (Roelcke [3]2010, 13).

In modern linguistics, three models of LSP can be distinguished, which determine the way linguistic analysis is carried out with respect to technical terminology (for more information, see Baßler 2002; Fraas 1998; Kageura and L'Homme 2008; Mayer 2001; Oeser 1998; Roelcke [3]2010: 55–77; 2015; Sager, Dungworth, and McDonald 1980); in addition to these three linguistic models and approaches, there are also didactic models (especially since the 1980s – see, for example, Hutchinson and Waters 1987; Fluck 1992; [5]1996; and for a short overview, Kniffka and Roelcke 2016). The three models each focus on specific aspects of (linguistic and semiotic) communication within (specialized) human activity (see Figure 2) and were mainly produced over a particular period of time (for more details, see Roelcke [3]2010: 13–28):

- LSP as systems of signs (brightly highlighted) based on a system-linguistic inventory model (since the 1930s to the present);
- LSP as utterances in texts (highlighted) with reference to a pragma-linguistic context model (since the 1970s the present);
- LSP as instruments of thinking (darkly highlighted) on the basis of a cognitive-linguistic function model (since the 1990s the present).

The three concepts of LSP each require their specific concept of the constitution of terminological systems (see Figure 3). In the case of the system-linguistic inventory model, this concept may be characterized as homogeneous and static, in the case of the pragma-linguistic context model as heterogeneous and dynamic; finally in the

case of the cognitive-linguistic function model, we may speak of a functional and epistemic concept of the constitution of terminological systems.

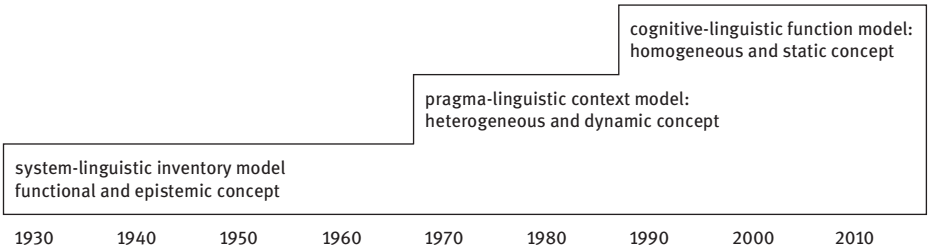


Figure 3: Models of languages for specific purposes and their concepts for the constitution of terminological systems.

In the following the different concepts are discussed and compared to each other; the main question here will be how the constitution of terms and terminology ensures (more or less) optimal communication within specialized human activity.

2 The system-linguistic inventory model

Modern research into terminology goes back to Eugen Wüster whose standard work "Internationale Sprachnormung in der Technik" ([1931] [3]1970) describes and discusses both national and international terminology work (see Antia 2000; Arntz, Picht, and Schmitz [7]2014; Drewer and Schmitz 2013; Felber 1984; Felber and Budin 1989; Wright and Budin [1997] 2001) and standardization of terms (see, for example, DIN 2330, ISO 707). The perspective ofearly and present terminology work is primarily system-linguistic: this applies both to the concept of individual terms and to the concept of whole of terminological systems.

2.1 Technical terms

For the semantics of technical terminology, three properties are postulated, which are guaranteed by an adequate definition of terms: exactness, uniqueness, and authenticity (see Arntz, Picht, and Schmitz; [7]2014; Roelcke [3]2010: 55–77).

– The *exactness* of a technical term consists in its unmistakable assignment with regard to the designated objects and facts. In the sense of the rhetorical distinction between clear (lat.: *clare*) and distinct (lat.: *distincte*), this referential comprehensibility emerges either from a direct sense-reference (for example in the case of the words *sweet*, *red* or *cold*) or from an explicit description of meaning with other words (like in Bloomfield's famous definition of *word* as 'minimal free form').

- The *uniqueness* of terms in the context of a system-linguistic inventory concept is given by an unmistakable assignment with regard to other meanings and expressions. This semantic comprehensibility consists both in monosemy (absence of polysemy) and in heteronymy (absence of synonymy) of the words concerned. With regard to this bi-directionality of the unambiguous relationship between expression and meaning, we terminologically also refer to the expression *bi-uniqueness* from modern logic.
- The semantic *authenticity* of terms is based on a motivated assignment of meanings and their expressions themselves. Within the framework of a system-linguistic inventory concept, transposed meanings like metaphors or metonymies or improper meanings are regarded as problematic, since the motivation of the corresponding meaning is not sufficiently clarified by the expression or word formation (so-called metaphor taboo of Weinrich 1989; Kretzenbacher 1994). Thus, this type of comprehensibility is characterized as motivated.

With this concept of exactness as a referential, uniqueness as a semantic and authenticity as a motivated comprehensibility, a static concept of the quality properties of individual terms is postulated (Roelcke 1991) by the system-linguistic oriented terminology research: this means that exactness is being understood with relation to a defined referent, uniqueness with relation to a certain meaning, and authenticity with relation to a fitting expression. The unambiguousness of terms within texts is brought about on the system level, so that producers and recipients themselves should do not have any communication problems during the technical communication.

The essential method for establishing or guaranteeing this referential, semantic, and motivated comprehensibility is through so-called terminologization, a semantic transformation of individual words into terms. Gerzymisch-Arbogast (1996: 184) describes terminologization as a technical constriction of a general meaning (see Figure 4):

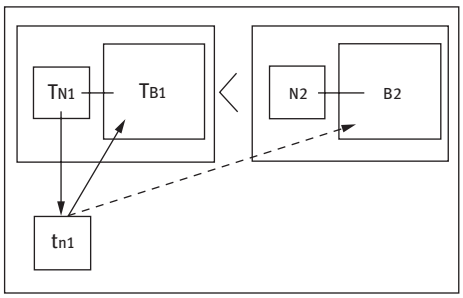


Figure 4: Terminologization of single words (Gerzymisch-Arbogast 1996: 184); T_{N1} = expression of term (system level), T_{B1} = meaning of term (system level), $_{B2}$, $_{N2}$ = expression of general language, t_{n1} = term-token, expression (individual level), ↓ = 'ideal' representation, ↗ = contaminated representation (= terminologization), < = conceptual narrowing.

Terminologization through convention is found, for example, in agriculture and animal husbandry, or in various handicrafts, and through definition often in science, technology, or administration. The methodology of defining (see also Robinson 1954, *Stanford Encyclopedia of Philosophy* 2015) has a long tradition that goes back at least to ancient times. The classic, so called Aristotelian definition is structured in three parts (see Figure 5): the definiendum (the term which is to be defined), the definiens (the defining phrase), and the definitor (the link between definiendum and defieniens); the definiens is again subdivided into genus proximum (specification of genus) and differentia specifica (indication of distinguishing characteristics).

<table>
<tr><th>A word</th><th>is</th><th>a minimal free</th><th>(linguistic) form.</th></tr>
<tr><td rowspan="2">definiendum</td><td rowspan="2">definitor</td><td>differentia specifica</td><td>genus proximum</td></tr>
<tr><td colspan="2">definiens</td></tr>
</table>

Figure 5: Structure and example of an Aristotelian definition.

Beside the Aristotelian definition many other types of definitions with respect of the design of definiens are known – as definitions with synonyms resp. (translatory) equivalents (e.g. *phonologie* in French is *phonemics* in English), genetic resp. operative definitions (phonemes are determined via minimal pairing and commutation testing), or definitions with explanations or associations (*phonemics* has to do with linguistics, minimal pairing etc.). The distinction between real definitions and nominal definitions depends on choosing the definitor: Within real definitions the definitor refers to existing objects and facts (e.g. words are minimal free forms), within nominal ones it standardizes the use of words (minimal free forms are called words). These distinctions are important not only for the terminologization of single words but also for the terminologization of whole vocabularies.

2.2 Technical terminologies

System-linguistic concepts do not refer solely to individual terms, but also to entire terminologies, which are composed of semantically interconnected terms. These system-linguistic concepts are static and are aligned with the inventory and the structure of terminologies. Examples of such terminological systems can be found in many disciplines (and can be depicted in analogy to each other graphically) – in German for example, in the word and form-related language didactic of the seventeenth century by Christian Gueintz (see Figure 6), in the epistemological theory of the late eighteenth century of Immanuel Kant (see Figure 7), in the relevant section of the German Civil Code (see Figure 8) or in the terminological standard of the German Institute for

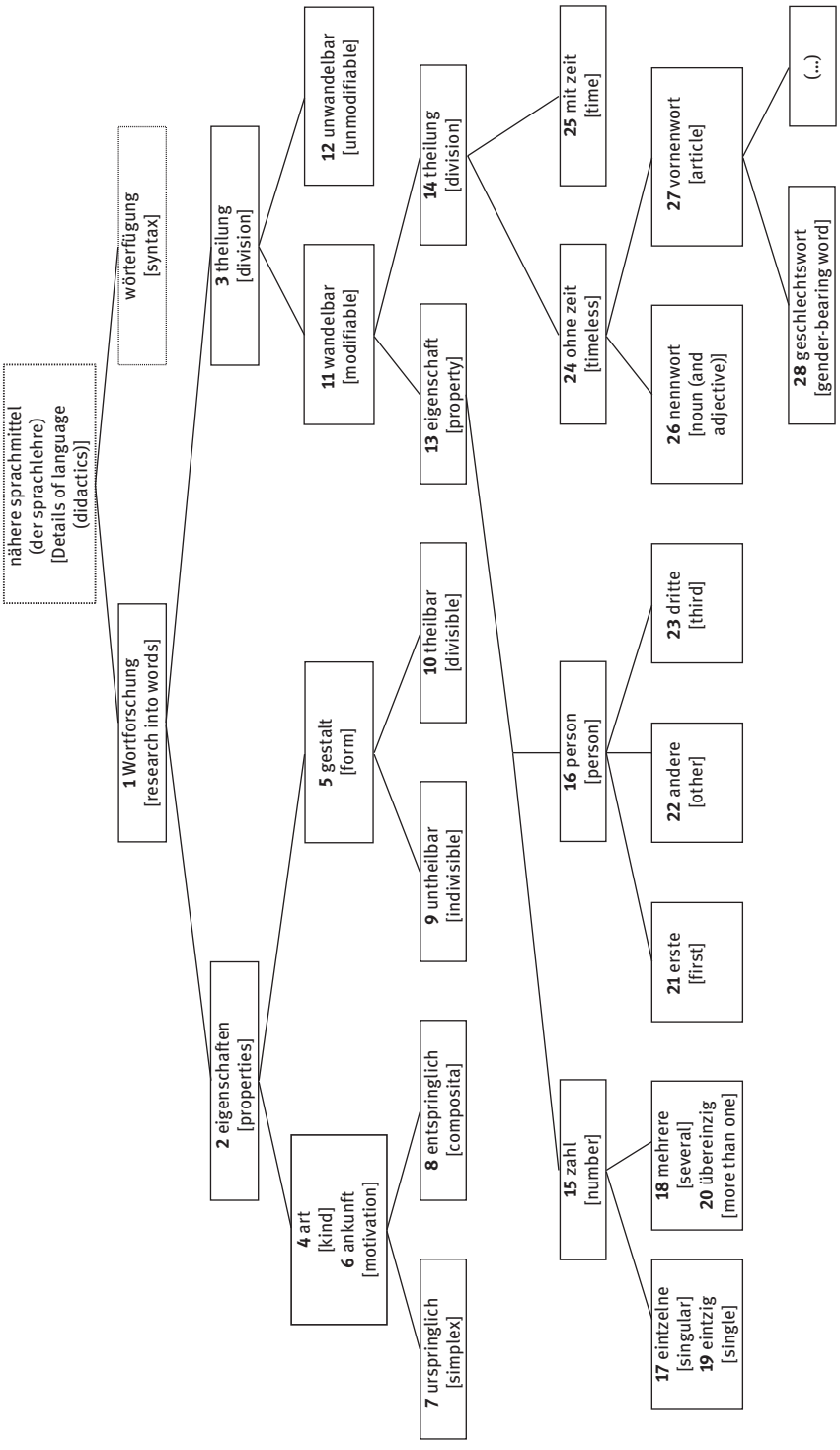


Figure 6: Linearization of the terminological system according to Gueintz 1641: 24–27 (see Roelcke 2016: 51).

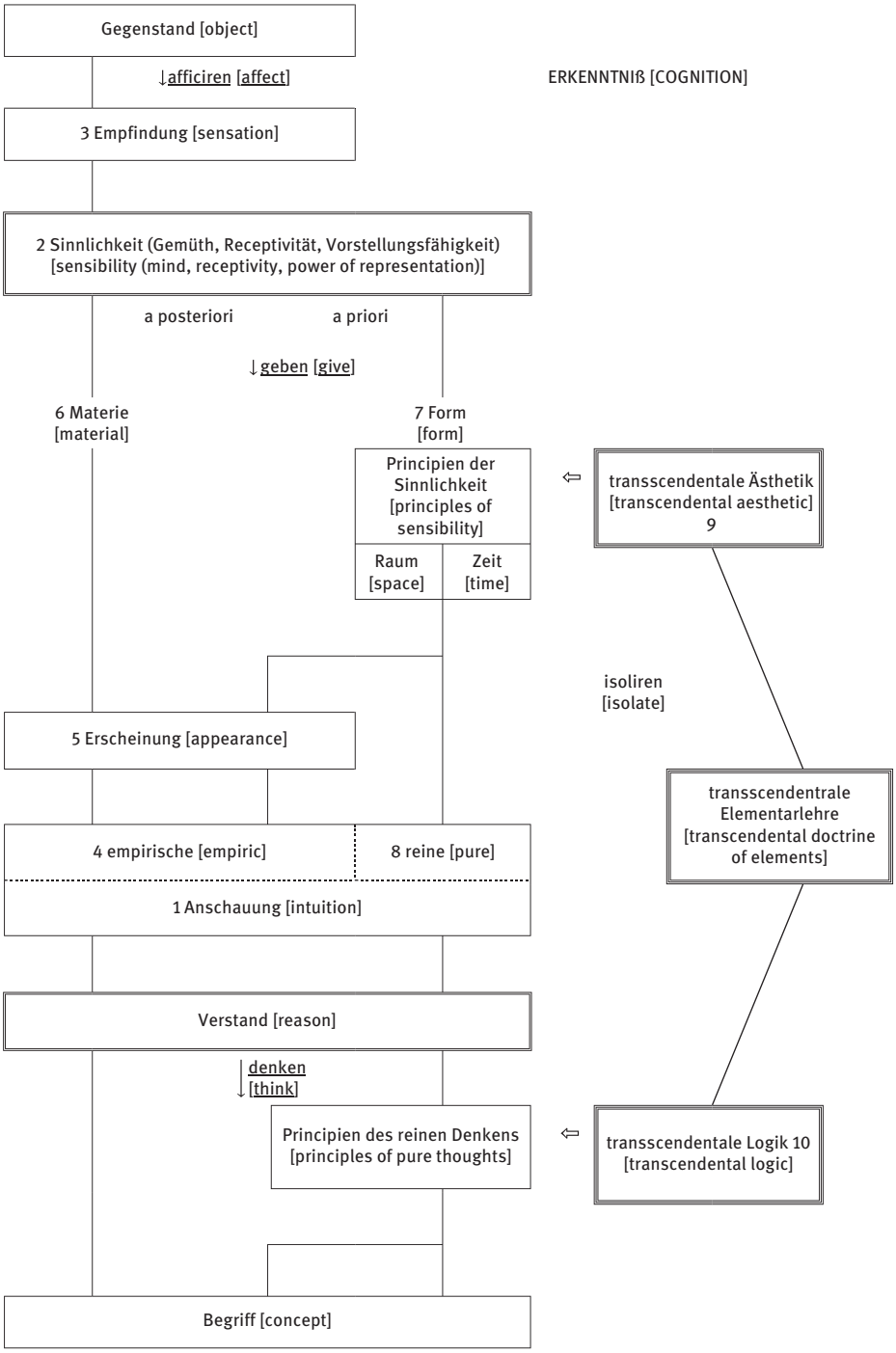


Figure 7: Linearization of the terminological system according to Kant ²1787: 24–27 (see Roelcke 2013a: 31).

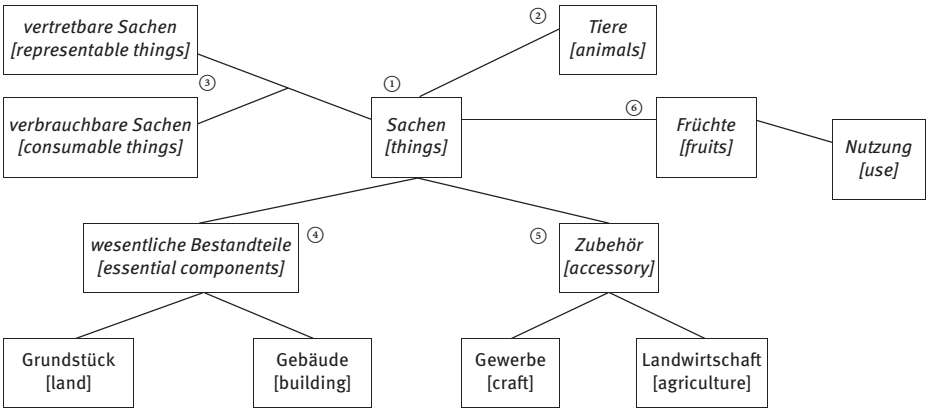


Figure 8: Linearization of the terminological system in §§ 90–103 BGB (see Roelcke 2013b: 154).

Standardization, or DIN (see Figure 9). These four terminological systems have (more or less) different structures (see also Roelcke 2014a).

- The system developed by Gueintz (1641: 24–27) is hierarchically structured, and as a rule it differentiates from the abstract to the concrete in binary steps (Figure 6; cf. Roelcke 2016: 50): Thus, for example, *Wortforschung* (*research into words*) is divided into research about *eigenschaften* (properties) and research about *theilung* (division). It is remarkable that here the hierarchy is expressed not only with substantives but also with adjectives, whereby the adjectival distinctions can form hyponymic multi-word terms with the hyperonymic being one-word terms – e.g. *untheilbare Gestalt* (indivisible form) vs. *theilbare Gestalt* (divisible form).
- The same applies to the terminological system from the second section of DIN standard 2330 (Figure 9, cf. Roelcke 2013a: 20; cf. ISO 1087-1 2000): Here we find below the term übergeordneter Begriff (superordinate concept) the terms *Oberbegriff* (generic concept) and *Verbandsbegriff* (comprehensive concept) and below *untergeordneter Begriff* (subordinate concept) the terms *Unterbegriff* (specific concept) and *Teilbegriff* (partitive concept). Because the terms *Oberbegriff* and *Unterbegriff* refer to the abstract/concrete relation, and the terms *Verbandsbegriff* and *Teilbegriff* refer to the part/whole relation, the terminological system is not two-dimensional but three-dimensional.
- The terminological system according to German Civil Code differs from a hierarchical structure (Figure 8; cf. Roelcke 2013b: 152) by appearing organized around a central term: in the center stands the term *Sachen* (things), around which appear the terms *vertretbare Sachen* (representable things), *verbrauchbare Sachen* (consumable things), *wesentliche Bestandteile* (essential components) etc.; the term *Früchte* (fruits) is semantically only loosely attached to this union, which partly also includes hierarchical relations as *Sachen* as well as *vertretbare Sachen* and *verbrauchbare Sachen*.

– Finally, the section from the terminological system in Kant's Critique of Pure Reason shows a complex structure (Figure 7; cf. Roelcke 2013a: 28): it includes terms for various epistemological faculties, e.g. *Sinnlichkeit* (sensuality) and *Verstand* (understanding), terms for epistemological principles, e.g. *Raum* (space) and *Zeit* (time), or *Prinzipien des reinen Denkens* (principles of pure thinking), terms for knowledge itself. e.g. *Anschauung* (perception) or *Begriff* (concept) as well as terms for epistemological disciplines, e.g. *transscendentale Ästhetik* (transcendental aesthetics) and *transscendentale Logik* (transcendental logic). This system describes in particular an (epistemological) process, the genesis of knowledge by means of perceptions and concepts.

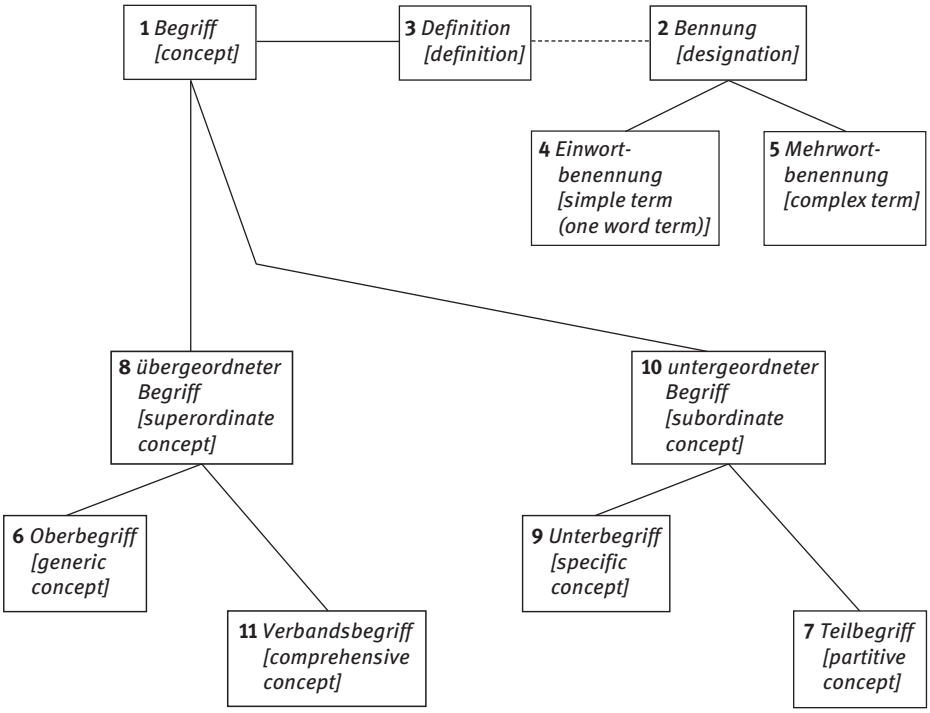


Figure 9: Linearization of the terminological system in Section 2 of DIN 2330 (see Roelcke 2013a: 23).

3 The pragma-linguistic context model

However, such a static, system-linguistic way of looking at the constitution of single terms turns out to be inadequate. Empirical studies, especially concerning the German language (that is the reason why in this contribution only examples in German are cited), show that terms are usually not exact, unique, or authentic, but are often used

vaguely, ambiguously, and metaphorically (see Roelcke 1991; [3]2010: 68–76). Moreover, a structural analysis of whole terminologies is not sufficient in view of their communicative anchoring within specialist texts.

Bearing this in mind, an approach to technical terminology is needed which does not (only) take into account the definition of single terms and the structure of whole terminological system, but (also) the design of technical texts from a pragmatic perspective (approaches are presented in particular by Baumann and Kalverkämper 2004; Kalverkämper 2016). This means that the linear structure of linguistic texts – including the context created by them – plays a decisive role.

3.1 Technical terms

Examples of vagueness, ambiguity, and metaphoric of technical vocabulary occur frequently and are easy to find. In particular, interdisciplinary terms such as *analysis* or *system* are examples for terminological vagueness, *freedom* or *democracy* (in politics and political science) such ones for ambiguity as well as *root* (not just biology but also mathematics, linguistics or dentistry) or *stroke* (in everyday language and in electrical engineering) for technical language metaphors.

In a pragma-linguistic concept *vagueness*, *ambiguity*, and *metaphors* are not taken as properties of terms which imply their misunderstanding: Within the linguistic context of specialist texts, communicative indicators contribute to the resolution of vagueness, ambiguity and transference and thus to their intelligibility. In view of this dependency on the context, terms are characterized by a relative exactness and a relative uniqueness as well as a relative authenticity from the point of view of a pragma-linguistic context model. Vagueness, ambiguity, and transference thus turn out to be a (controllable) principle and no a (misleading) exception to general terminological properties (see also Roelcke 1995; 2004), so that a distinction between technical and general language, as had been attempted repeatedly in the 1970s (see, for example, Mentrup 1979), hardly seems to make any sense.

3.2 Technical terminologies

A further aspect of the pragma-linguistic approach is the constitution of terminologies: Terminologization in a broader sense is not limited by the definition of single terms (see above, Figure 4), but involves the introduction of complex terminological systems in linguistic texts which are structured linearly (see Figure 10): In specialist texts, terms appear in a (one-dimensional) series of word tokens (W_t), whereas they appear in (two-dimensional or multi-dimensional) language systems as types (W_T) (the contribution of Illustrations in the context of terminologization for example is discussed in Roelcke 2012; 2013c). Against this background, the question arises as

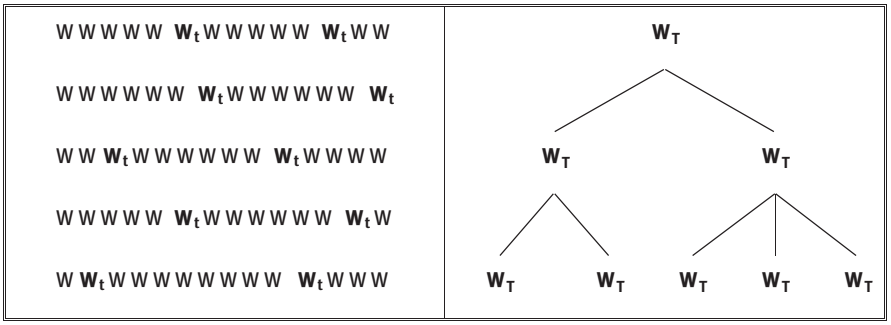


Figure 10: Termini in a linear technical text and in a hierarchical terminological structure (Roelcke 2013a: 2); W = word (type or token), W_t = term token, W_T = term type.

to how term types of technical-language systems are constituted as term token in technical-language texts.

The linguistic analysis of terminologization can cover a whole series of qualitatively different phenomena – in particular the order of the introduction of single terms in the text (linearization), the use of different types of definitions, or the implicit and explicit networking of terms. From a quantitative viewpoint, the number of terms in relation to the total number of words in the text (terminological density) and the number of definitions relative to the total number of sentences (definition density) are also of interest.

The four terminological systems described above (see Figures 6–9) each show their own linearization (see the numbers in the structure representations, respectively, which show the order in which the termini are inserted in the corresponding text).

- In Gueintz (see Figure 6), terms with abstract meaning are introduced before those with concrete meaning (from top to down), whereby the branches of the system are each completed individually (from left to right) – thus *eigenschaften* (properties) and *theilung* (division) come after *Wortforschung* (word research).
- In contrast to Gueintz' structural linearization, Kant's is contentual as follows (see Figure 7): firstly, terms are introduced which describe different types – e.g. *Anschauung* (perception), *Sinnlichkeit* (sensibility) or *Empfindung* (sensation) – and then those which contain various components of human knowledge – such as *Materie* (matter) and *Form* (shape); finally, terms are used which refer to disciplines of transcendental philosophy – *transscendentale Ästhetik* (transcendental aesthetics) or *transscendentale Logik* (transcendental logic).
- The linearization in the German Civil Code (see Figure 8) again is carried out structure-related: firstly, the center of the star-shaped system is introduced – *Sachen* (things), followed by the peripheral areas – *Tiere* (animals), *vertretbare Sachen* (justifiable things), *verbrauchbare Sachen* (consumable things), etc.
- Finally, in the terminological principle of DIN standard 2330 (see Figure 9) the terms seem to be introduced at first sight from the abstract to the concrete; but

actually these appear in alphabetical order in the text: from *Begriff* (concept) and *Benennung* (expression) to *untergeordneter Begriff* (lower concept) and *Verbandsbegriff* (concept of a union).

Another important aspect of the construction of terminological systems in LSPs is the distribution of individual definitions.

- In the case of Gueintz (cf. Roelcke 2016: 54), it can be stated that terms are introduced in Aristotelian definitions on almost all levels of the terminological system. Only terms on the lowest level of the terminological hierarchy are defined by explanations or examples.
- Although Kant's terminological system (Roelcke 2013a: 30–33) is not hierarchical, Aristotelian definitions are used almost exclusively. The distribution of real and nominal definitions is remarkable: real definitions are used exclusively to determine terms which were common in Kant's time; nominal definitions are found in such terms as may be regarded as specific to Kant's transcendental philosophy.
- In the German Civil Code (Roelcke 2013b: 154) too, the Aristotelian definition type appears exclusively. Here, however, the number of so-called legal definitions is of interest: just under half of the definitions are expressly "in the sense of the law", while the others also contain quite right law-specific definitions, even if these are not legal *expressis verbis*.
- In the DIN standard 2330 (Roelcke 2013a: 23) there are analogous findings. Here again Aristotelian definitions prevail; operational components are only to be found in the *differentia specifica*, the lowest level of the differentia is unspecified.

In view of the fact that in all four texts, Aristotelian definitions prevail, the explicit terminological networking has to be seen as comparatively strong.

In addition to the phenomena of the linearization of terminological systems and the distribution of individual types of definitions, terminological density and definition density are also of interest regarding the constitution of terminological systems (see Roelcke 2013a: 205–207, 211–213). Here, a direct comparison of the text parts from Kant and DIN reveals remarkable findings:

- The relative frequency of terms in the DIN text is 12%, whereas that in the Kant text is only 9%; thus the terminological density (the number of terms in relation to the total number of words in the text) in the DIN text is higher than in the Kant text.
- Furthermore, 44% of the sentences in DIN are definitions, whereas in the case of Kant only 38% are used in this way; in view of this finding, the definition density (the number of definitions relative to the total number of sentences) in the DIN text is higher than in the Kant text.
- Finally, the average number of terms in the definitions from DIN is 2, while that for Kant is 2.8 (the later also shows a higher variance); so the definitions of Kant as opposed to DIN show a higher terminological complexity.

In comparison, Kant's text shows a relatively low and DIN a relatively high terminological as well as definition density – with exception of the average number of termini in definitions, which in case of Kant exceeds DIN.

4 The cognitive-linguistic function model

As seen there is a gap between postulated and actual properties of single terms, furthermore a pure systematic view on terminological systems is not sufficient and has to be completed by a pragmatic analysis of their terminologization. Like a dialectic three-step from the thesis of a system-linguistic inventory model via the antithesis of a pragma-linguistic context model we finally need to make a synthesis based on a cognitive-linguistic function model.

4.1 Technical terms

While the construction of terminological systems from a system- or pragma-linguistic perspective is associated with the postulate of various qualities or the analysis of the actual properties of individual terms and whole terminologies, cognitive linguistics essentially deals with the problem of interpreting them. In this context, specialized human activities as well as various text functions which can be deduced from them, are the focus of interest (see also Roelcke 2001).

- The vagueness or relative exactness of terms is not (only) given by definitions and can be controlled by means of contextual indicators, but is a specific linguistic strategy by which communication within specialized areas of activity can be carried out in a special, namely optimal way. The relativity of the terminological exactness consists in an adequate determination of the meaning, which for the purpose on the one hand is necessary and on the other hand sufficient to keep the communicative effort efficient – measured by a specific communicative goal (see Roelcke 2002). On the one hand, too little precision would be ineffective, too high a precision on the other hand effective, but not efficient.
- The same can be said for the ambiguity and relative uniqueness of terms. The polysemy and synonymy of terms also fulfill important functions within the communication of specialized human activities. On the one hand, polysemy (or homonymy) leads to an expansion of the subject-specific vocabulary, and therefore allows specialization (further methods of expansion of the lexical inventory are word formation and borrowing), on the other hand, synonymy enables a differentiation of specialized meanings by means of which specific semantic aspects can be highlighted. Here again, the communicative effort and the communicative result have to be in an optimal relationship with each other.

– Efficiency of communication also applies to lexical metaphors, which are not to be regarded as misleading, but as conducive to technical communication. Lexical metaphors also serve the terminological expansion of the inventory in technical areas and secure the connection to existing lexical units by means of a semantic relationship. Thus, lexical metaphors within LSPs prove not only to be unmistakable, but also a support for a technical communication: new (specialized) meanings are derived from already existing (general or specialized) meanings.

The terminological quality or actual characteristics of terms, such as vagueness, ambiguity and metaphoric in the sense of relative exactness, uniqueness and authenticity, thus appear to be not only possible from the perspective of linguistic pragmatics, but also from the point of view of cognitive linguistics necessary, if human areas of specialized activity continue to develop on the basis of existing knowledge and language.

4.2 Technical terminologies

A comparable explanation against the background of cognitive requirements of technical communication is also possible with regard to the various phenomena of terminologization of whole terminologies.

– According to Roelcke (2014b), the didactic text of Gueintz can be characterized as confirming and regulating, since it summarizes the existing knowledge of the times with only little normative liability. This is reflected not only in a strictly hierarchical system of the terminology, but also in its structural linearization from the top downwards and in the comprehensive use of Aristotelian definitions supplemented by some explanations on the lowest level. Such a systematic and deductive approach supports a clear externalization and internalization of knowledge.
– In contrast to that of Gueintz, the philosophical text of Kant is not to be characterized as a confirming, but rather as updating and regulating, since he did not describe didactic knowledge, but develops new scientific knowledge. The complex terminological system is linearized not according to the structure of the terminological system, but according to the content of the philosophical text; with respect to general philosophy the Aristotelian definitions here appear as real definitions, with respect to Kant's transcendental philosophy as nominal definitions. In this way, the terminological system is constructed along the author's line of argumentation which gradually externalizes new insights with reference to existing knowledge. This rather discursive system corresponds to a relatively low density of terms and definitions (compared to the DIN standard).
– The German Civil Code is to be understood as a confirming and sanctioning text that summarizes existing legal norms with high binding force and makes them available for jurisprudence. The centered or star-shaped terminological system is therefore systematically linearized and made accessible (under this aspect,

comparable with the one of Gueintz), whereby some of the Aristotelian definitions appear as legal definitions and thus are marked expressis verbis as juridical.
– The actualizing and sanctioning function of the DIN text, unlike that of the German Civil Code, has a lower binding force, as it publishes new and specially developed standards and compiles them into an overview. In order to enable a rapid and selective internalization of knowledge in this context, its terminological system is hierarchically structured and its linearization is performed alphabetically using Aristotelian definitions. According to the normative approach and relative to the text of Kant the density of terms and definitions is high.

Obviously the different functions of the texts determines different types of terminological systems as well as specific methods of terminologization – the more a text has a didactic or a referential function the more systematic is its terminologization, whereas the more it has an argumentative or an epistemic function, the more the terminologization relates to content.

5 Conclusion

In this chapter the constitution of terminological systems in LSPs is shown on the one hand with respect to individual terms and on the other hand to whole terminologies. They can be interpreted scientifically in terms of a system-linguistic inventory model, a pragma-linguistic context model or a cognition-linguistic function model. In doing so, these three modes of observation come to very different results with respect to terminological properties and strategies of terminologization.

The use of terms, normed by definition or convention, serves to render the communication in specialized human spheres of activity ideally unequivocally (see Table 1). With regard to reality (objects and facts), we have to speak of a referential comprehensibility, with respect to meaning and expression of a semantic and a motivated comprehensibility. From a system-linguistic perspective, this is reflected in a postulate of the exactness, the uniqueness, and the authenticity of terms which

Table 1: Terminological properties at a glance.

aspect of semiotics (language)	type of comprehensibility	system-linguistic inventory model	pragma-linguistic context model	cognitiv-linguistic function model
reality	referential	exact	vague	adequacy
meaning	semantic	unique	ambiguous	differentiation
expression	motivated	authentic	metaphoric	equivalence
definition (or convention)		→ postulate	→ analysis	→ interpretation

are intended to ensure their comprehensibility before they are used in specialist texts. However, the linguistic analysis within the framework of a pragma-linguistic model shows that terms are in fact often characterized by vagueness, ambiguity, and metaphors, which can be controlled by contextual indicators and thus must not be regarded as misleading. Finally, a cognitive-linguistic approach makes it possible to explain these properties in a functional way by interpreting relative exactness as referential adequacy, relative ambiguity as semantic differentiation and metaphors as motivated equivalence.

As shown with respect to four examples given, in addition to the characteristics of individual terms, complete terminologies can also be discussed in the framework of the three concepts (see Table 2). Thus, a system-linguistic view leads to the conclusion that the terminology is structured hierarchically according to Gueintz' historical grammar and in DIN standard 2330, whereas Kant's philosophical terminology seems complex and that juridical terminology of the German civil code is centered. From a pragma-linguistic perspective the linearizations of the systems of Gueintz and the German civil code prove to be structural, those of Kant and in DIN as contentual and alphabetical respectively. In all four texts, Aristotelian definitions prevail, with a use of nominal and real definitions in Kant's text and a use of legal definitions in the civil code.

From a cognitive linguistics perspective, these systematic and pragmatic findings are reflected in the fundamental functions of the texts: The hierarchical structure and the structural linearization serve the confirming and regulating basic function of the didactic text of Gueintz as well as the complex system and the contentual linearization (including the distinction between nominal and real definitions) serve the updating and regulating character of the discursive text of Kant (which also shows a correspondingly low density of terms and definitions). The two sanctioning texts offer the following picture: While the predominantly confirming text of the German Civil Code structurally linearizes the centered terminological system and uses explicit legal definitions, the predominantly actualizing text of the DIN standard shows an alphabetical linearization of the hierarchical system (and a comparatively high density of terms and definitions).

Table 2: Constitution of terminologies at a glance.

	System	linearization	definitions	density	function of text
Gueintz (1641)	hierarchical	structural	Aristotelian	–	confirming & regulating
Kant (^{2}1787)	complex	contentual	Aristotelian, nominal & real	low	updating & regulating
BGB (2002/11)	centered	structural	Aristotelian, legal	–	confirming & sanctioning
DIN (1993)	hierarchical	alphabetical	Aristotelian	high	actualizing & sanctioning

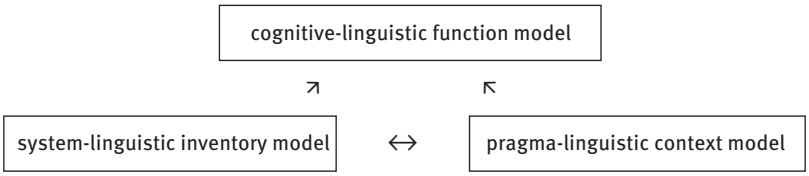


Figure 11: Conceptual and historical dialectic of linguistic models of languages for specific purposes.

In view of these postulates, analyses and interpretations, it is quite clear that the three different linguistic concepts have their own perspectives on the constitution of terminological systems in LSPs. On the other hand, a cognitive interpretation helps to explain pragmatic findings which tend to oppose systematic postulates. Thus the system-linguistic inventory model, the pragmalinguistic context model, and the cognitive-linguistic function model follow a dialectic development, conceptually as well as historically, from a thesis via an antithesis to a synthesis (see Figure 11). The cognitive and functional perspective should therefore determine the further discussion about terms and terminology with regard to modern terminology work, which up to now has largely been elaborated as a system-linguistic inventory model. The same is required for an applied linguistic science be understood as a discipline for the solution of communicative problems (see Knapp and Antos 2011).

6 Sources

Bürgerliches Gesetzbuch in der Fassung der Bekanntmachung vom 2. Januar 2002 (BGBl. I S. 42, 2909; 2003 I S. 738), das zuletzt durch Artikel 1 des Gesetzes vom 27. Juli 2011 (BGBl. I S. 1600) geändert worden ist.

Gueintz, Christian. 1641. *Deutscher Sprachlehre Entwurf*. Köthen [Nachdruck 1978 (Documenta Linguistica) Hildesheim, New York: Olms].

Kant, Immanuel. [1787] 1968. *Kritik der reinen Vernunft. 2. Auflage* (Kants Werke. Akademie-Textausgabe. Band III). Berlin: de Gruyter: 49f.

DIN 2330. 1993. *Begriffe und Benennungen; Allgemeine Grundsätze*. Berlin, Wien, Zürich: Beuth.

References

Antia, Bassey. 2000. *Terminology and Lnguage Planning. An Alternative Framework for Praxtice and Discourse*. Amsterdam/Phil.: Benjamins.

Arntz, Reiner, Heribert Picht and Klaus-Dirk Schmitz. [7]2014. *Einführung in die Terminologiearbeit*. 7., vollständig überarbeitete und aktualisierte Aufl. (Studien zu Sprache und Technik. Band 2). Hildesheim/Zürich/New York: Olms.

Baßler, Harald. 2002. *Definierte Wörter. Fachsprachliche Terminologie*. In Jürgen Dittmann & Claudia Schmitt (eds.), Über Wörter – Grundkurs Linguistik, 211–231. (Rombach Grundkurs 5). Freiburg: Rombach.

Baumann, Klaus-Dieter and Hartwig Kalverkämper (eds.). 2004. *Pluralität in der Fachsprachenforschung* (Forum für Fachsprachen-Forschung 67). Tübingen: Narr.

Collins Cobuild English Dictionary. 1995. Birmingham: HarperCollins.

DIN 2330. 2013. *Begriffe und Benennungen; Allgemeine Grundsätze*. Berlin/Wien/Zürich: Beuth.

Drewer, Petra and Klaus-Dirk Schmitz. 2013. Terminology management in Technical Communication – Principles, Methods, Training. In Gesellschaft für Technische Kommunikation – tekom e.V. (ed.), *Proceedings of the European Colloquium on Technical Communication 2012*, 50–61. Stuttgart: tcworld.

Felber, Helmut. 1984. *Terminology Manual*. Paris: UNESCO, Infoterm.

Felber, Helmut and Gerhard Budin. 1989. *Terminologie in Theorie und Praxis* (Forum für Fachsprachen-Forschung 9). Tübingen: Narr.

Fluck, Hans-Rüdiger. 1992. *Didaktik der Fachsprachen. Aufgaben und Arbeitsfelder, Konzepte und Perspektiven im Sprachbereich Deutsch* (Forum für Fachsprachen-Forschung 16). Tübingen: Narr.

Fluck, Hans-Rüdiger. 1996. *Fachsprachen. Einführung und Bibliographie* (Uni-Taschenbücher 483). 5., überarbeitete und erweiterte Auflage. Tübingen/Basel: Francke.

Fraas, Claudia. 1998. Lexikalisch-semantische Eigenschaften von Fachsprachen. In Lothar Hoffmann, Hartwig Kalverkämper and Herbert Ernst Wiegand (eds.), *Fachsprachen / Languages for Special Purposes. Ein internationales Handbuch zur Fachsprachenforschung und Terminologiewissenschaft / An International Handbook of Special-Language and Terminology Research,* Vol. 1., 428–438. (Handbücher zur Sprach- und Kommunikationswissenschaft 14). Berlin/New York: de Gruyter.

Gerzymisch-Arbogast, Heidrun. 1996. *Termini im Kontext. Verfahren zur Erschließung und Übersetzung der textspezifischen Bedeutung von fachlichen Ausdrücken* (Forum für Fachsprachen-Forschung 31). Tübingen: Narr.

Hutchinson, Tom and Alan Waters. 1987. *English for Specific Purposes. A learning-centred approach* (Cambridge Language Teaching Library). Cambridge: University Press.

ISO 704. 2009. *Terminology Work – Principles and Methods*. Geneva: International Organization for Standardization.

Kageura, Kyo and Marie-Claude L'Homme. 2008. Reflecting fifteen years of research and development in terminology. *Terminology* 14. 153–157.

Kalverkämper, Hartwig. 2016. *Fachkommunikation im Fokus – Paradigmen, Positionen, Perspektiven. Klaus-Dieter Baumann zum 60. Geburtstag gewidmet* (Forum für Fachsprachen-Forschung 100). Berlin: Frank & Timme.

Knapp, Karlfried and Gerd Antos. 2011. Introduction to the handbook series. Linguistics for problem solving. In Christopher N. Candlin & Srikant Sarangi (eds.), *Handbook of Communication in Organisations and Professions* (Handbooks of Applied Linguistics, Vol. 3). v–xv. Berlin/Boston: Mouton de Gruyter.

Kniffka, Gabriele and Thorsten Roelcke. 2016. *Fachsprachenvermittlung im Unterricht*. Paderborn: Schöningh.

Kretzenbacher, Heinz-Leonhard. 1994. 'Just Give Us the Facts!' The Connection between the Narrative Taboo, the Ego Taboo and the Metaphor Taboo in Scientific Style. *Lingua e Stile* 29. 115–130.

Mayer, Felix (ed.). 2001. *Language for Special Purposes: Perspectives for the New Millennium*. Vol. 1: *Linguistics and Cognitive Aspects, Knowledge Representation and Computational Linguistics, Terminology, Lexicography and Didactics*. Vol. 2: *LSP in Academic Discourse and the Fields of Law, Business and Medicine*. Tübingen: Narr.

Mentrup, Wolfgang (ed.). 1979. *Fachsprachen und Gemeinsprache. Jahrbuch 1978 des Instituts für deutsche Sprache* (Sprache der Gegenwart 46). Düsseldorf: Schwann.

Oeser, Erhard and Heribert Picht. 1998. Terminologieforschung in Europa: Ein historischer Überblick. In Hoffmann, Kalverkämper and Wiegand 1998: 341–347.
Robinson, Richard. *1954. Definition.* Oxford: Clarendon.
Roelcke, Thorsten. 1991. Das Eineindeutigkeitspostulat der lexikalischen Fachsprachensemantik. *Zeitschrift für germanistische Linguistik* 19. 194–208.
Roelcke, Thorsten. 1995. Fachwortkonzeption und Fachwortgebrauch. Hintergründe einer Diskrepanz zwischen Sprachwissenschaft und Sprachwirklichkeit. *Zeitschrift für deutsche Philologie* 114. 394–409.
Roelcke, Thorsten. 2001. Was bringt die Kognitive Semantik dem fachlexikalischen Wissenstransfer? In Sigurd Wichter and Gerd Antos in cooperation with Daniela Schütte and Oliver Stenschke (eds.), *Wissenstransfer zwischen Experten und Laien. Umrisse einer Transferwissenschaft,* 51–63. (Transferwissenschaften 1). Frankfurt/M.: Lang.
Roelcke, Thorsten. 2002. *Kommunikative Effizienz. Eine Modellskizze* (Sprache – Literatur und Geschichte 23). Heidelberg: Winter.
Roelcke, Thorsten. 2004. Stabilität statt Flexibilität? Kritische Anmerkungen zu den semantischen Grundlagen der modernen Terminologielehre. In Inge Pohl and Klaus-Peter Konerding (eds.), *Stabilität und Flexibilität in der Semantik. Strukturelle, kognitive, pragmatische und historische Perspektiven,* 137–150. (Sprache – System und Tätigkeit 52). Frankfurt/M.: Lang.
Roelcke, Thorsten. 2010. *Fachsprachen*. 3., neu bearb. Aufl. (Grundlagen der Germanistik 37). Berlin: Schmidt.
Roelcke, Thorsten. 2012. Der Beitrag von Text und Bild zur Konstituierung von Fachwortschatz. Eine exemplarische Studie zur terminologischen Grundsatznorm DIN 2330. In Ingelore Oomen-Welke and Michael Staiger(eds.), *Bilder in Medien, Kunst, Literatur, Sprache, Didaktik. Festschrift für Adalbert Wichert*, 231–247, Freiburg: Fillibach.
Roelcke, Thorsten. 2013a. *Definitionen und Termini. Quantitative Studien zur Konstituierung von Fachwortschatz* (Linguistik – Impulse und Tendenzen 48). Berlin/Boston: de Gruyter.
Roelcke, Thorsten. 2013b. Definitionen und Linearisierung in §§ 90–103 BGB. In Marina Wagnerová and Gerald G. Sander (eds.), *Die Rechtssprache in der internationalen Diskussion* (Schriften zu Mittel- und Osteuropa in der Europäischen Integration 13), 143–162. Hamburg: Kovač.
Roelcke, Thorsten. 2013c. Der Beitrag von graphischen Abbildungen zur Konstituierung von Fachwortschatz in der terminologischen Grundsatznorm DIN 2330 des Deutschen Instituts für Normung. *Glottotheory* 4. 5–35.
Roelcke, Thorsten. 2014a. Three ways of terminological linearisation. *Glottotheory* 5. 85–99.
Roelcke, Thorsten. 2014b. Zur Gliederung von Fachsprache und Fachkommunikation. *Fachsprache – International Journal of Specialized Communication* 37. 154–178.
Roelcke, Thorsten. 2015. Besondere Wörter II: Fachwörter, Termini. In Ulrike Haß and Petra Storjohann (eds.), *Handbuch Wort und Wortschatz,* 371–393. (Handbücher Sprachwissen 3). Berlin/Boston: de Gruyter.
Roelcke, Thorsten. 2016. Terminologisierung in Gueintz' „Deutscher Sprachlehre Entwurf" (1641). In Jörg Meier and Albrecht Greule (eds.), *Von der Arznei bis zum Ziegeldach. Historische Fach- und Handwerkersprachen. Deidesheimer Gespräche zur Sprach- und Kulturgeschichte IV*, 47–64. Berlin: Weidler.
Sager, Juan C., David Dungworth, Peter F. McDonald. 1980. *English Special Languages: Principles and Practice in Science and Technology.* Wiesbaden: Brandstetter.
Stanford Encyclopedia of Philosophy. 2015. Definitions. https://plato.stanford.edu/entries/definitions/ (last access 2017-08-04).
Weinrich, Harald. 1989. Formen der Wissenschaftssprache. *Jahrbuch 1988 der Akademie der Wissenschaften zu Berlin*, 119–158. Berlin/New York: de Gruyter.

Wright, Sue Ellen, Gerhard Budin (eds.). 1997/2001. *Handbook of Terminology Management*. Vol. 1 (1997): *Basic Aspects of Terminology Management*; Vol. 2 (2001): *Application-Oriented Terminology Management*. Amsterdam/Phil.: Benjamins.

Wüster, Eugen. [1931] 1970. *Internationale Sprachnormung in der Technik, besonders in der Elektrotechnik. (Die nationale Sprachnormung und ihre Verallgemeinerung)*. Dritte, abermals ergänzte Auflage (Sprachforum. Beiheft 2). Bonn: Bouvier, 1970.

Peter Sandrini

26 Terminology work in different domains: legal terminology

Abstract: The object of study of terminology is the knowledge units of a specific domain. This paper sets out to identify the knowledge units of law by describing the features and characteristics of legal concepts and stressing the importance of conceptual information for terminology and translation. Legal concepts are bound to a specific legal system and equivalence across legal systems does not exist in principle. Against the background of this system-specifity the paper brings forward a comparative approach in legal terminology work which safeguards clarity and unambiguity in legal communication across borders.

Terminology is defined as an inter- and trans-disciplinary subject which investigates the objects, concepts and their representations as well as the relations between them with the overall goal of ensuring and augmenting "the quality of communication with professional context regardless of the level of professionalism of the users" (Picht 2006: 10). Against the background of this assumption, we may set out to see what are the features and characteristics of legal concepts or legal knowledge units trying to join these findings with the overall aim of legal communication across borders and illustrate the procedure of a comparative approach to legal terminology.

By legal terminology we understand terms and concepts used in law as the building blocks of all communication, and as such of legal translation, as well as of legal knowledge representation. Avoiding the much cited dichotomies of words against terms, or meaning against concepts or even language against content which is omnipresent in much of the introductory work on terminology (Myking 2007), we would like to refocus on the overall goal of specialist communication or in our case of legal communication as well as legal knowledge representation. Thus, we see terminology as cognitive units of knowledge represented by terms while terminological products and tools provide the necessary background to be able to use these concepts and terms adequately in texts.

For this contribution we are assuming that law represents a specialized subject field along the lines of other subject fields such as botany, physics or economics which due to internal needs has developed particular features such as its trans-disciplinarity, meaning that law may be applied to every subject and in every legal text we may find both actual legal terms as well as other terms from the subject which is regulated, the fact that law addresses both legal experts and lawyers as well as lay people or citizens and the fragmentation of law into independent national legal systems (Sandrini 1999a: 14).

Peter Sandrini, Innsbruck (Austria)

https://doi.org/10.1515/9783110228014-026

The first part of this contribution focuses on the legal concept: how a legal concept is constructed and what the peculiarities of legal concepts are in contrast to other disciplines. Then, we move on to look at how legal experts describe their concepts and what kind of concept descriptions are used. In law, descriptions and concepts are specific to a legal system and this must be indicated clearly in all terminological products. It is this bondage to a national tradition and a specific community that complicates the comparison of concepts and multilingual terminology, once a system of defined concepts is in place. Terminological products such as term bases and glossaries are the product of terminological research including a comparative analysis, and reflect the knowledge structure of a legal domain describing its specific terms and concepts in the context of each national legal system.

1 Legal concepts

For Hoffmann (1993: 614) the very core of specialist communication is formed by knowledge systems and cognitive processes, and he defines specialist communication accordingly (see chapter 29 on Legal Translation in this volume). If we see law as a specialized discipline concepts are at the center of legal knowledge and constitute its main units. Concepts are considered by most terminological approaches a central element of terminology (Picht and Laurén 2006: 176), at least if we consider terminology as a knowledge-oriented discipline, and not so much as a special type of lexicography (e.g. Bergenholtz and Tarp 1995).

Although some authors doubt the existence of language-independent concepts in law (see e. g. the claim for nominal definitions in Wiesmann 2004a: 43), others, inclusive of the author of this contribution, favor a more specialist approach to law, defining law as a specialist subject field with its own knowledge structure, its own concepts, ideas and goals, just like any other subject field. With this approach, language is seen as a tool, albeit an important one, which is used to communicate legal content as well as to communicate about legal content.

In law, concepts are formed according to two main procedures: abstraction and concept construction. While abstraction represents the standard cognitive procedure for concept creation forming new concepts by filtering common features from a multiplicity of objects, concept construction represents a social phenomenon: “Bei der Begriffskonstruktion, insbesondere im Recht, wird einem Bedarf Rechnung getragen, der aus den ethischen, moralischen, ideologischen, religiösen, politischen oder sonstigen Maßstäben bzw. Vorstellungen einer Gesellschaft oder zumindest der Mehrheit der Mitglieder derselben entspringt” (Picht 2010: 21); (*concept construction, especially in law, fulfills specific needs or expectations by society, or at least by the majority of its*

members, coming from ethical, moral, ideological, religious, political or other standards; translation by author).

Ideas and Concepts must be sufficiently precise and specific, thus differentiating themselves from general concepts, to fulfill the function of law as a conflict-solving mechanism. On the other hand, legal concepts must be all-inclusive so that they are able to cover every relevant situation (Bhatia et al 2005: 10). Being all-inclusive they tend to be vague "as vagueness makes it easier to interpret a normative text in a suitable way" (Bhatia et al 2005: 10) or semantically open (Hudalla 2012: 100). For legal concepts we may identify three layers of vagueness (Arntz and Sandrini 2007: 137):

1) Both the creation of legal concepts in the course of legislative or jurisprudential activity as well as their use and interpretation within jurisdiction depend heavily on the social, ethical and moral environment which is subject to change over time and liable to ideological influence leading to an intrinsic vagueness of legal concepts. This is in no way intended, nor can it be directly influenced, it is simply a matter of fact and thus inherent in every legal system.
2) For a subset of legal terms we may speak of intentional vagueness which is characterized by deliberately leaving open the definitional content in favour of a broader interpretation by the courts. The primary function of such abstract concepts is to provide a certain degree of adaptability by leaving space for the unexpected, for change in the legal system through widening the scope of interpetation. Examples for such intentional vague concepts are *honesty, good faith, fair use, state of emergency*, etc.
3) Sometimes legal concepts are not defined properly in the course of the legislative process, they may not be sufficiently delimited from neighbouring concepts, or words from general language are taken without a proper re-definition which leads to a kind of accidental vagueness.

The first two kinds, intrinsic and intentional vagueness, can be referred to as subject-specific vagueness and they "are considered indispensable resources for the expression of legislative intentions in all legal systems" (Bhatia 2005: 352); they are essential and inevitable in law while the third type, accidental vagueness, can be traced back to communication problems and leads to misunderstandings and ambiguities.

It is precisley the aim of systematic terminological documentation of concepts and terms to reduce vagueness, or at least to point out possible sources of ambiguity to be taken care of by experts with regard to the third type of vagueness considering the first two types of vagueness as systemic. Legal terminology has to deal with subject-specific, intrinsic and intentional, vagueness as it is a constitutive element of law. Thus, precision and vagueness are the two extremes that characterize the definitional work and the description of legal concepts.

2 Description of legal concepts

The dichotomy between terms and words, for some researchers fundamental (Wüster 1993), for others only perceived and contested (Kageura 1995, Pearson 1998), is further complicated in law by the characteristics of legal language. An essential assumption for legal language is that it should be comprehensible for all people since it regulates their lives: it is aimed both at professional lawyers and at lay persons. In addition, legal terms are taken from general language and given a specific legal meaning that may lead to misunderstandings.

In terminology we define concepts, we do not define terms or words. As trivial as this statement may sound, it clearly describes the two approaches to terminology with regard to definitions: the lexicographical-linguistic and the cognitive-conceptual approach. For a lexicographic approach, lexemes or linguistic parts of a text are described in their meaning, and, thus, we have a clear distinction between lexicographical descriptions and the definitional needs of a subject field from a knowledge perspective. In this sense, Wiesmann states, legal and lexicographical requirements must be kept apart: "juristische und lexikographische Erfordernisse auseinander gehalten werden müssen" (Wiesmann 2004a: 225). In the first case, a definition serves to convey the essential features of the legal concept, in the second case, or by applying a semasiological procedure, the definition highlights the linguistic use of a legal term. For terminological purposes an onomasiological approach is most suitable to describe legal concepts in conformity with the requirements of the subject field to grasp the content side (Engberg 2013: 10) and to convey the legal knowledge which is necessary to be able to assess equivalence and evaluate the choice of terms in a text. For the following discussion, the scope of a definition encompasses the legal concept and its normative function: "en terminologie, on ne cherche pas à extraire le sens d'une forme linguistique, mais au contraire, le concept étant defini, on se pose la question de savoir quelle forme linguistique le représente" (Rondeau 1984: 18) (*In terminology we don't try to extract the meaning of a linguistic form, it is rather the other way round, we have a defined concept for which linguistic representations must be found;* translation by author).

Definitions are subject to the different legal traditions or legal families, such as the Common Law tradition or the Civil law tradition, which have a decisive influence on the scope of interpretation of a definition as well as on definitional practices. In concept-oriented terminology a definition consists of the characteristics of a concept, its intension. These characteristics can be subdivided into essential and accidental characteristics: „Even when all experts agree on the major parts of a concept, there may be ongoing discussions at the margins between different experts" (Engberg 2013: 18). Interpretation of statutes and laws often leads to a discussion, adjustment or change of the definition of a concept, sometimes even to the expansion of its application. Legal concepts, therefore, may be defined by describing their characteristics, but also by delimiting their scope of application, i. e. by an extensional definition.

Starting from an empirical analysis of a corpus of texts, Ralli and Ties (2006: 410) enumerate four types of definitions in law:

1. explicit definition: when legislators explicitly define a legal concept in a statute or law;
2. implicit definition: when a normative text contains a description of a concept from which legal experts are able to retrieve a definition by applying interpretation procedures;
3. stipulative definition: an arbitrary statement determining the meaning of a term for the purposes of argumentation or discussion in a given context;
4. redefinition: elaboration or deepening of an existing definition for the purpose of stating more precisely the meaning of a term in a new context.

It is not only the types of definitions that are relevant in law for the description and further development of legal concepts but also the communicative interaction between legal experts over time. Commentaries, discussions, amendments of statutes all contribute to integrate different opinions of legal experts into existing legal definitions. Legal translators and terminologists may gain specific insights and "information about the relative importance of the different parts of a concept" (Engberg 2013: 18) from consulting also secondary sources of law such as scholarly writing and commentaries.

3 System-specificity of legal concepts

Multilingual legal terminology is a designation which is better avoided since it does not distinguish between legal terms coming from different legal systems, on the one hand, and terms in different languages from the same legal system, on the other hand. We prefer to speak of multinational legal terminology or of system-bound legal terms. There is no such thing as an international legal language because of independent national legal systems: "Wegen der Systemgebundenheit juristischer Terminologie gibt es praktisch keine internationale juristische Fachsprache" (de Groot 1999: 12) (*Because of the system-specificity of legal terms there is practically no international legal language;* translation by the author). Concepts are created and constructed in the context of a national legal system with its own tradition of laws, interpretative principles and legislative procedures. Furthermore, each society may forge new statutes and norms on her own initiative according to the principle of democratic self-determination.

System-bound concepts may well be represented by terms in more than one language in the case of multilingual nations, or conversely, one language may be used for different legal systems. This is why it is extremely important to highlight the legal background of concepts by specifying the legal system they belong to. And this is another reason why a conceptual approach to legal terminology is needed and why the analysis should not stop at the level of language.

De Groot and van Laer (2008) also act on the assumption of system-bound concepts in law and identify the following exclusive cases when a relative convergence of legal concepts may occur: "a) there is a partial unification of legal areas [...]; b) in the past, a concept of the one legal system has been adopted by the other and still functions in that system in the same way, not influenced by the remainder of that legal system" (de Groot and van Laer 2008: 2).

The resulting "inherent incongruency of the terminology of different legal systems" (Šarčević 1997: 235) has its repercussions on the applicability of the notion of equivalence in legal terminology but also on the terminographical methods to apply.

4 Comparison of system-bound legal concepts

What is here at stake is the concept of equivalence in general and in terminology in particular. Put in another way, the question arises how we can compare specific legal concepts across the boundaries of idiosyncratic legal traditions and join them into one terminographical entry, in line with the largely accepted notion of concept-oriented terminographical models that all information belonging to one concept should be stored in one entry. Legal concepts, however, are culture-specific or dependent upon legal traditions and cannot be equated with concepts from different legal systems.

Equivalence measures the degree by which two concepts are corresponding or identical. To be able to do this, terminology investigates the constituent features or characteristics of concepts and compares them. When the "preeminent goal of descriptive terminology is to describe relations between the concepts of a defined subject field and to identify the terms in two or more languages which designate one concept" (Cole 1991: 18), we have to remark that such an approach can be followed only within one legal system. If terms in different languages from two legal systems are compared they never designate one common concept. As legal concepts are system-bound and the product of a historic development, embedded in a tradition of jurisdiction and interpretative practice as well as the result of conscious decisions by legislators, they cannot be identical to the concepts of another legal system with its diverging traditions and political preferences. Thus, we postulate the following basic assumption: There is no equivalence between concepts from different legal systems.

Equivalence in terminology is defined as a relation between concepts having the same characteristics corresponding to intensional identity (Arntz, Picht and Mayer 2002: 159). Due to the system-bound specificity of legal concepts this is only possible for concepts rooted in the same legal system or "full equivalence only occurs where the source language and the target language relate to the same legal system " (de Groot and van Laer 2008: 2). Some authors recognize the problem of equivalence in law, but still they use the term equivalence albeit in a attenuated way, as a kind of limited equivalence, like, for example, Šarčević who distinguishes cases of near equivalence and cases of partial equivalence aside form cases of non-equivalence in law (1997:

238). Decisive for all of these cases of limited equivalence is the correspondence of conceptual characteristics subdivided into essential and accidental characteristics. The "optimum degree of equivalence" (Šarčević 1997: 238) in law is near equivalence when two concepts "share all of their essential and most of their accidental characteristics (intersection) or when concept A contains all of the characteristics of concept B, and concept B all of the essential and most of the accidental characteristics of concept A (inclusion)" (Šarčević 1997: 238). All other cases of partial equivalence and non-equivalence may still be relevant for translation purposes but must be decided on a case per case basis depending on the circumstances of the translation as well as the use of the target text. In this sense Kisch states: "Bref, la question de l'équivalence est une question d'ordre pragmatique" (Kisch 1973: 412) (*the question of equivalence is a pragmatic one*, translation by the author).

The concept-oriented approach, however, is of overall importance and should not be dismissed altogether in law. Some linguist have done so in favor of more lexicographical methods applying traditional procedures of lexicography to the structure of their dictionaries (e. g. Nielsen 1994, Wiesmann 2004a) contrary to the conviction of scholars in the area of legal translation and legal terminology. Indeed, as early as thirty years ago (Gémar 1979, Šarčević 1985, de Groot 1986) scholars stressed the importance of the conceptual background of legal terms as well as the implied legal knowledge behind the terms in compiling bilingual terminologies. And there is no doubt, whatsoever, as to the importance of legal background knowledge and a sound understanding of legal concepts as a essential prerequisite for the translation of legal texts (Stolze 1999: 45, Cao 2007: 54, Sandrini 1999a: 38, 2009: 36, Šarčević 1997: 121 and others). Thus, we may formulate a second assumption: Conceptual information is essential for legal terminology and legal translation.

In legal translation, the translator has to have conceptual information on the legal topics the source text is dealing with; first, legal knowledge in the legal system of the source text to be able to understand the text, and second, legal knowledge of the target system to be able to author a consistent and perfectly understandable translation. This holds true even more for the legal terminologist who needs profound legal knowledge to be able to describe, assess and classify the concepts within the legal system they belong to as well as to be able to evaluate and judge their degree of equivalence with concepts from another legal system. Both steps are very hard to imagine without legal knowledge.

Of particular importance is, however, the procedure of assessing the degree of equivalence between concepts from different legal systems in the light of our first basic assumption. Where equivalence is not possible, we may still be able to grasp degrees of equivalence like the mentioned approach by Šarčević, or comprehend different embeddings of concepts within their legal systems, detect differences of interpretation, or find out diverging conceptual structures. This can be done by a comparative approach which strives to understand the relative function of each concept within its legal system by asking "quelle est sa fonction, quel est le problème

qu'elle vient résoudre?" (Moréteau 2005: 420) (*What is its function, what is the problem intended to resolve;* translation by the author). Šarčević states in this respect: "Since most legal systems provide solutions for basically the same problems, comparative lawyers maintain that concepts and institutions of different legal systems can be meaningfully compared only if they are capable of performing the same task, i. e. they have the same function" (Šarčević 1997: 235). Such a functional approach analyses the system-specific function of a concept and searches for a comparable function of a concept in another legal system. Diverging conceptual features, different concept structures and other structural problems let a functional approach appear as the best solution in order to offer as much as possible information about the legal background of the concepts in question: "la fonction, clé de la comparaison" (Moréteau 2005: 419) (*function, the key of comparison;* translation by the author).

Obviously, this requires "considerable comparative law skills" (Šarčević 1997: 235) for terminologists to apply such a comparative approach, but also for legal translators to judge the adequacy of functional alternatives. Thus, "translators of legal terminology are obliged to practice comparative Law" (De Groot 2000: 133) and we would add that indeed legal terminologists are obliged to practice comparative Law when they set out to compare legal concepts across the boundaries of legal systems. In this sense, we venture out to state the following: Multilingual legal terminology with concepts from different legal systems is necessarily the result of a comparative analysis.

When Engberg (2013: 13) states that "contrastive terminology is interested in equivalence between concepts, whereas comparative law is interested in equivalence between legal rules", the concept of equivalence is used here to mean the degree of equivalence or, better yet, the amount of sameness or of difference of the concepts involved. It should be added that both, terminologists and comparative lawyers, are first and foremost interested in getting to know the legal background and the embedding of concepts and rules. But, a difference in the degree of the depth of analysis can be noted because the aim of the comparison is different: terminologists are obviously not interested in publishing a comparative legal study: "wenn auch natürlich nicht mit der Zielsetzung, eine rechtsvergleichende Veröffentlichung vorzubereiten" (de Groot 1999: 12) (*albeit not with the intention to publish a comparative study;* translation by the author).

It must be stressed that the final result of a terminological approach in law cannot be the establishing of cases of equivalence. This is the task of the legal translator who looks for pragmatic equivalents which fit into the communicative situation of his specific translation (see e. g. 'subsidiary solutions' by de Groot and van Laer 2008: 3). A terminologist follows a more systematic approach independent of a particular communicative setting. A terminological product, be it an electronic termbase or a glossary, has to provide the background knowledge which enables a text producer or a legal translator to take his text-bound decisions. The following steps illustrate a comparative approach to legal terminology (Sandrini 1999b: 105) which has been applied effectively, for example, to the Norwegian-Chilean terminology of aquaculture (Våge 2010) and the Russian-Austrian terminology of public companies (Naydich 2011).

Comparing the knowledge structure of two legal systems requires a starting point: in philosophy this is called a 'tertium comparationis' constituting the basis of a comparison and by definition independent of the two legal systems involved. Such a comparative basis can be identified in the social function of law where legal rules and legal concepts serve as a tool to control and regulate a certain aspect of real life.

The basic question to ask is how a specific social problem is addressed by legal system A and what tools, rules and concepts, are used. In practice, a terminologist would start bottom up from the concepts of one legal system whose function, purpose and structure should be analyzed to provide a specific legal setting which in turn regulates and refers to a certain societal aspect. Once this analysis for legal system A is in place, the procedure goes top down and looks for the corresponding legal setting and the concepts that structure it within legal system B.

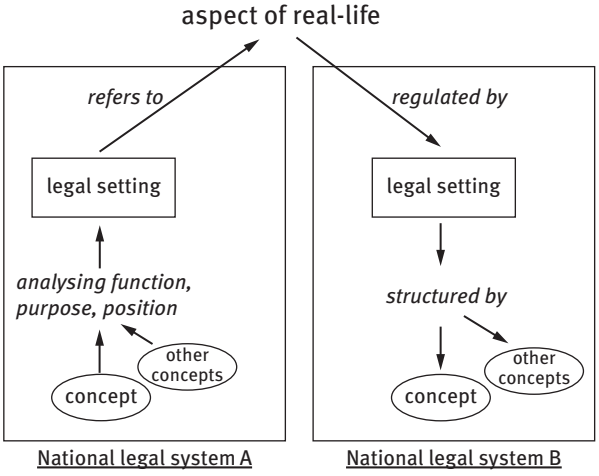


Figure 1: Comparative procedure for legal terminology

An alternative way which departs somewhat from comparative law and its methodology and focuses more on single concepts is the 'conceptual comparison' proposed by Brand (2007) in which the 'tertium comparationis' is represented by the construction of a neutral, independent and abstract concept on the basis of comparable features identified in the actual concepts of one legal system allowing, thus, the identification of comparable concepts in the other legal system.

Every comparative analyses is based on four elementary components (Naydich 2011: 32): 1) the legal setting for which in most legal systems a superordinate concept is used, 2) the legal building blocks (rules, provisions, customary practice), 3) individual concepts and facts contributing to structure the legal setting and 4) the way in which all concepts involved interact (conceptual system). All four aspects can be compared and the results are documented to depict the legal background.

An adequate documentation of the results of a comparative approach requires an adaptation of the traditional way to display glossary entries. Since the all-important purpose of such a documentation of results would be to convey as much information as possible on the concepts and the terms used in both legal systems, an adequate terminographical product resembles – more than a dictionary – a knowledge base on a very specific legal subject. A comparative analysis of legal concepts requires an adequate terminographical entry structure.

It must be clear to which legal system every piece of information, legal or linguistic, refers to. Definitions are extracted or written for a specific legal system, terms are used not in a language but in a legal system – we may have a German term which is used in Austria but not in Germany or an English term used in Great Britain but not in the US. Thus, comparative terminology always involves two legal systems and usually two or more languages, though a monolingual comparative analysis is also conceivable, e. g. a comparison of US vs GB English legal terms.

The main difficulty derives from the lack of equivalence since the concept-oriented terminographical method is based on the principle 'one concept – one entry'. Our first basic assumption (see above) prevents us from having bilingual entries because the concepts from different legal systems can never be absolute equivalents and, thus, cannot be integrated into one conceptual entry or, exceptionally, may be combined into one entry only if the four mentioned comparative aspects correspond. One approach would be to slightly stretch the terminographical principle combining similar concepts by adding comprehensive notes illustrating differences, disparities, nuances (Wiesmann 2004a: 166; Mayer 1998: 185). Another possibility would be to separate the concepts of the two legal systems accurately and build links between them according to the degree of sameness resulting from the comparative analysis. Such relations may be direct relations in cases of corresponding conceptual characteristics, functional relations where two concepts have the same function as an element in the specific legal setting of each legal system and, as such, they have some conceptual features in common, or indirect relations when both concepts relate to a comparable function within this legal setting in each legal system, but they have no features in common (Sandrini 1999b: 107). Additionally, a link between the terms and concepts of two independent legal systems may be established on the basis of the relative knowledge structure either by making use of concept relations which could represent an aid for the user to see if the superordinate concept or any other related concept links to concepts in the other legal system, or by establishing a link to the respective legal setting which enables the user to see all the concepts which contribute to this particular legal setting in the other legal system.

5 Conclusions

Understanding legal concepts across the borders of nations and languages is becoming more and more important in a globalized world. One has to be aware, though, that

the discipline of law has its own peculiarities which have to be addressed to avoid communication pitfalls. The potential vagueness of legal concepts – being intrinsic, intentional or accidental – can be reduced by accurately researched terminology and a deliberate and thoughtful use of legal terms in text production and translation taking into consideration that all legal terms and concepts are characterized by the peculiarities of the legal system they belong to.

A conceptual approach is absolutely necessary for the documentation of multinational legal terminology in order to convey the legal background of each concept and the system-specific legal setting in which it is embedded. Due to this system-specificity there can be no equivalence between concepts originating from different legal systems. Only on the basis of a conceptual description and a comparative analysis based on a functional approach the degree of correspondence may be established and documented. The results in a glossary or a terminology database have to be presented in a way which makes it clear for every piece of conceptual or linguistic information which legal system they refer to. This analytical information can then be used by translators or text producers in law to decide which concepts best fit according to their specific communicative situation.

Legal terminology represents a challenging subject, and preparing terminological works of reference in law can be a daunting task when not based on well-thought-out procedures and representational models; only then, they represent valuable and useful tools for legal text producers and legal translators going beyond traditional paper-bound dictionaries.

References

Antia, Bassey Edem (ed.). 2007. *Indeterminacy in terminology and LSP: studies in honour of Heribert Picht*. Amsterdam and Philadelphia: John Benjamins.

Arntz, Reiner, Heribert Picht and Felix Mayer. 2002. *Einführung in die Terminologiearbeit*. 4th edn. Hildesheim, Zürich and New York: Georg Olms.

Arntz, Reiner and Peter Sandrini. 2007. Präzision versus Vagheit: das Dilemma der Rechtssprache im Lichte von Rechtsvergleich und Sprachvergleich. In Bassey Edem Antia (ed.), *Indeterminacy in LSP and Terminology: Studies in honour of Heribert Picht*, 135–153. Amsterdam and Philadelphia: John Benjamins.

Bergenholtz, Henning and Sven Tarp. 1995. *Manual of specialised lexicography: the preparation of specialised dictionaries*. Amsterdam and Philadelphia: John Benjamins.

Bhatia, Vijay, Jan Engberg, Maurizio Gotti and Dorothee Heller (eds.). 2005. *Vagueness in normative texts* (Insights 23). Bern and Wien: Peter Lang.

Bhatia, Vijay. 2005. Specificty and Generality in Legislative Expression: Two Sides of the Coin. In Vijay Bhatia, Jan Engberg, Maurizio Gotti and Dorothee Heller (eds.), *Vagueness in normative texts* (Insights 23), 337–356. Bern and Wien: Peter Lang.

Brand, Oliver. 2007. Conceptual comparisons: Towards a Coherent Methodology of Comparative Legal Studies. *Brooklyn Journal of International Law* 32(2). 405–466.

Cao, Deborah. 2007. *Translating Law*. Clevedon, Buffalo and Toronto: Multilingual Matters.

Cole, Wayne. 1991. Descriptive terminology: some theoretical implications. *Meta: Journal des traducteurs* 36(1). 16–22.
de Groot, Gerard-René. 1986. Problems of legal translation from the point of view of a comparative lawyer. Nederlandes rapporten voor het XIIe congrés international de droit compare (Sydney and Melbourne), 1–19. The Hague: T.M.C. Asser Instituut.
de Groot, Gerard-René. 1999. Das Übersetzen juristischer Terminologie. In Reiner Schultze, Gerard-René de Groot (eds.), *Recht und* Übersetzen, 11–46. Baden-Baden: Nomos.
de Groot, Gerard-René. 2000. Translating Legal Information. In Giuseppe Zaccaria (ed.): Übersetzung *im Recht/Translation in Law*, 131–149. Münster: LIT.
de Groot, Gerard-René and Conrad J. P. van Laer. 2008. *The Quality of Legal Dictionaries: an assessment.* (Maastricht Faculty of Law Working Paper 6). Maastricht: University of Maastricht.
Engberg, Jan. 2013. Comparative law for translation: The key to successful mediation between legal systems. In A. Borja Albi and F. Prieto Ramos (eds.), *Legal translation in context: Professional issues and prospects*, 9–25. Oxford: Peter Lang.
Gémar, Jean-Claude (1979): La traduction juridique et son enseignment: aspects theoriques et pratiques (Legal Translation and Its Teaching: Theoretical and Practical Aspects). *Meta: Journal des traducteurs* 24(1). 35–53.
Hoffmann, Lothar. 1993. Fachwissen und Fachkommunikation. Zur Dialektik von Systematik und Linearität in den Fachsprachen. In Theo Bungarten (ed.), *Fachsprachentheorie*, 595–617. Tostedt: Attikon.
Hudalla, Inge. 2012. Phraseologismen der deutschen Rechtssprache und ihre Übertragung ins Französische – ein Buch mit sieben Siegeln? *Beiträge zur Fremdsprachenvermittlung* 52. 97–114.
Kageura, Kyo (1995): Toward the theoretical study of terms: a sketch from the linguistic viewpoint. In: *Terminology. International Journal of Theoretical and Applied Issues in Specialized Communication*, 2. Amsterdam and Philadelphia: *John Benjamins*. 239–257.
Kageura, Kyō. 2002. *The dynamics of terminology: a descriptive theory of term formation and terminological growth*. Amsterdam and Philadelphia: John Benjamins.
Kisch, Isaac. 1973. Droit comparé et terminologie juridique. In Mario Rotondi (ed.), *Inchieste di diritto comparato. But et Méthodes du droit compare*, 402–423. Padova: Cedam.
Mattila, Heikki E. S. 2006. *Comparative Legal Linguistics*. Burlington: Ashgate.
Mayer, Felix. 1998. *Eintragsmodelle für terminologische Datenbanken: ein Beitrag zur* übersetzungsorientierten *Terminographie*. Tübingen: Gunter Narr.
Moréteau, Olivier. 2005. Premier pas dans la comparaison des droits. In Jean-Claude Gémar and Nicholas Kasirer (eds.), *Jurilinguistique: entre langue et droits*, 407–430. Bruxelles: Éditions juridiques Bruylant.
Myking, Johan. 2007. No fixed boundaries. In Bassey Edem Antia (ed.), *Indeterminacy in Terminology and LSP*, 73–92. Amsterdam and Philadelphia: John Benjamins.
Naydich, Yulia. 2011. Problematik des Terminologievergleichs von Rechtsbegriffen aus der russischen und österreichischen Rechtsordnung zum Thema „Aktiengesellschaft". Vienna: University of Vienna Master thesis.
Nielsen, Sandro. 1994.*The bilingual LSP dictionary: principles and practice for legal language* (FFF 24.). Tübingen: Gunter Narr.
Pearson, Jennifer. 1998. *Terms in context.* Amsterdam and Philadelphia: John Benjamins.
Picht, Heribert. 2010. Einige Gedanken zum Wesen der Begriffe im Recht. *Synaps* 25. 19–25.
Picht, Heribert (ed.). 2006. *Modern Approaches to Terminological Theories and Applications*. Bern: Peter Lang.
Picht, Heribert and Christer Laurén. 2006. Approaches to Terminological Theories: A Comparative Study of the State-of-the-Art. In Heribert Picht (ed.), *Modern Approaches to Terminological Theories and Applications*, 163–185. Bern [et al.]: Peter Lang.

Ralli, Natascia and Isabella Ties. 2006. Corpora e Terminologia: Applicazioni pratiche in Bistro. In Heribert Picht (ed.), *Modern Approaches to Terminological Theories and Applications*, 407–426. Bern [et al.]: Peter Lang.

Rondeau, Guy. 1984. *Introduction à la terminologie*. 2nd edn. Chicoutimi: Gaëtan Morin.

Sandrini, Peter (ed.). 1999a. Übersetzen *von Rechtstexten*. Tübingen: Gunter Narr.

Sandrini, Peter. 1999b. Legal Terminology. Some Aspects for a New Methodology. *Hermes Journal of Linguistics* 22, Aarhus School of Business. 101–112.

Šarčević, Susan. 1985. Translation of Culture-bound Terms in Law. *Multilingua* 4–3. 127–133.

Šarčević, Susan. 1997. *New Approach to Legal Translation*. The Hague et al.: Kluwer Law International.

Stolze, Radegundis. 1999. Expertenwissen des juristischen Fachübersetzers. In Peter Sandrini (ed.), Übersetzen *von Rechtstexten*, 45–62. Tübingen: Gunter Narr.

Våge, Ole. 2010. Legal Concepts in aquaculture in Norwegian and Chilean Spanish: a brief Discussion on two approaches. *Synaps* 25. 45–51.

Wiesmann, Eva. 2004a. *Rechtsübersetzung und Hilfsmittel zur Translation*. Tübingen: Narr.

Wiesmann, Eva. 2004b. Neue Wege der Beschreibung von Rechtstermini: der semasiologisch-onomasiologische Ansatz der Begriffsbestimmung und seine Bedeutung für den Übersetzer. *Linguistica Antverpiensia, New Series–Themes in Translation Studies* 3, 37–51. Antwerpen: Hoger Instituut voor Vertalers en Tolken.

Wüster, Eugen. 1993. Die Allgemeine Terminologielehre – ein Grenzgebiet zwischen Sprachwissenschaft, Logik, Ontologie, Informatik und den Sachwissenschaften. In Christer Laurèn and Heribert Picht (eds.), *Ausgewählte Texte zur Terminologie*, 331–376. Wien: TermNet.

Ingrid Wiese

27 Terminology work in different domains: medical terminology

Abstract: The article describes the work of terminology and classification committees of medical associations and presents the history of the development and the structure of important medical classification systems.

1 Introduction

Classifications and terminologies have taken on increasing importance for medicine over the past decades. This can be explained by the increasingly broad range of applications that classifications are now used for, the use of modern information and communication technology in health care, and the necessity to make sure that the results of clinical and other scientific studies are strictly comparable.

Originally medical classifications were created for statistical purposes. The world-wide reference diagnostic classification *International Statistical Classification of Diseases and Related Health Problems* (ICD) was in fact developed from a list in which causes of death were registered. Today, classifications have acquired a new importance in that they are used for remuneration of health services. Thanks to the generalisation of electronic data processing, terminologies and classifications are becoming ever more indispensable as a basis for documentary systems (Ngouongo and Stausberg 2011: 129; Zaiß 2012: 72; Ingenerf 2015: 35).

Standards for medical documentation and automatic processing are elaborated by the International Organization for Standardization (ISO), which has created its own Technical Committee (ISO/TC 215) for automatic processing. For an overview of the most important standards for this area, see Leiner et al. (2012: 157–158).

2 Terminology work of medical associations

The definition and the differentiation of diseases is the task of medical experts and expert teams. Hausteiner-Wiehle and Henningsen (2012: 1097) define the aim of the classification of diseases as follows: "Sie soll valide Einheiten abbilden, sie aber nicht künstlich erzeugen, und sie soll die *Kommunikation* zwischen allen Beteiligten vereinfachen. Letztlich soll sie eine *zielgerichtete Forschung* und, wenn nötig, auch eine

Ingrid Wiese, Leipzig (Germany)

https://doi.org/10.1515/9783110228014-027

spezifische Therapie ermöglichen." [Classification should form valid units, but not generate them artificially, and it should simplify the *communication* between all those involved. Finally it should allow *goal-oriented research* and, if necessary, a *specific therapy*.]

Classifications are an indicator of scientific development. New insights into how diseases behave can lead to new criteria for disease classification, even to new categories of diseases. Classifications of medical content are constantly updated. Often content can be ordered within several classifications.

The close relationship between the progress of knowledge and classification becomes clear when the development of classification is considered. In an introductory chapter of the handbook *Rheumatologie in Praxis und Klinik*, Miehle (2000: 3–4) describes the development of the classification of diseases of the rheumatic spectrum. Miehle suggests that in the past, in the area of rheumatology, different classifications were used based on differing criteria. Thus, the British Ministry of Health classified according to the course of the disease and the anatomical correlates, the German Association for Combatting Rheuma according to the course of the disease and the structure associated with it, and the Swiss Rheuma Classification of 1952 distinguished rheumatic diseases from an aetiological viewpoint. Miehle demonstrates that important discoveries of "modern rheumatology", especially since 1990, have led to many classifications of rheumatic diseases. The catalogue of criteria for rheumatology set up by Kuipers, Zeidler and Köhler (2006) compares relevant national and international criteria and stresses that the use of criteria catalogues for individual diseases can be at variance nationally and regionally and subject to changes. The classification of *juvenile idiopathic arthritis* is quoted as an example. Up to 1997 the criteria of EULAR (*European League against Rheumatism*) and in the USA the ARA criteria (*American Rheumatism Association*) were used to classify this entity. In 1997, the Paediatric Committee of the ILAR (*International League of Associations of Rheumatologists*) proposed new criteria for classification in order to achieve a unified terminology on the international level (Kuipers, Zeidler, and Köhler 2006: 208).

Coming up with proposals for a unified terminology and setting up classifications usually takes place within expert work groups on behalf of a national or international medical association. One example of the work of classification and terminology commissions which can be shown is the report of the *International League against Epilepsy*, which proposed a revision of the way seizures and epilepsies are categorised (Revised Terminology and Concepts for Organization of Seizures and Epilepsies. Report of the ILAE Commission on Classification and Terminology, 2005–2009).

In their report, the commission set out their findings and the recommendations worked out during their period of activity between 2005 and 2009. These recommendations were complemented by detailed comments to back up the decisions made. The introduction explained why the 1981 classification of seizures and the 1989 classification of epilepsies needed to be revised. The reason given for this was that the classifications from 1981 and 1989 were elaborated before the time when modern imaging

techniques had been perfected and before genetic engineering and molecular biological concepts were brought in, and it was felt that the suggested changes in the classification mirrored these advances. The proposed changes to the differentiation of seizures and epilepsies were amply discussed. The committee stressed however that even the newly proposed concepts must be further developed. Changes in terminology also went with the changes in classification. Thus it was recommended to replace the previous terms *idiopathic*, *symptomatic* and *cryptogenic* by *genetic*, *structural-metabolic* and *unknown*. The concept of new expressions was explained in detail. The reason for using *self-limited* in place of *benign* was justified by the fact that this term can lead to confusion, because "benign" epilepsies can still have associated disturbances. *Self-limited* suggests a good likelihood of spontaneous remission (Berg et al. 2010: 123–127). The revised proposals were worked out in commissions, and experts were consulted. The results were made public in 2009 at an international epilepsy congress. The associated report was sent to the national chapters of the ILAE and the comments received were posted on its website for discussion. In its final statement, the classification and terminology committee were thus able to take negative reactions to certain changes in terminology into consideration. The discussion among clinical neurologists states that it remains to be seen just how far the new classification will be accepted outside the circle of experts in the area of epilepsy (Baumgartner 2011: 5).

New classification criteria therefore lead to changes in terminology. This is also illustrated in the recent classification of *Diabetes mellitus*. In 1997 the *American Diabetes Association* (ADA) proposed a new classification, which was aimed at classifying *Diabetes mellitus* based on aetiological aspects. Pfeiffer (2006: 17) observes: "Die Nomenklatur ähnelt teilweise der in Europa üblichen [...] Mit dieser Klassifikation wurde vor allem die alte und oft irreführende Nomenklatur des „nichtinsulinabhängigen Diabetes mellitus", jetzt Typ-2-Diabetes, und des „insulinabhängigen Diabetes mellitus", jetzt Typ-1-Diabetes, verlassen, bei der insulinpflichtig gewordene Typ-2-Diabetiker durch die alte Nomenklatur eigentlich nicht korrekt erfasst wurden." [With this classification the old and often misleading nomenclature of "non-insulin-dependent Diabetes mellitus", now Type-2-Diabetes, and of "insulin-dependent Diabetes", now Type-1-Diabetes, is abandoned, in which the Type-2-Diabetic which becomes insulin dependent was not correctly named.]

The world-wide cooperation for the unification of the terminology of allergic diseases is another good example of the efforts made to achieve a unified use of terminology. In 2001 the *Nomenclature Task Force* of the *European Academy of Allergy and Clinical Immunology* (EAACI) published a position paper. The *World Allergy Organisation* (WAO) put out a "revised nomenclature for allergy for global use" in 2004, which broadly follows the EAACI proposals. Here again, the experts stressed that only practice would tell if the new terminology would prevail (Wüthrich 2005: 4–6).

Scientific publications, which often give preliminary information about definitions, classification and terminology, also play an important part in the updating of terminology. The reference work *Gastroenterology* thus draws attention to

the desirable consensus reached on the classifications of the degree of activity of *chronic Hepatitis*: "Ältere Begriffe, wie chronisch persistierende und chronisch aktive Hepatitis kennzeichnen den durchaus fluktuierenden Krankheitsverlauf nicht korrekt und sind daher obsolet. Die jetzt allgemein akzeptierten Klassifikationen wurden von Klinikern und Pathologen gleichermaßen erarbeitet, als Konsens empfohlen und haben inzwischen eine allgemeine Verbreitung gefunden". [Older concepts, such as chronic persistent or chronic active Hepatitis, do not correctly reflect the fluctuating progress of the disease, and are therefore obsolete. The now generally accepted classifications were worked out by clinicians and pathologists alike, recommended as a consensus, and have gained general acceptance.] (Riemann et al. 2008: 1209).

In medical-scientific writing, attention is drawn to differing uses of terminology, as well. In an article on acute lung embolism the following definition is included: "Patienten mit hämodynamischer Instabilität (persistierende arterielle Hypotension oder kardiogener Schock) bei Einweisung haben zweifelsohne eine Hochrisiko- (europäische Definition) oder massive (nordamerikanische Definition) Lungenembolie." [Patients with haemodynamic instability (persistent arterial hypotension or cardiogenic shock) at hospitalisation have a high-risk lung embolism, according to the European definition, or massive lung embolism, according to the American definition.] (Konstantinides 2012: 2014).

3 Medical classifications and terminologies

3.1 ICD

3.1.1 Historical development

The *International Statistical Classification of Diseases and Related Health Problems* (ICD) is the most important diagnosis classification in medicine. The ICD is edited by the World Health Organisation. WHO member states are expected to use the ICD criteria in their most up to date form when compiling statistics on causes of death, thereby achieving internationally comparable statistics on mortality. The ICD has been translated into 43 languages and is used for cause of death statistics in 117 countries (Jakob and Üstün 2012: 85). In many countries, the ICD is also used for coding diseases handled in health services, for epidemiological surveys, health monitoring and remuneration of health services.

The foundations of the ICD go back to the British doctor William Farr. Building on this work, Jacques Bertillon presented the *International Classification of Causes of Death* to the International Statistical Institute in 1893. This classification was recommended for validation and became official from 1901 on under the title of *International*

List of Causes of Death. Since the sixth revision of 1948, the ICD has been edited by WHO. ICD-6 was renamed the *International Statistical Classification of Diseases, Injuries, and Causes of Death* (ICD). The change in name reflects the ambition that the classification should be oriented towards establishing statistics on morbidity. The revised version 10 (ICD-10) of today was approved in 1990 by the World Health Assembly. The content of ICD-10 was comprehensively reorganized and it was renamed the *International Statistical Classification of Diseases and Related Health Problems*. ICD-10 is currently being updated (Graubner 2012: 1340–1342; Leiner et al. 2012: 43–44).

WHO edits other international classifications besides the ICD, referred to as the *WHO Family of International Classifications* (WHO-FIC). The WHO-FIC consists of three types of classifications. At the heart of these are the *Reference Classifications*. These classifications are based on disease, disability and operations. Among these are the *International Classification of Diseases and Related Health Problems* (ICD), the *International Classification of Functioning, Disability and Health* (ICF) and the *International Classification of Health Interventions* (ICHI). Other members of this classification family are the Derived Classifications (e.g. the ICD-10 *Classification of Mental and Behavioural Disorders*) and the Related Classifications (e.g. the *International Classification of Primary Care* (ICPC)). The use of different classifications within a conceptual space is designed to make it possible to portray succinctly the multitude of dimensions of health. WHO works with regional Collaborating Centres for the development, upkeep and implementation of international classifications. Together they form the *WHO-Family of International Classifications Network* (WHO-FIC Network) (Jakob et al. 2007: 924–926).

IDC-11 is in the process of elaboration. According to Jakob and Üstün (2012: 85), "WHO is undertaking the 11th revision of the International Classification of Diseases, which aims to create a scientifically up-to-date classification with modern features that enable its use in electronic health applications". ICD-11 is expected to be available in 2018 (http://www.who.int/classifications/icd/revisions/en (16.05.2017)).

3.1.2 ICD-10-WHO

ICD-10-WHO consists of a systematic register, a comprehensive volume of rules and an alphabetical index. ICD-10 is a single criterion monohierarchical classification using an alphanumerical notation. In some cases, the localised manifestation of the primary disease can also be coded. With this star and cross notation, ICD-10 is in this respect a two-criteria classification. The classification is hierarchical subdivided into 22 chapters, more than 240 groups, and more than 13,000 'terminal' classes of diseases (Leiner et al. 2012: 44).

> Extract from ICD-10 Version: 2016 (http://apps.who.int/classifications/icd10/browse/2016/en (16.05.2017))

Chapters:

I Certain infections and parasitic diseases
II Neoplasms
III Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism
IV Endocrine, nutritional and metabolic diseases
V Mental and behavioural disorders
VI Diseases of the nervous system
VII Diseases of the eye and adnexa
VIII Diseases of the ear and mastoid process
IX Diseases of the circulatory system
X Diseases of the respiratory system
XI Diseases of the digestive system
[...]

Chapter XI
Diseases of the digestive system
(K00-K93)
[...]

Diseases of liver
(K70-77)
[...]
K70 Alcoholic liver diseases
K70.0 Alcoholic fatty liver
K70.1 Alcoholic hepatitis
K70.2 Alcoholic fibrosis and sclerosis of liver
K70.3 Alcoholic cirrhosis of liver
[...]

The ICD can be used as a three-digit and four-digit notation and in some areas even as a five-digit notation. ICD-10-WHO Version 2011 has more than 13,000 'terminal' classes of diseases. Classes of diseases are formed largely by statistical criteria, in particular by the prevalence of a disease. The ICD classification has no unambiguous underlying frame of reference. The reference framework takes in topography, aetiology and pathology. Since the ICD is a very general classification, there are also extensions to individual ICD specialities, such as ophthalmology, dermatology, rheumatology and other specialised areas (Leiner et al. 2012: 44–48).

For Chapter V of ICD-10, *Mental and behavioural disorders*, there is more than one version available according to the use to which it can be put. For clinical use, WHO has edited a special volume entitled *The ICD-10 Classification of Mental and Behavioural Disorders. Clinical Descriptions and Diagnostic Guidelines*. This edition is an exhaustive version of Chapter V and contains descriptions of the essential clinical characteristics for each disorder and further important specific features (Dilling

et al. 2011: 22). This Chapter V of ICD-10 is thus a new classification of mental disorders, the result of decades of international cooperation between representatives of different psychiatric traditions and cultures. Recommendations were drafted and a research programme agreed upon following an international conference on diagnostics and classification in Copenhagen in 1982. The documents produced were worked on after consultation with expert groups as well as national and international psychiatric associations. The 1987 version was tested in the field (Dilling et al. 2011: 18–20).

The classification of mental disorders put forward by the ICD-10 shows some fundamental changes from classical German-language psychiatry. The editors and translators of the German edition give a summary of the main changes (Dilling et al. 2011: 11):

> Konzeptionell wird im vorliegenden Kapitel V versucht, zumindest teilweise einem „atheoretischen" Ansatz folgend, auf bisherige Begriffsbildungen wie etwa Neurose, Psychose und Endogenität zu verzichten und diese durch Einführung einer deskriptiven, an diagnostischen Kriterien orientierten Klassifikation zu ersetzen. So ersetzt der Begriff „Störung" den der psychischen Krankheit weitgehend; dem Prinzip der Komorbidität wird Rechnung getragen. Gegenüber der bisher gewohnten Diagnostik wurden vor allem die depressiven Störungen nach Schweregrad und Verlauf neu eingeteilt und die unter dem Begriff „Neurosen" zusammengefassten Störungen neu unterteilt; der Demenzbegriff wurde erheblich ausgeweitet. [Chapter V was conceived at least partially as having an atheoretical approach, leaving aside former concepts such as neurosis, psychosis and endogeneity and replacing these by introducing a classification based on descriptive and diagnostic criteria. Thus the concept of 'disorder' has largely replaced that of mental disorders, and the principle of comorbidity is taken into consideration. In a break with the familiar diagnostics, depressive disorders were reordered according to their severity and the course of the disease, and disorders were grouped under the heading of neuroses. The concept of dementia was substantially broadened.]

This new arrangement led to discussion among German-speaking psychiatrists. Peters, in the introduction to *Lexikon Psychiatrie, Psychotherapie, Medizinische Psychologie* (2007: VI-VII), calls it "Umbruch nie gekannten Ausmaßes" [a break of hitherto unknown magnitude] in the use of terminology and goes on to state that since ICD-10 has been introduced, the need to explain psychiatric concepts has increased. Dilling et al. (2011: 11), who carried out the German translation for the Deutsche Gesellschaft für Psychiatrie, Psychotherapie und Nervenheilkunde, pointed to the need to compromise: "Die Herausgeber und Übersetzer stimmen nicht in allen Einzelheiten mit dem neuen Klassifikationskonzept überein. Es bildet aber einen Kompromiss zwischen den Erfordernissen verschiedener Sprach- und Kulturräume, der zwar durchaus kontrovers diskutiert wurde, aber auch im deutschen Sprachraum voll zu übernehmen ist." [The editors and the translators are not in agreement on all the details of the new classification concept. It represents, however, a compromise between the demands of differing language and cultural communities, which has led to discussion but which should by and large be adopted by the German-language community.] In the translation, new concepts such as *cyclothymia* and *dysthymia*

were adopted and expressions aimed at international harmonisation. Some diagnostic terms, which are often used in German-speaking countries but which do not occur in English, have been added to a section entitled "associated concepts" in the German translation of *Clinical Descriptions and Diagnostic Guidelines* and are printed in italics (Dilling et al. 2011: 11).

3.1.3 ICD-10-GM

ICD-10-WHO is uniformly used internationally for statistics on mortality, but some countries have developed specific adaptations to comply with the demands of their national health system. In Germany since 2004 a German Modification has been in force, under the name of ICD-10-GM. This modified version, which has further refined the classification, was necessary because ICD had been used in Germany since 2000 to code diagnoses for remuneration of health services. The modified version was proposed by the *Deutsches Institut für Medizinische Dokumentation und Information* (DIMDI), the WHO cooperation centre in German-speaking countries. ICD-10-GM is continually being updated. As experience is gained, recommendations are made by medical associations and updates from WHO are incorporated. Thus new medical knowledge can be included as quickly as possible (Krause 2007: 1060; Weber 2012: 76).

The ICD-10-GM is made up of a systematic index and an alphabetical index (Diagnosis Thesaurus). ICD-10-GM Version 2012 has 15,906 key numbers and areas, which are divided up into 22 chapters and 241 groups of diseases. It contains 13,348 terminal codes (Graubner 2012: 1349). The alphabetical index has around 76,500 entries, linked to the codes of the systematic index. The number of entries made in the alphabetic index increases continuously. By way of comparison, the 2005 version had around 64,000 entries. In 2005 the name of the index was changed from *Diagnosenthesaurus* to *Alphabetisches Verzeichnis der ICD-10-GM* (*Diagnosenthesaurus*) (DIMDI 2011: 9–10).

The alphabetical index is made using diagnostic texts in natural language and it is endeavoured to incorporate concepts as they are actually used. This means that in German the popular *Ziegenpeter* for *Parotitis epidemica* or *mumps* is also noted, or beside the technical term of *Diabetes mellitus* the traditional German words *Zuckerkrankheit* and *Zuckerharnruhr* are also noted. While the systematic index uses standardised descriptors, the alphabetical index also uses synonyms. In the introduction, the editor of DIMDI expressly requests that users report names for diseases which are not in the index (DIMDI 2011: 7).

To facilitate electronic communication, DIMDI has made the Alpha-ID available since 2005. Using the alphabetical index as a basis, each entry is given an identification number (Alpha-ID). This way each disease designation, and also each synonym, has an one-to-one corresponding (bijection), non-classifying identification number,

which is connected with the ICD-10-GM-code. Even similar diseases, which are grouped under one single code in the ICD-10 classification, here receive their own Alpha-ID-code. For example, there are 28 entries in the index under the ICD-10-GM-code *L30.8 miscellaneous sorts of dermatitis*. Thanks to these identification numbers, the documentation can handle greater differentiation (http://www.dimdi.de/static/de/klassi/alpha-id/index.htm (16.05.2017)):

Alpha-ID-code	ICD-10-GM-code	Entry
I6158	L30.8	Ichthyosiformes Ekzem [ichthyosiform eczema]
I6159	L30.8	Nässendes Ekzem [wet eczema]
I6154	L30.8	Nässender Nabel [exudating navel]
I6142	L30.8	Trockenes Ekzem [dry eczema]

Ingenerf (2015: 43) points out that the Alpha-ID allows for more precise machine-based communication than the ICD-10-code, but that it is only a pragmatic solution, since for example synonym relations cannot be identified.

3.2 Classification of procedures

Classifications for operations and other medical procedures are established mainly to enable remuneration of health services. Medical procedures are subject to rapid change, which means that continual updating of classifications is necessary. In 1978, WHO set up the *International Classification of Procedure in Medicine* (IPCM). Although there were no updates made to this, it formed the basis for national procedure classifications. In Germany the *Operationen- und Prozedurenschlüssel* (OPS) has been edited since 1994 by DIMDI and is updated every year to keep abreast with medical progress. The OPS is a monohierarchical classification. Its 2011 version contains the following six chapters on procedure:

1. Diagnostische Maßnahmen [Diagnostic measures]
3. Bildgebende Diagnostik [Imaging diagnostics]
5. Operationen [Operations]
6. Medikamente [Medicines]
8. Nichtoperative therapeutische Maßnahmen [Non-operative therapeutic measures]
9. Ergänzende Maßnahmen [Complementary measures]

The OPS only borrowed a part of the area covered in the IPCM, but kept the numbering system so as to maintain comparability (Leiner et al. 2012: 49).

The chapter on procedures is made up of 68 groups, which are further broken down into procedure classes (237 three-digit, around 1,500 four-digit, 8,500 five-digit and more than 20,000 six-digit codes). In total, the OPS-Version 2011 has 31,310 numbers and areas, 27,513 of which are terminal codes. In the 2012 version the number

of numbers and areas rose to 31,871, of which 27,990 are terminal codes. In the chapter on operations, groupings are made according to the organ concerned, whereas in the other chapters the groupings are made according to the type of procedures. The OPS also has an alphabetical index (Graubner 2012: 1356–1357; Leiner et al. 2012: 48–50).

Procedure classification systems which are designed on a multiaxial system are easier to update and are better suited to computer-based medical documentation. In structure and terminology, the French clinical procedure catalogue *Classification commune des Actes Médicaux* (CCAM) is regarded as a model (Zaiß and Hanser 2007: 944). In 2005 WHO published the multiaxial classification system *International Classification of Health Intervention* (ICHI). This rather coarse classification system was meant to enable international comparability. The multiaxial classification system *ICD-10 Procedure Coding System* (ICD-10-PCS) developed in the USA is highly comprehensive and detailed (Leiner et al. 2012: 51–53).

3.3 SNOMED CT

The *Systematized Nomenclature of Medicine Clinical Terms* (SNOMED CT) is characterised as "[...] the most comprehensive, multilingual, clinical healthcare terminology in the world" (http://www.snomed.org/snomed-ct/what-is-snomed-ct (27.05.2017)). The goal of SNOMED CT is to create a formal terminological basis for electronic clinical procedures that can express all relevant clinical data and automatically process them independently of language (Leiner et al. 2012: 58).

SNOMED CT came into being through the collaboration of the *College of American Pathologists* (CAP), which developed the SNOMED system, and the British *National Health Service*, which produced the system *Clinical Terms Version3* (CTV3). The first version of SNOMED CT came out in 2002, and in 2007 the rights were transferred to the newly created *International Health Terminology Standards Development Organisation* (IHTSDO). As of January 1, 2017, the organization is known as "SNOMED International". Through the efforts of this organisation, the terminology system is constantly developed and updated thanks to the collaboration of international experts. The revisions of the international version of SNOMED CT are published twice a year. The countries that are members of IHTSDO include the USA, UK, Australia, Denmark, Sweden, and Spain, among others. The member countries provide finance and see to it that the system is extended to all countries (Dudeck 2006: 16; Schulz 2011: 9–11).

As far as the formal construction of SNOMED CT is concerned, it can best be defined as a thesaurus with an ontological basis (Schulz 2011: 11). On their homepage, the following description of the structure of SNOMED CT is given:

> SNOMED CT content is represented using three types of component: Concepts, Descriptions, Relationships. SNOMED CT concepts represent clinical thoughts. Every concept has a unique numeric concept identifier. Within each hierarchy, concepts are organized from the general to the more detailed. Each SNOMED CT concept contains descriptions that link human readable terms

to concepts. All concepts have a single unambiguous Fully Specified Name (FSN) that contains the "semantic tag" in parenthesis and identifies the hierarchy to which the concept belongs. The concept can also have several associated descriptions, each representing a synonym that describes the same clinical concept. Every description has a unique numeric description identifier. SNOMED CT relationships link concepts to other concepts whose meaning is related in some way. (http://www.snomed.org/snomed-ct/what-is-snomed-ct/how-does-snomed-ct-work (27.05.2017))

3.4 UMLS

The *Unified Medical Language System* (UMLS) was initiated by the American *National Library of Medicine* (NLM) at the end of the 1980s. The UMLS administers medical terms and semantic relationships between many heterogeneous concept classification systems and medical nomenclature in various languages (Zaiß et al. 2005: 125).

The UMLS is made up of several components, the chief of these being the central Metathesaurus, which comprises the integrated representation of over roughly one hundred source vocabularies and classifications. The semantic network ensures a consistent categorising of all concepts. The specialist lexicon contains morphosyntactic information and linguistic programmes. Classifications and vocabularies integrated into the UMLS include the ICD, ICPC (International Classification of Primary Care), SNOMED CT and thesauri such as MeSH (Medical Subject Headings), which is used for indexing data bases of the National Library of Medicine, for example for the online data bank MEDLINE. The project is supported by institutional and commercial partners. The *Deutsche Institut für Medizinische Dokumentation und Information* feeds German-language vocabularies into the UMLS, so that after English-language the German-language holds position two (cf. Zaiß et al. 2005: 126–129; Reiner 2003: 110–113; Dugas 2017: 106–108).

References

Baumgartner, Christoph. 2011. Trends und Perspektiven in der Neurologie. Revidierte Terminologie und Konzepte zur Einteilung von epileptischen Anfällen und Epilepsien: Bericht der Klassifikations- und Terminologiekommission der „Internationalen Liga gegen Epilepsie". *Journal für Neurologie, Neurochirurgie und Psychiatrie* 12. 4–5.

Berg, A. T., S. F. Bergovic, M. Brodie et al. 2010. Revidierte Terminologie und Konzepte zur Einteilung von epileptischen Anfällen und Epilepsien. Bericht der Klassifikations- und Terminologiekommission der Internationalen Liga gegen Epilepsie, 2005–2009. Revised Terminology and Concepts for Organization of Seizures and Epilepsies: Report of the ILAE on Classification and Terminology, 2005–2009. *Aktuelle Neurologie* 37. 120–130.

Dilling, Horst, Werner Mombour, Martin H. Schmidt, Elisabeth Schulte-Markwort and H. Remschmidt (eds.). 2011. *Weltgesundheitsorganisation. Internationale Klassifikation psychischer Störungen ICD-10, Kapitel V (F): Klinisch-diagnostische Leitlinien*. 8. Auflage unter Berücksichtigung der Änderungen entsprechend der ICD-10-GM 2011. Bern/ Göttingen/ Toronto: Hans Huber.

DIMDI (ed.). 2011. *ICD-10-GM Version 2012*. Band I: *Systematisches Verzeichnis*. Band II: *Alphabetisches Verzeichnis (Diagnosenthesaurus)*. *Internationale statistische Klassifikation der*

Krankheiten und verwandter Gesundheitsprobleme, 10. Revision – German Modification. Düsseldorf: Deutsche Krankenhaus Verlagsgesellschaft.

Dudeck, Joachim. 2006. SNOMED CT – Terminologie der Zukunft? *HL7-Mitteilungen* 20. 13-25.

Dugas, Martin. 2017. *Medizininformatik.* Berlin: Springer Vieweg.

Graubner, Bernd. 2012. ICD und OPS. Historische Entwicklung und aktueller Stand. In DIMDI (ed.), *OPS 2012. Alphabetisches Verzeichnis. Operationen- und Prozedurenschlüssel – Internationale Klassifikation der Prozeduren in der Medizin*, 1335–1364. Köln: Deutscher Ärzte-Verlag.

Hausteiner-Wiehle, Constanze and Peter Henningsen. 2012. Diskussion um Konzepte und Diagnostik somatoformer Störungen. *Der Nervenarzt* 83. 1097–1105.

Ingenerf, Josef. 2015. Klassifikationen und Terminologien – Eine Übersicht. In Otto Rienhoff and Sebastian C. Semler (eds.), *Terminologien und Ordnungssysteme in der Medizin,* 35–50. Berlin: Medizinisch-Wissenschaftliche Verlagsgesellschaft.

Jakob, Robert and Bedirhan Üstün. 2012. ICD-11 Revision. *Forum der Medizin Dokumentation und Medizin Informatik* 14. 85.

Jakob, Robert, Bedirhan Üstün, R. Madden and C. Sykes. 2007. The WHO Family of International Classifications. *Bundesgesundheitsblatt – Gesundheitsforschung – Gesundheitsschutz* 50. 924–931.

Konstantinides, Stavros. 2012. Akute schwere Lungenembolie. *Deutsche Medizinische Wochenschrift* 137. 2014–2017.

Krause, Birgit. 2007. Das Revisionsverfahren der medizinischen Klassifikationen in Deutschland. *Bundesgesundheitsblatt – Gesundheitsforschung – Gesundheitsschutz* 50. 1055–1060.

Kuipers Jens Gert, Henning Zeidler and Lars Köhler (eds.). 2006. *Medal Rheumatologie. Kriterien für die Klassifikation, Diagnose, Aktivität und Prognose rheumatologischer Erkrankungen*. Friedrichshafen: wiscom.

Leiner, Florian, Wilhelm Gaus, Reinhold Haux, Petra Knaup-Gregori, Karl-Peter Pfeiffer and Judith Wagner. 2012. *Medizinische Dokumentation. Grundlagen einer qualitätsgesicherten integrierten Krankenversorgung*. 6., überarbeitete Auflage. Stuttgart: Schattauer.

Miehle, Wolfgang. 2000. Nomenklatur und Geschichte. In Wolfgang Miehle, Kurt Fehr, Manfred Schattenkirchner and Karl Tillmann (eds.), *Rheumatologie in Praxis und Klinik*, 3–19. 2., völlig neu bearbeitete Auflage. Stuttgart/ New York: Thieme.

Ngouongo, Sylvie and Jürgen Stausberg. 2011. Harmonisierung von Datenbeständen der Medizin. Ein Weg zu besserer Qualität und höherer Effizienz empirischer Forschung. *Forum der Medizin Dokumentation und Medizin Informatik* 13. 129–132.

Peters, Uwe Henrik. 2007. Lexikon Psychiatrie, Psychotherapie, Medizinische Psychologie. 6., völlig neu bearbeitete und erweiterte Auflage. München: Elsevier and Jena: Urban&Fischer.

Pfeiffer, Andreas F. H. 2006. Die verschiedenen Formen der Zuckerkrankheit und deren Genetik. In Helmut Schatz (ed.), *Diabetologie kompakt. Grundlagen und Praxis*, 17–22. 4., erweiterte und aktualisierte Auflage. Stuttgart/ New York: Thieme.

Reiner, Jörg L. 2003. *Terminologiesysteme als Grundlagen für die semantische Interoperabilität von heterogenen Anwendungssystemen sowie deren fachsprachlicher Zugang*. Berlin: Akademische Verlagsgesellschaft.

Riemann, Jürgen R., Wolfgang Fischbach, Peter R. Galle and Joachim Mössner (eds.). 2008. *Gastroenterologie. Das Referenzwerk für Klinik und Praxis*. 2 Bde. Stuttgart / NewYork: Thieme.

Schulz, Stefan. 2011. Standardisierung internationaler medizinischer Terminologien durch die IHTSDO. International Health Terminology Standards Development Organisation. *HL7-Mitteilungen* 28. 7–16.

Weber, Stefanie. 2012. Die WHO-Familie der internationalen gesundheitsrelevanten Klassifikationen und ihr Einsatz in Deutschland. *Forum der Medizin Dokumentation und Medizin Informatik* 14. 74–77.

Wüthrich, Brunello. 2005. Das Ende der allergologischen Verwirrung? „Neue globale“ Terminologie. *ORL Highlights* 11. 4–6.
Zaiß, Albrecht. 2012. Das Kuratorium für Fragen der Klassifikation im Gesundheitswesen. *Forum der Medizin Dokumentation und Medizin Informatik* 14. 72–74.
Zaiß, Albrecht, Bernd Graubner, Josef Ingenerf, Florian Leiner, U. Lochmann, M. Schopen, U. Schrader and S. Schulz. 2005. Medizinische Dokumentation, Terminologie und Linguistik. In Thomas M. Lehmann (ed.), *Handbuch der Medizinischen Informatik*, 89–143. 2., vollständig neu bearbeitete Auflage. München /Wien: Hanser.
Zaiß, Albrecht and Susanne Hanser. 2007. Die französische Prozedurenklassifikation CCAM. Eine Option für Deutschland. *Bundesgesundheitsblatt – Gesundheitsforschung – Gesundheitsschutz* 50. 944–952.

Internet resources

http://www.who.int/classifications/icd/revisions/en, 16.05.2017
http://apps.who.int/classifications/icd10/browse/2016/en, 16.05.2017
http://www.dimdi.de/static/de/klassi/alpha-id/index.htm, 16.05.2017
http://www.snomed.org/snomed-ct/what-is-snomed-ct, 27.05.2017
http://www.snomed.org/snomed-ct/what-is-snomed-ct/how-does-snomed-ct-work, 27.05.2017

Øivin Andersen and Johan Myking

28 Terminology work for specific problem areas and issues: the case of oil terminology

Abstract: The introduction outlines the aim of the article. In sections 2 and 3 three basic concepts are outlined and defined: 'oil language', 'oil terminology' and 'Norwegianization'. Section 4 describes the public anxiety for the fate of Norwegian and compares this anxiety with evidence of success for Norwegian equivalents. In section 5 the Terminol project is descibed as being the most comprehensive effort in Norwegian oil terminology. In sections 6 and 7 the arguments in favour of using Norwegian are analysed and the main principles of secondary term formation are described, emphasizing morphological motivation. Sections 8 and 9 discuss the degree of success or failure of the terminology work, and in the final section 10 it is asked whether this terminology has a future. It is argued that oil and gas are not ever-lating resources but still, that the terminology work demonstrated that language planning was able to keep up with the major economic trends of society.

1 Introduction

The aim of this article is to give an overview of the development and implementation of the Norwegian oil terminology, which is a well-known example of large-scale terminology planning from the 1980-ies onwards. The article deals with the societal, cultural and political motivations for developing a Norwegian oil terminology. Strategies of secondary term formation are described with a particular emphasis on morphological motivation. The article is summed up by an attempt to outline the outcomes and long-time effects of the oil terminology projects.

2 The concepts of 'oil language' and 'oil terminology'

The concept (or notion) of 'oil language' has always been fuzzy with vague borders. The best definition perhaps is this one: "In Norway the expression "oil language" is used as a collective designation for the language used by the workers on oil and gas installations" (Sæbøe 1996: 74, note 4, our translation from Norwegian). Still, this branch of industry is not separated into well-defined sectors. So we will have to let the concept include land based oil industry, administrative sectors, supply industry

Øivin Andersen and Johan Myking, Bergen (Norway)

https://doi.org/10.1515/9783110228014-028

and some others. It is a historical fact, however, that Norwegian was the language to be used at work developed for the personnel working off-shore on the platforms, like drilling and deck workers as well as operator personnel, but the extension to administrative sectors and the supply industry has been transparent from the start. Terminology seems to float freely through the text mass from oral communication on an off-shore operating system to contract and ordering documentation directed against national and international suppliers.

The linguistic developmental work focused primarily on terminology intended for use in the comprehensive translation and editing work in written documents in the wake of the oil drilling and production. However, the question whether Norwegian language should be used in this LSP communication domain was a political one and the practical Norwegianization of the oil terminology was built on positive political and cultural attitudes in the Norwegian society.

Consequently, we can delimit the topic of this part of the chapter to focus on "oil terminology" as a collective term for the expressions that the personnel in the oil industry uses, especially work operations, processes and appliances on the off-shore fixed and floating installations, but not exclusively confined to these. These expressions formed the basis for the consistent development of Norwegian terminology during the 1980-ies. This was a necessary precondition for the intended use of Norwegian language as a language of communication in the oil and gas industry.

3 The concept or notion of 'Norwegianization'

The term *Norwegianization* is ambiguous, too. It may refer to various historical phenomena, such as the policy of assimilation of the Sami culture and language in the nineteenth century, which displays only negative connotations today. In the context of the oil activity, however, the term has been used to refer to a linguistic and cultural process, but first and foremost to an economic and industrial process enabling the Norwegian society to cope with the economical as well as the cultural challenges resulting from the discovery of massive oil reservoirs in the North Sea. The Norwegian Petroleum Museum in Stavanger formulates it like this on a poster without reference to the linguistic dimension: "But now the Norwegianization was carried one step further. Gullfaks was the first installation which was exclusively developed by Norwegian companies, i.e. Statoil, Hydro and Saga."

The use of Norwegian language on the continental shelf may be considered a token of the political work aiming to obtain Norwegian political control. It is a well-known fact that both technology and competence came from USA in the 60-ies and the 70-ies. But it was a distinct goal to transform the offshore oil sector to a regular Norwegian industry. This was mediated by the policy of "The direct economic activity of the state". The establishment of the Norwegian state oil company Statoil in 1972

was crucial in this context. The basic intention was that Norwegian labour could run the business on Norwegian terms. The language development is both an indicator and a cultural expression of this economic development.

It is not possible to establish a satisfactory language of communication without an oil specific vocabulary and a well-structured concept system. Systematic terminology work based on the oil terminology is then essential. A simple sociolinguistic model with two basic terms can illustrate this: *domain conquest* and *domain loss*. Terminology is a precondition for maintenance and development of the vernacular and protection against domain loss. When this sector of society was new the Norwegianization could be seen as an instance of domain conquest and not only as a prevention of domain loss.

4 Early domain conquest – prevention of domain loss

From the first search for oil to the startup of the first oil field using Norwegian as an operating language there was a span of only 20 years. The 1970-ies emerged as the pioneer time. This was also the time when the English language heavily influenced the Norwegian language. The 1970-ies was a decade of political disputes and saw the awakening of a growing language political awareness. This gave rise to the publication of a short list of basic petroleum related terms in Norwegian edited by The Norwegian Council of Technical Terminology (RTT) and The Norwegian Language Council. In 1985 the *Terminol Project* at the University of Bergen was completed, ordered by Statoil. This was the first large-scale project intended to run the oil field Gullfaks with Norwegian as the working language.

The political unrest related to the English-American influence was expressed in various ways. There were many negative reactions towards the so called "uncritical" import towards, or to be more precise, the spontaneous adjustment of terms so typical of the Norwegianization at this early stage before it became more systematic:

> Is "Oil Norwegian" an art of language engineering or a subconscious copying from offshore or land based authorities? Despite a series of inventive expressions the bottom line must be that a great majority of the "anglosisms" seems to be the result of an uncritical attitude to the foreign vocabulary (Standal 1981: 462, translated from Norwegian).

The strong anxiety in the Norwegian society that the oil activities would lead to language death gave rise to terminological activities which made it possible to call off or at least postpone this danger:

> During some hectic years of high oil prices a solid basis for a Norwegian petroleum terminology was established and developed by the oil sector itself into a full blown communicative system for both petroleum related subjects and for practical work life. [...] This is the basic reason why foreign languages have not won more influence so far. (Pedersen 1994: 169, translated from Norwegian).

In the decades to come there were frequent debates on the consequences of these terminological activities: Did the words enter Norwegian language use or not? Were they accepted elsewhere than in the manuals? Did they arouse negative reactions? Very little systematic research has been carried out on these aspects, but fiction literature may give us a good impression here. In 2008 a novel with the title *14 dager I Nordsjøen* (two weeks in the North Sea) by Leif Henriksen was published. He wrote the following on this novel (personal communication on e-mail 08.05.2008):

> In this novel I have to the best of my ability tried to establish a one-to-one relationship to work, including language use on the platforms. The language in the North Sea is as I perceived it, how I overheard the conversations of the workers in the coffee bar and in the fields including the platforms, the objects, the tools, the work situations and the social relations on the platforms and at shore (translated from Norwegian).

In this novel it is possible to identify 288 terms; many are identical to terms from the pioneer Oil list. More than 20 can be characterized as English: *bracing, reclaimed oil, eagleclamp, flight, grating, handover, high torc, medic, non destructive testing, permit, safety, space, catering, coating, conductor, degassing, derrick, flow, strips, monkeyboard, moonpool, mud)*. But many of these terms were used in variation with the Norwegianized equivalent terms: *reclaimed oil/spillolje, permit/arbeidtillatelse, derrick/boretårn, mud/(bore)slam,* etc. Only four of the Oil list terms are used without variation with the Norwegian equivalent: *moonpool* (= kjellerdekkshull), *reiser* (i.e. English *riser* = stigerør), *monkey board* (= tårnplattform) supplyboat (= forsyningsskip).

Even though this is not a systematic investigation, the quantitative preference for Norwegian is quite evident. So this novel can be seen as a Norwegian dominated description of a working environment in the first decade of this millennium. Some critics interpreted the Norwegian dominance as a lack of exotic flavor. "I missed a real blow-out", as one of the critics put it.

5 The Terminol project and its aftermath

The Terminol project was quantitatively the most comprehensive effort in Norwegian oil terminology. It is perhaps the largest terminological project in Norway ever. It was run from 1984 to 1985 at the emerging "Norwegian Term Bank" at The University of Bergen. The assignment came from Statoil and the goal was to develop a Norwegian terminology for the oilfield Gullfaks and adapt it for training documentation on the platforms in the field, primarily for Gullfaks A. About 40 different manuals in English describing different systems were edited both linguistically and terminologically, furnishing Norwegian terminological equivalents to approximately 10 000 concepts and implementing this terminology into technical manuals and textbooks. In 1986 this was supplemented by a separate project for the Gullfaks B platform, and this time the manuals were written directly in Norwegian.

The different projects at the Norwegian Term Bank centering around the Gullfaks terminology and similar projects are documented in detail in various reports. The reports underline the fact that the cooperation with technical experts was crucial. These experts were selected representatives of the crew that would run the platforms. This was seen as a guarantee that solutions were found that would be acceptable to the users. At the same time it is important to stress the fact that philologists and engineers may have different approaches, values and premises for the task at hand. Sometimes conflict could occur and it is an undeniable fact that many of the strongest focused terms tended to be the ones that arouse the strongest negative reactions, like *drivrør, drivrørshylse* and *rørkoplingshylse*, see further below.

The Terminol project was established, not only as a result of a comprehensive political groundwork, but also of the fact that the oil language was present in the current public debate. The preparatory groundwork is not documented in detail, but it is fair to say that The University of Bergen, The Rogaland University College and competent resources in the Statoil system found each other. A terminological pilot project was realized in Stavanger in 1981 (Hegland and Pedersen 1982). In the 1980-ies Statoil was a 100% state owned company with public assignments that could be influenced by political impulses to a much greater extent than today. Thus we can assume that the company would be sensitive to the so called "impression government" from society at large and from the political environment (Sæbøe 1996, Sæbøe and Myking 2002). The fact that the head director of Statoil was Arve Johnsen with a political background from the Norwegian Labour Party was significant.

Another important driving force were the psychological reactions of the young Norwegian engineers and technicians when meeting the everyday conditions of the American oil business. This was the starting point of the Norwegian "oil adventure" at the end of the 60-ies. Jakob Bleie, who later was to become the director of Statoil's Gullfaks division in Bergen, and thus the responsible assigner of the Terminol project, expressed it like this:

> There was much arrogance from the American companies. "We know these things, and we have done this for many years. You Norwegians do not have to bother with this." And we who in those days were young, listening to this, became increasingly annoyed, because they behaved in ways signaling that they had arrived in an underdeveloped country without educated people. Thus, very early we decided to manage this ourselves. We *will* manage this ourselves. And language becomes a very important part of the picture (Kristoffersen, Kristiansen and Røyneland 2005: 146, translated from Norwegian).

The result of this work was the terminological database of the Norwegian Term Bank (the "NOT-base"), a concrete, usage-based terminological resource. The base was developed, run, maintained and marketed by the Norwegian Term Bank, basically in the final decade of the last century. The term base is a further development of the Gullfaks terminology, run by a subscriber basis to the companies in the petroleum industry in those years when systematic Norwegianization was still going on. Later the base has been used in translation and documentation work.

6 The arguments in favor of Norwegianization

The arguments in favour of an increased focus on Norwegian in the oil sector in the 70-ies and the 80-ies can be divided into three groups:

Firstly, reasons of safety in a multilingual and multicultural work environment where the bosses used English as working language to Norwegians who at the time had an insufficient command of the language. Moreover, there were other nationalities and languages present. Einar Flydals book *Oljespråk* (Oil language, Flydal 1982) was important for the general importance of this argument. The trade unions in the first decade of this century still focused on this question, as illustrated above, and the communicative problems have continued to increase at work as a consequence of Norway's adherence to the Eurpoean Economic Area (EEA) and increased labour immigration.

Secondly, market policy is important. In order to make things easier for the Norwegian supply industry the use of Norwegian language was stimulated. Especially smaller companies who could not afford expensive translation services would have easier access. Later the strategy of the state oil company changed in a more international direction. In 2010, Statoil issued a letter stating that they no longer would communicate with the supply industry in Norwegian. All this shows that these problems still remained 30 years after the first start up of the Norwegian oil terminology work. By public and political pressure Statoil was forced to state that they still intended to use Norwegian. There was also an economic motivation for Statoil to introduce Norwegian as language at work. It was of course an advantage for the company to show the government that they were able to use Norwegian. In this respect Statoil had the opportunity during the first decades to serve as as a role model for other companies in competition. However, Statoil's strategy has changed in a more international direction later.

Thirdly, Norwegian cultural attitudes certainly had an important role to play here, but it is hard to document the extent of this influence compared to the other two arguments. It is tempting to state that economic and value creating arguments weigh more than culture in terminology work as well, especially when the strategies are strictly goal oriented. But culture is, amongst many other things, a psychological dimension. This is evident from the Jakob Bleie citation above. Sometimes it is easy to forget the influence that dedicated individuals can have on historical events. No economic, social or cultural processes operate in a vacuum; there are always people involved.

7 Morphological motivation as the Main Principle of Term Formation

Terminology work is not primarily weighing principles of adaptation against each other. The basic aspect is to establish a functionally correct linguistic expression for the concept or the entity to be described. The main goal demand from Statoil was

a demand for "forbilledlig norsk" ('exemplary Norwegian', Roald 1986). This was interpreted as "transparent" and easily understandable word formation, implying that minimum adaption of style was to be avoided, like *derrick > derrick*. In contrast one should encourage a morphological and semantic type of motivation which was more typical of Norwegian lexical structure, e.g. *derrick > boretårn*.

Applying this strategy the Norwegian terminology is expressed by familiar word elements, thus avoiding unfamiliar word formation stems. The demand for transparency, or, to use a more general expression, *motivation*, is a key concept in all types of terminological treatment of import word formation even though the term motivation is more frequently used in terminological literature than in general lexicographical work (Myking 2008). However, in the 90-ies the concepts of 'orthographic purism' vs. 'lexical purism' were the most important ones in the current debate on Norwegianization (Sandøy 2000). In this context "motivation" would mean lexical purism, whereas the alternative strategy was based on structural adaptation or 'orthographic purism' (cf. Andersen and Myking, article 11, this publication). It is easy to conclude that the principle of Norwegianization in the sense of orthographic purism did not play a major part of the Norwegian oil terminology work. Consistent transparency and lexical purism by means of loan translations and morphological motivation were the most dominant factors. So the English term *pig* was not introduced into the Gullfaks terminology as *pigg* (as in the original term oil list), but rather as (*rense)plugg*.

The spontaneously developed pidgin language (Guldbrandsen 1985), in contrast, was primarily an oral register including foreign stems from the source language into a grammatical framework which belongs to the target language:

(1)

a. *Han inspiserte spoolpiecen* "He inspected the spool piece".
b. *Røret var plassert I musehullet* "The pipe was situated in the mouse hole"
c. *Blowdownventilen ble skiftet ut* "The blow down valve was substituted"
d. *Dopa de ikkje jointene når de connecta drillpipen, nytta det ikke hvor mye de teita til med tengene* «If they did not dope the joints when they connected the drill pipe, it did not matter how much they tightened with their tongs" (Johnsgaard 1996)
e. *En kelly er en kelly, men hva er et drivrør?* "A kelly is a kelly, but what is a 'drivrør'" (an authentic example from the terminology group at The Norwegian Term Bank)

A mixture like this is not uncommon and it is not exclusive for the oil language. These are the same lexical inference processes described by Einar Haugen in the 1930-ies, when he documented the Norwegian language in America, especially the oral language use. The new Gullfaks terminology, however, was developed by a systematic excerption of technical manuals, written in English, and subsequently systematized, using terminological methods. So these terms belong primarily to a

written register. Fiction literature written by former oil workers is an interesting piece of fieldwork (e.g. Johnsgaard 1996; Henriksen 2008), and by comparing fiction literature with the official terms this register difference becomes visible (the mixed language terms constitute the left column and the official terms constitute the right column):

(2)

a.	Joint/er	skjøt
b.	Drillpip/en	borerør
c.	Roustabout/er	dekksarbeider
d.	Riser/en	stigerør
e.	Derrick/en	boretårn
f.	Monkeybo(a)rd/et	tårnplattform
g.	Floor/en	boredekk
h.	Doghous/en	bakrom til borehytte
i.	Drawwork/en	heisespill

It is worth noting that Johnsgaard's terminological examples reflect an earlier stage in this linguistic process. The presence of English terms or hybrid terms is significantly higher than by Leif Henriksen (above). Much of the discussion on language quality and good term formation centered around som few doublets and triplets of words:

(3)

a.	Kelly	drivrør	kelly
b.	Rathole	drivrørshylse	rottehull
c.	Mousehole	rørkoplingshylse	musehull

The right column illustrates a minimal Norwegian adaptation formally or semantically, whereas the mid column contains "official" terms, i.e. terms that are in harmony with the quality criteria. There is very scant empirical evidence for the actual use of these term variants over time, but it is an important fact that the official terms in the mid column gave frequent rise to negative reactions. The left and right column terms were more frequently used in oral communication than the mid column terms, but these terms were consistently used in training documents and on process screens and signposts on the platforms, i.e. in those genres and text types which could be systematically planned.

To some extent the terminology work resulted in doublet term variation and separation into different registers, a formal written register and an informal oral register. In the project "The North Sea as a Language-cultural Laboratory" these aspects were investigated in the 90-ies, but it was not possible to identify exact or statistically significant surveys on this variation. The basic pattern described above is still fairly reliable (cf. Andersen 1998a, Myking and Sæbøe 2002, Rangnes 1997).

8 So how did things turn out?

As far as the role of the oil language as linguistic colonizing factor and source of influence is concerned, many strong and conflicting opinions have been uttered during the last couple of decades.

One might easily focus too much on the fact that the English words still seem to be in current use. These words are usully very pregnant words with a wide meaning potential. They also tend to have a strong symbolic power with a strong weight in the media, i.e. words like *offshore*. This word is highly flexible and it can enter into many compound constructions. This might leave the impression that English is still the stronger language. Later words such as *subsea* have had a similar impact. It is a kind of marker of every aspect of sub water technology, a branch associated with technological innovation and education.

However, such isolated words say very little about the status of English. As a contrast, many Norwegian substitute words are being currently used instead of the English equivalents in the mass media, but these are hardly noticed by the public. Newspaper reports on three major catastrophes in the oil sector may illustrate this.

In 1977 there was a giant uncontrolled blow out on the Ekofisk field. The well on the Bravo platform leaked oil and had to be shut down. The "well killer" Red Adair and his crew were assigned the task. In 1988 the Piper Alpha platform in the British sector exploded and many people died (Myking 1989). Finally, 2009 witnessed the tragedy of Deepwater Horizon in the Mexico gulf.

The term *blow out* was familiar to the Norwegian public during the Bravo accident, but the Norwegian substitute term *ukontrollert utblåsing* was introduced at the same time. Today the general impression is that the English term has become invisible in the mass media, having been substituted by the official Norwegian term. The newspaper Stavanger Aftenblad had the following headline on January 29 2010: *Lofoten tåler en Bravo-utblåsing.* "(The district of) Lofoten can take a Bravo blow out."

On the other hand it is possible to describe the English expression *offshore* as "the term that will never be Norwegianized". Attempts such as *"havindustri"* (literary "industry at sea") failed. Today this word is generally used in connection with other marine industries such as aquaculture.

When the proposed Norwegian equivalents of *offshore* failed, the equivalent of *blowout*, *ukontrollert utblåsing* turned out to be a great success. There are several reasons for this contrast: The expression *utblåsing* is short and it is formed by a morphological structure corresponding semantically to the English structure. More importantly, these structures were familiar in the Norwegian vernacular, although they did not have a technical meaning.

Maybe it would be possible to call this the right term at the right time, because it had a strong symbolic effect in the media, perhaps because at the end of the day the Bravo blow out ended well. Interestingly, this expression has later given rise to the metaphorical meaning "sudden burst of anger" in the political language.

The Norwegian oil language has a very short history compared to the Norwegian maritime language. This is probably the reason why it has still not yet delivered much lexical expression to the general language by determinologization. Perhaps the word *utblåsing* is until now the only determinologized oil expression in Norwegian general language. This is a clear contrast to the abundant determinologized expressions from the maritime language.

9 Success or failure?

Considering the development of the Norwegian oil language we have been dealing with two distinct but interrerelated trends:

1. The danger of negative influence on Norwegian general language that was expressed in the debate in the 1970-ies and 1980-ies. The oil language was seen as a source of language attrition and colonization by uncontrolled influx of borrowings into Norwegian.
2. The efforts to nationally control the oil industry and transform it into a regular Norwegian branch of industry where the basic precondition would be the running of Norwegian labour force being able to use Norwegian language as day to day working language and special language in order to secure safety and good working environment.

It is easy to sum up the positive aspects of the general language conditions. The Norwegian language is certainly very much alive. But at the same time the oil industry is quite distant from the everyday life of the average Norwegian. Few know how this special communication is. Systematic development of terminology is no longer carried out. The development of new oil fields are carried out in English, and even the partially privatized Statoil, still in a key position, has switched to the use of English. It would perhaps be reasonable to believe that Norwegian equivalents are no longer used, as the examples *offshore* and *subsea* illustrate, but there are still some counterexamples. There is still some pressure to maintain Norwegian as the working language, especially in the trade unions and in The Petroleum safety Authority Norway (PSA, Petroleumstilsynet), and in the Norwegian labour force still being in majority on the Norwegian continental shelf. But Statoil has introduced English as official working language since the late 1990-ies despite some instances of protest (cf. above) but still, with a general trend of acceptance or perhaps resignation.

The general impression is that the language of the oil industry is a mixture of register variation between English and Norwegian (and some other languages) in a way indicated by research in the 1990-ies. Norwegian terminology exists on vital sectors of the industry. This terminology is available, but the pressure of using it is weaker than it was in the 1990-ies. The outcome of the terminology work can perhaps be said to be

a partial success, and this is perhaps the best we can hope to achieve (Jónsson et. al. 2013: 166). The field may be said to be *domain distributed*. Norwegian still exists, but not in job announcements. English dominates, but not in media reports.

Even if the history of the Norwegian oil language is a success both economically and industrially, it did not give rise to a fruitful and rich increase in Norwegian terminology work in general. The hope of such a success was unrealistic. Still, this work led to an increased interest in LSP and terminology research and higher competence in the following years.

10 Does oil terminology have a future?

The language policy climate change can be represented by Statoil's shift to English as working language in 1998. When Statoil was partly privatized in 2001 it acquired a new role and a new function both in Norwegian industry and in Norwegian politics. The reduced public influence diminished the possibility of controlling and stimulating the use of Norwegian on a cultural basis. Since then Statoil has engaged in projects abroad, also outside Europe. In this context the motivation for the use of Norwegian is considerably reduced. The time when a big company could function as the engine and political ideal of national values and language political ideals is definitely over.

Oil and gas are as such of course not an everlasting resource and its terminology has never been ensured a long-lasting existence. During the "Green Shift" that we are witnessing anything related to oil tends to evoke negative political connotations. Interestingly, this shift is in 2018 signalled by the company name Statoil being replaced by the name of Equinor, removing the elements of 'state' and 'oil'. There is still no generally morphologically motivated Norwegian equivalent to *fracking* ("hydrostatic fracturing") a term referring to the latest technology available, ensuring the oil supplies in America while still being banned in Germany and some other countries for reasons of bad environmental effects. The installations on some of the oldest Norwegian oilfields have been assigned the status of Norwegian Cultural Heritage, and the removal and destruction of old platforms are likely to form a new industry in certain districts during the next decades.

Money and resources spent on language and terminology are insignificant compared to the incomes generated by the oil exploration. Today we are, however, witnessing a decline of incomes and an increased rate of unemployment clearly signalling a reduction of the societal and economic impact of Norway's oil industry, thus introducing a phase of major transition.

In these perspectives the development of the Norwegian oil language was perhaps also an insignificant episode. Nevertheless, the oil terminology demonstrated that it is in fact possible for language planning to keep up with the general trends in society. The oil terminology epitomized the language planning pertaining to the

social-democratic ideas, and as such, it may be considered an honorable achievement of the 'Nordic societal model' – although not followed by similar large-scale projects in other domains.

References

Andersen, Øivin. 1998a. *NOT-prosjektet. Norsk terminologisk database – struktur og applikasjoner* [The NOT project, Norwegian Terminological Data Base, Structure and Applications]. Nordterms proceedings 1998. Kautokeino: Nordterm.

Andersen, Øivin. 1998b. Fagtekst og agentivitet (LSP text and agentivity). In Christer Laurén and Marianne Nordman (eds.), *Nation och individ i fackspråk, Forskning i Norden* (Nation and Individual in LSP. Nordic research), 12–26. Vaasa: University of Vaasa.

Andersen, Øivin. 1999. From conception to concept in a terminological data base. In *TKE 99 Terminology and Knowledge Engineering 43. 54. International Congress on Terminology and Knowledge Engineering*. Vienna.

Andersen, Øivin. 2002. Terminology and pragmatics. In Merja Koskela, Christer Laurén, Marianne Nordman and Nina Pilke (eds.), *Porta Scientiae*, 136–147. Vaasa: Universitätspublikation.

Andersen, Øivin. 2007a. Deverbal nouns as hybrids: some textual aspects. In Kurshid Ahmad and Margaret Rogers (eds.), *Evidence Based LSP*, 155–170. Bern: Peter Lang Verlag.

Andersen, Øivin. 2007b. Indeterminacy, context, economy and well-formedness in specialist communication. In Bassey Edem Antia (ed.), *Indeterminacy in Terminology and LSP*, 40–41. Amsterdam and Philadelphia: John Benjamins. http://www.uib.no/form/arbeidsfelt/publikasjoner/hubro/hubro-2013 (accessed 26 August 2013).

Flydal, Einar. 1983. *Oljespråk*. Språklige lovbrudd og lovlige språkbrudd på sokkelen [Oil language. Linguistic law violations and legal language violations on the continental shelf]. Oslo: Universitetsforlaget.

Gulbrandsen, Tone. 1985. *Med fireflaiten åffsjår. Norske oljearbeideres bruk av anglisismer* [The four o'clock flight offshore. The use of anglicisms of Norwegian oil workers]. Oslo: Universitetsforlaget.

Hegland, Kåre and Per-Bjørn Pedersen. 1982. *Petroleumsteknisk terminologi: forprosjekt* [Petroleum techological pre project]. Stavanger autumn 1981, Report 6/82. Stavanger: Rogalandsforskning.

Henriksen, Leif. 2008. *14 dager i Nordsjøen*, Roman [Two weeks in the North sea, Novel]. Oslo: Gyldendal.

Johnsgaard, Magnar. 1996. *Svart regn*, Roman [Black Rain, Novel]. Oslo: Cappelen.

Jónsson, Sigurður, Christer Laurén, Johan Myking and Heribert Picht. 2013. *Parallellspråk og domene. Nordisk språkplanlegging på 2000-tallet, med særlig vekt på utdannings- og forskningssektoren* [Parallel language and domain. Nordic language planning in the 2000-ies, with emphasis on reserach and higher education]. Oslo: Novus.

Kristoffersen, Gjert, Marita Kristiansen and Unn Røyneland. 2005. *Norsk i hundre!* [Norwegian at High speed]. Oslo: Språkrådet.

Laurén, Christer, Johan Myking and Heribert Picht. 1998. *Terminologie unter der Lupe. Vom Grenzgebiet zum Wissenschaftszweig*. Vienna: TermNet.

Laurén, Christer, Johan Myking and Heribert Picht. 2008. *Insikter om insikt. Nordiska teser om fackkommunikation* [Insights of insight. Nordic theses on terminology and special communication]. Oslo: Novus.

Myking, Johan. 1989. Cultural Policy or Specialized Communication? Norwegian Oil Terminology in the Eighties. In R. Fallenstein and T. J. Ropeid (eds.), *Sprachpflege in europäischen Ländern* (Schriften des Germanistischen Instituts der Universität Bergen), 91–112. Bergen: Germanistisk institutt.

Myking, Johan. 2005. Terminologi i Noreg – historisk oversyn [Terminology in Norway – a Historical Survey]. In J. Hoel (ed.), *Hvem tar ansvaret for fagterminologien?*, 2–15. Oslo: Språkrådet.

Myking, Johan. 2008. *Motivasjon som termdanningsprinsipp. Ein teoretisk diskusjon med grunnlag i norsk oljeterminologi* [Motivation as a principle of term formation. A theoretical discussion based on Norwegian oil terminology] (Acta Wasaensia 191). Vaasa: University of Vaasa dissertation.

Myking, Johan. 2009. Yet another taxonomy of motivations. *Terminology Science and Research* 20. 39–53. http://www.iitf.fi/cms/component/remository/?Itemid=108 (accessed 16 July 2017).

Myking, Johan and Randi Sæbøe. 2002. Språkplanlegging, identitet og marknad – Nordsjøen som språkleg-kulturelt laboratorium [Language Planning, Identity and Marknad – The North Sea as Language Cultural Laboratory]. In Håkon Andersen, Sissel Lie and Marit Melhus (eds.), *KULT – i kulturforskningens tegn. En antologi*, 18–196. Oslo: Pax Forlag A/S.

NOT. Norsk terminologisk database. Elektronisk utgåve [Norwegian terminological database. Electronical edition]. Bergen: Unifob/Aksis. Cf. The project Termportalen [Termportal], Norwegian School of Economics. http://www.terminologi.no/forside.xhtml (accessed 26 August 2013).

Oljeordliste [Norwegian glossary of oil terms]. 1982. Oslo: RTT/Norsk språkråd.

Pedersen, Per-Bjørn. 1994. Norsk oljespråk i eit tiårs perspektiv [The Norwegian Oil Language in a 10 Year Perspective]. In Johan Myking, Helge Sandøy and Ivar Utne (eds.), *Helsing til Lars Vassenden på 70-årsdagen* [Greetings to Lars Vassenden on his 70th Birthday], 61–170. Bergen: University of Bergen, Dep. of Scandinavian.

Rangnes, Odd Kjetil. 1997. *The mother tongue as a threat to professional identity: Norwegian oil workers' attitudes to Norwegian oil terminology* (Småskrifter 21). Bergen: Norsk termbank.

Roald, Jan. 1986. Faglig sluttrapport [Final Report]. In Jan Roald, Johan Myking and Per Bjørn Pedersen, *Terminol. Sluttrapport fra et terminologisk prosjekt* [Terminol. Final report from a terminology project], 6–29. University of Bergen: Norske språkdata 11. Bergen, Norsk termbank – Avdeling for norsk leksikologi.

Sæbøe, Randi. 1996. Norsk språk i møte med en anglo-amerikansk kultur [The Norwegian Language meeting an Anglo-American Culture]. In Christer Laurén and Marianne Nordman (eds.), *Fackspråk i olika kontexter. Forskning i Norden* [Language in Different Contexts. Nordic research], 68–75. Vaasa: University of Vaasa.

Sollie, Bente Getz. 2005. Fra Råd til råd [From Counsil to Counseling]. In Jan Hoel (ed.), *Hvem tar ansvaret for fagterminologien? Rapport fra en strategikonferanse om terminologi og fagspråk i Norge* [Who are resonsible for the terminology? Report from a strategy conference on terminology and LSP in Norway], 44–47. Oslo: The Norwegian Language Council.

Språkrådet. 2010a. http://www.sprakradet.no/nb-NO/Toppmeny/Aktuelt/Sprakdagen/Sprakdagen-2010/ (accessed 1 August 2013).

Språkrådet. 2010b. http://www.sprakradet.no/Toppmeny/Publikasjoner/Spraaknytt/Arkivet/Spraknytt-2010/Spraknytt-32010/Statoil-vil-likevel-bruke-norsk/ (accessed 1 August 2013).

Standal, Arnlaug. F. 1981. Oljenorsk. Språkleg ingeniørkunst eller medvitslaus etteraping? [Oil Norwegian. Linguistic engineering art or unconscious imitation?]. *Syn og segn* 8/1981. 458–462. Oslo: Samlaget.

Peter Sandrini

29 Legal translation

Abstract: Legal translation has always been a field that, on the one hand, derives its importance from practical needs of people involved in globalized legal relations as well as in the judiciary system of multilingual societies and language minorities, and, on the other hand, stirs a special interest in translation studies because of the specific relation between language and law and, in recent studies, between culture and law.

In the following article we will begin with some general assumptions about language and law, attempting to clarify these assumptions with some central definitions, and subsequently, we will proceed to the important role that comparative law plays here, and the key factors determining legal translation combining them in a layered model allowing for a concise synopsis of legal translation.

1 Language and law

Di Lucia (1994) brought forward a precise analysis of the relationship between language and law, identifying three basic oppositions:

1. comparison of language and law vs conception of law as language
2. linguisticity of law vs linguisticity of the norm
3. ontology of the normative vs semiotics of the normative

The historical school of law put forward two analogies between law and language: First, both evolved in the same way from natural practice by the people. Second, after this spontaneous creation both are further investigated by experts, lawyers and grammaticians (Savigny 1814). Linguists compared language and law by highlighting the fact that both are human institutions relying on their systematicity. The comparison of law and language, however, has had only a minor impact in modern translation studies, e. g. the role of interpretation of a text from both viewpoints (Engberg 2002). Translation is interested in language as a communication tool within law and not so much as an abstract system that may be compared to law.

In opposition to these early approaches to the relation of law and language, the analytical philosophy of the twentieth century (with philosophers like L.F.L. Oppenheim and Norberto Bobbio) defined law as a corpus of texts, of communications which constitute the object of the meta-language of jurists. This view can be misleading as it conceals the nature of Law as a special domain and the role of legal language as a

Peter Sandrini, Innsbruck (Austria)

https://doi.org/10.1515/9783110228014-029

language for special purposes. The conception of law as language, however, is still a well-received assumption in linguistics and also in translation studies, and is often brought forward as evidence for the importance of language for law and a linguistic approach to legal translation. The Italian linguist Cortelazzo, for example, states that "Il diritto non si serve della lingua, ma è fatto di lingua" (Cortelazzo 1997: 36) "Law doesn't make use of language, it is made of language" (translation by author).

Seeing law as a corpus of language products (a class of sentences) represents the approach of the linguisticity of law, in the sense that what legal science does is a semantic and syntactic analysis of a corpus of texts. There is however, serious criticism against this approach: not all norms are linguistic facts, there are norms which pre-exist written law, and there are also norms which have been codified ex post by legislation, as the comparative lawyer Sacco demonstrates: "Il diritto non ha bisogno della parola. Il diritto preesiste alla parola articolata" (1990: 14) "Law does not need language" (Sacco 2000: 117), "Law precedes the spoken or written word" (translation by author). This means that law represents something beyond language and texts. Comparative law identifies this with the social function of legal norms which has important reflections on translation as will be shown further on when we speak about translation and comparative law.

For the scope of this contribution we see law as a specific domain which sets its own rules and constraints for all kind of communication purposes. This is in line with the definition of specialised communication (Fachkommunikation) by Hoffmann (1993) who places specific knowledge and cognitive processes at the centre of his definition, stating that specialized communication is the "exteriorization and interiorization of knowledge systems and cognitive processes, motivated or stimulated externally or internally, concentrating on subject-matter events or sequences of events" (Hoffmann 1993: 614, translation by author). For law, therefore we may speak of a specific communicative framework which is "intimately linked to the discipline's methodology, and they [the experts] package information in ways that conform to a discipline's norms, values, and ideology" (Berkenkotter and Huckin 1995: 1). Hence, there can be no doubt that "legal language is a technical language and legal translation is technical translation involving special language texts" (Cao 2007: 17).

2 Towards a definition of legal translation

What distinguishes legal translation from other types of technical translations is the adjective legal; legal may imply the translation of *legal* texts. Going into detail, this simple assumption could be challenged, simply by questioning the criteria that identify a legal text. This is by no means an academic question since a precise characterization and categorization of legal texts is not available, and has been a desiderata for research for a long time (see Busse 2000: 658). Furthermore, such criteria would have

to take into account not just linguistic features of texts, but foremost their role within an institutional context: "Nicht durch den sprachlichen Charakter, sondern durch ihre Rolle in einem institutionellen Handlungszusammenhang bekommen Gesetzestexte ihre 'normative Funktion'" (Busse 2000: 660) "the normative function of statutes is not derived from their linguistic features but comes from their role within an institutional framework of action" (translation by the author). Yet, many base their understanding of legal translation on the notion of legal text. Gemar (1995: 124), for instance, distinguished between "translating the law" and "translating legal texts", a consideration which implies that laws and statutes might not be legal texts or at least that there is a huge difference between them and other kinds of legal texts.

A second meaning of legal in legal translation would be its differentiation from translations in other subject areas. Legal translation would then be the translation within the field of law of any texts that are needed in law. The field of law is not clear-cut nor well-defined: anything may be of importance when seen from a normative or regulative perspective. Thus, legal provisions may be taken in every aspect of life, or in other words, legal thinking is just a normative view on reality, making law trans-disciplinary in its nature (Cornu 1990: 23; Gémar 1979: 51, Sandrini 1999: 14). Furthermore, law is system-bound and thus split up into a great number of independent communicative settings. We tend to assume a more general view on the definition of legal language insofar as to comprise all communication acts occurring in the course of legal actions taken by legal experts, lay people, and administrative personnel. Such a description devolves the differentiating criteria onto the question of what constitutes a legal action; it takes us out of the linguistic discussion into the subject-specific realm of law. Every text with some legal importance may be seen as a legal text. Engberg (2002), thus, argues that in a criminal procedure even a restaurant bill may constitute a legal text when it is used as evidence. This is why Engberg bases his definition of legal translation not on the text type of the source text, but on the function of the translated text as well as the context of the translation itself: "By way of definition, I take legal translation to be translation of texts for legal purposes and in legal settings, i.e., a functionally– and situationally – defined translation type" (Engberg 2002: 375).

Function is central to the German Skopos theory of translation (Vermeer 1996, Nord 1997) which lends itself to translation in professional settings and the new multimodal types of software and web localization (Nord 2012), focusing on the role the target text has to play within the subject community. In this sense, translation has to cater for the receiver of the text and "the translation of legal texts is (or ought to be) receiver oriented" (Šarčević 2000: 1), an approach that has been discussed theoretically (Madsen 1997) as well as tested against parallel legal texts and authoritative translations (Šarčević 1997, 2000) with the conclusion that it is not just the function of the target text and the receiver that influence the decisions of the translator but mainly the legal context in which the translation is to be used: "By suggesting that the translation strategy for contracts is determined primarily by function, he [Vermeer]

disregards the fact that legal texts are subject to legal rules governing their usage in the mechanism of the law" (Šarčević 2000: 330). Accordingly, Šarčević defines legal translation as an "act of communication within the mechanism of the law" (Šarčević 1997: 56) in itself as opposed to a mere act of linguistic transcoding. Again, the specificity of law as a subject and a discourse community is seen as the primary criterion for translation which should render ideas and thoughts but never words or language: "à traduire l'idée avant de s'attacher au mot" (Sparer 1979: 68).

The strategies to achieve this may be variegated but are always a function of the overall purpose of the specific translation task and the legal setting in which it takes place. In accordance with Hoffmann's definition of specialist communication (1993: 614) and taking recourse to the definition offered by the translation studies terminology (Delisle, Lee-Jahnke and Cormier 1999: 188) we may define legal translation as

> a purposeful activity of exteriorizing legal knowledge systems, legal cognitive processes and norms, induced, selected and weighted from an offer of information (interpretation), aiming at disseminating them in another language (interlingual) and/or in another legal system (transcultural) while assessing their legal effect against the background of relevant supra- national and international regulations.

In law each text is the result of an application of legal knowledge systems as well as legal cognitive processes, and each act of communication reflects a world of normative ideas and projects them into the text which serves a specific communicative need. What will be exteriorized by the translator in the target text depends on the purpose of the translation and the legal setting in which the target text will be used. Through interpretation of the source text, the translator inevitably chooses, selects and weighs, and therefore acts as a sort of filter for the text. The legal effect of the target text has to be seen in conjunction with the purpose of the target text, and since people from different legal backgrounds communicate in translation, the relevant supranational and international regulations must be taken into account. It should be stressed here that there is no fixed meaning in a legal text which can be transcoded into another language with the help of a dictionary; meaning is rather constructed in communication by specific communicative parameters (Engberg 2002). Training and education of the translator will be decisive in this respect; for he or she must be able to judge legal implications and effects in the text which is possible only with appropriate legal knowledge (Jackson 1995). With the growing importance of international legal settings and regional legal systems like European law, the target text has to be checked not only for its legal effect in the target legal system but also for its implications within supranational or international legal frameworks where one language may be used by one or more legal systems as well as by the supranational legal setting.

For many, all these elements make legal translation one of the most difficult types of technical translation requiring a great deal of legal knowledge and a fine grasp of legal reasoning. On the other hand, Harvey (2002) challenges the special status of

legal translation as the most difficult type of specialist translation and pinpoints its specificity to the fact that it "stands at the crossroads of three areas of inquiry – legal theory, language theory and translation theory – that are fundamentally indeterminate, largely because of their reliance on natural language" (Harvey 2002: 182).

Our definition identifies an inter-lingual type of legal translation when two languages within one coherent cognitive context are involved and the source as well as the target text both refer to the same legal system. This would apply to bilingual legal settings, to the translation of legal texts for foreigners, to translations done in the course of legal procedures with interested parties with a foreign language. Even if in these cases, both source and target text relate to the same legal framework, it should be observed, though, that in the case of involved persons originating from a foreign country, translators must take into account the different knowledge background of these persons who may tend to interpret texts with the norms and the concepts of the legal system of their country of origin in mind. Furthermore, the translator must decide which words and terms to use in the target language to verbalize the legal contents represented in the source text; it is important for her to know in which legal system(s) the target language is used and how words and phrases are used there. Thus, knowledge about the legal system of the source text as well as some knowledge about the legal system(s) of the target text is important even for this type of translation.

It becomes essential, however, in the case of a transcultural type of legal translation when source and target text refer to different legal systems requiring even more comparative awareness from the translator.

A third type of translation may be identified with the growing importance of international legal settings. Of special interest will be the cases of supranational law where two or more countries conclude an international agreement to regulate a specific legal matter in a common way, e. g. international agreements like the WTO, but also more complex regional legal systems such as European law. One could argue that this represents the relatively simple case of a translation from language A to language B within the same supranational legal framework. However, this would be a rather naive assumption because in most cases a neutral legal language for supranational law does not exist and has to be created anew (Kjær 2007: 71). A translator or text producer inevitably uses his own terminology or legal language, which is the language of his legal system to express new legal thoughts which then become part of the new supranational framework, a situation that might lead to misunderstandings when two legal systems use the same language. Harmonization would be necessary.

For these kind of legal contexts we may adapt our definition of legal translation in the following way; legal translation within the framework of supranational law would then be the:

> purposeful activity of exteriorizing supranational legal knowledge systems, legal cognitive processes and norms, which are selected and weighted from a source text constituting an offer of information, aiming at disseminating them in another language against the background of national and local legal systems, while assessing their legal effect.

Three different types of legal translation can, thus, be identified: the translation within one legal system, the translation between different legal systems and the translation in an international context. All of them require the legal translator to possess competences of legal knowledge and to some degree also in comparative law.

3 Culture-specificity

Independent legal systems are the reason for culture-specific legal texts and a major concern for legal translators trying to bridge those differences. National legal systems are a relatively late phenomenon in legal history dating back only about two hundred years. Previously, Europe cultivated its century-old tradition of Roman Law, the *ius commune*, in one common language, namely Latin. Even though the ius commune was only subsidiary law in addition to the particular rights of each region or country, it soon formed a common legal basis because of its adaptability.

This situation changed with the advent of the nation states in Europe, each developing its own structure of statutes and laws. The object of jurisprudence was thus narrowed down to national law, a process heavily criticized by many scholars especially by legal historians in the second half of the nineteenth century: Rudolf von Jhering even called this a degradation of legal sciences:

> Die Wissenschaft ist zur Landesjurisprudenz degradiert, die wissenschaftlichen Gränzen fallen in der Jurisprudenz mit den politischen zusammen. Eine demüthigende, unwürdige Form für eine Wissenschaft! (Jhering 1852: 15)
>
> *[Legal science has been degraded to a national jurisprudence, its research borders now correspond to political borders: a humiliating and shameful situation for a research discipline! (translation by author)]*

A critical viewpoint that is still raised today when the social dimension of law is emphasized and legal systems are embedded in a broader historical picture.

> L'étude du droit municipal … est certes indispensable, mais la connaissance du droit ne peut se développer sans la pris en compte de la dimension historique et comparative, sans rencontrer les autres sciences sociales et les sciences du vivant (Moréteau 2005: 411)
>
> *The study of municipal law is obviously necessary, but the knowledge of law cannot be advanced without taking into account the historical and comparative dimension, as well as the other social sciences. (translation by author)*

Contrary to the situation in the sciences, law and all legal communication acts are made by and within national legal systems; there is no universal law because "référents opératoires universels" (Pelage 2000: 127) are lacking. National legislative bodies are autonomous in releasing regulations and laws reflecting the democratic principle of societies.

> "à la différence du spécialiste d'anatomie comparée, le juriste n'a pas cette terminologie de référence. Il ne dispose que de langues nationales attachées à des droits nationaux" (Moréteau 2005: 427).
>
> In contrast to experts in comparative anatomy, legal experts don't have such a terminology of reference, having at their disposal only national languages bound to national legal systems. (translation by author)

Thus, legal language is always bound to a legal system, it serves as a means of communication in a specific national law. There are so many legal languages as there are legal systems, even within one natural language:

> The system-specificity of legal language is responsible for the fact that within a single language there is not one legal language, like, for instance, there is a single medical, chemical or economic language. A language has as many legal languages as there are systems using this language as a legal language. (De Groot 2000: 131)

For translation, this means that the translator has to take into account that each legal system has its own legal language and that translation always involves two languages that may be tied to different legal systems. In this sense, Kerby (1982) argues that legal translation involves a change of language but also some sort of transfer form one legal system to another: „non seulement le passage d'un langua à une autre, mais encore la transportation d'une système de droit à un autre" (Jean Kerby 1982: 5). This fact constitutes a major source of difficulty for legal translations when the source text is bound to one legal system and the target text to another, or when the receivers of the target text are influenced not just by another language but also by another legal system. Every translation has to be done into a specific legal language, i. e. into a language that is used by a national legal system. De Groot (2000, 2008) states rightfully that "it is of primary importance to establish that one legal language must be translated into another legal language" (De Groot 2000: 132).

The difference between national legal systems is determined by the respective cultures and traditions; we may speak of legal families, the two most important being civil law and common law. The relatedness of legal systems, thus, strongly affects the degree of difficulty of a specific translation task (Kocbek 2009: 49, Sandrini 1998: 866) because a translator "is able to transfer into another language (or 'code') only what he or she understands ('decodes') in the source text" (Chromá 2009: 29). Knowledge about the legal system of the source text is, therefore, of vital importance. In cases where the target text refers to another legal system or even where the target text refers to the same legal system but changes into a language whose primary speakers are familiar with a different legal system, knowledge about a second legal system as well as some sort of comparative knowledge will be necessary. Thus, translation constitutes a linguistic process combined with legal interpretation, legal hermeneutics as well as an assessment of the legal effects of the target text.

> Dans certain domains, dont le droit, il s'agira de passer d'un système à un autre, non seulement dans la lettre mais aussi dans l'esprit des cultures juridiques en présence, avec tout se que cela comporte de risques et de changements possibles (Gemar 2002: 119).
>
> *For certain domains, including law, this means moving from one system to another, not just the language but also the spirit of legal cultures involved, with all the risks and changes this might entail. (translation by author)*

In contrast to the systematic approach of comparative law where differences and similarities of legal provisions or even whole branches of law are spread out in specific publications, a translation involves a more targeted and situational comparison focusing on the communicative aspect of the texts involved, their embedding in the respective legal system as well as the legal effects specific decisions of the translator regarding choice of words and terms will have. A comparison of legal concepts relevant to the texts would also be necessary to some degree, though a comprehensive systematic comparison of legal concepts should be the task of legal terminology (Sandrini 1996).

For texts and terms to deliver a specific legal effect, it must be clear what legal concepts, institutions, provisions and thoughts they are refering to; this is achieved by interpretation of the source text and an evaluation of translation options for the target language based on a comparison. The key for such an evaluation is the function specific institutions, concepts or notions have within their respective legal systems: "la fonction, clé de la comparaison" (Moréteau 2005: 419). From a comparison of text-specific legal concepts and institutions for both legal systems involved – "quelle est sa fonction, quel est le problème qu'elle vient résoudre ?" (Moréteau 2005: 420) *What is its function, what kind of problem should be addressed? (translation by author)* – the translator derives a sound basis for his linguistic decisions in compliance with the translation brief and in accordance with the intended use of the target text (Pommer 2006).

> Een goed translateur [is] eigenlijk een binnen-buiten gekeerd comparatist, en een goed comparatist eigenlijk een buitenst-binnen gekeerd translateur (Kisch 1977: 119)
>
> *A good translator [is] actually an inside-outwards looking comparatist, and a good comparatist actually an outside-inwards looking translateur. (translation by author)*

Accordingly, equivalence is a non-issue to our understanding of legal translation. Every relation between the target text and the source text might only be established from a specific viewpoint using specific criteria; the target text and its features are, moreover, heavily bound to the personality, knowledge and competences of the translator as well as to situational parameters regarding the translation process. This is in contrast to numerous older approaches in translation studies that elevate the relationship between source text and target text to the core of their studies. In a legal context, however, equivalence or variance of whatever, plays a subordinate role in relation to the legal function of the target text and its repercussions within

its envisaged context. What remains unchanged is not so much a question of textual features; it is a question of situational factors of the translation process as well as of conscientious decisions by the translator. Thus, in the context of the system-specificity of law, a text is embedded in a net of provisions, statutes and norms; when the text becomes a source text for translation, it must be clear from the start what the role of the target text should be, for whom it will be translated, in what context it will be used and what legal consequences it should have.

4 Interpretation

As such, legal texts constitute a tool which is used to achieve specific objectives in law. The process used in law to identify the legal function of a text is called interpretation. Interpretation does not identify meaning as commonly assumed; it defines meaning in a specific legal context under specific legal constraints including traditional canons of statutory interpretation, legislative history, and purpose.

Understanding the source text in the sense of being able to assess its legal effects as well as its embedding in the legal system it belongs to, is a prerequisite for legal translation. The translator "must be able to assess not only one of the possible contextual meanings of a text, but the relevant legal meaning of the text, i.e. the meaning that a legal practitioner would reach when reading the text" (Engberg 2002: 376).

Legal language may also be viewed from a semiotic perspective as done by Jackson for whom the key to understanding legal texts lies in the knowledge of the legal system and not so much in linguistic knowledge: "what impedes comprehension is not the language but the legal concepts expressed by the language" (Jackson 1995: 117), because legal words make sense only within the context of the legal system itself. Law "is a set of technical concepts, related to each other in a particular system of signification" (Jackson 1995: 138). The main interpretative criteria "that influence the sense of these expressions: the linguistic, the systematic and the functional contexts" (Wroblewski 2000: 155) or the traditional methods of interpretation as proposed by legal theorists, i.e. literal meaning, historical meaning, systematic embedding, teleological interpretation are subject to a hierarchical structure when applied, with the literal or grammatical interpretation clearly subordinated to the other, specifically legal interpretation methods.

A special case is the simultaneous production of multilingual legal texts (multilingual drafting) in international organisations or supranational law; here the "uniform interpretation and application of parallel texts" (Šarčević 1997: 87) must be ensured and the distinction between source and target blurs.

The role of interpretation for translation does not stop with the source text; the translation, i.e. the target text, too, will be the object of interpretation, albeit

by a different audience under different situational parameters. The audience of the target text, for example, may be familiar with a different legal environment or legal system and apply different interpretation methods to it. For the target text to be able to fulfill its legal function as requested by the translation specifications and the communicative situation, the translator has to take into account and evaluate potential interpretation cases for the target text and be aware of the specific interpretation rules of the target legal system: "La traduction doit toujours avoir présentes à l'esprit les règles d'interprétation du pays vers lequel il traduit" (Tallon 1995: 341).

How the target text is interpreted may also depend on the status of the translation: is it legally binding or merely for informational purposes. Wiesmann (2004: 141) distinguishes four possible cases:

1. informative source text → informative target text
2. legally binding source text → informative target text
3. informative source text → legally binding target text
4. legally binding source text → legally binding target text

Combining this approach with the three types of legal translation, it is clear that the cases where the target becomes a legally binding text (3 and 4) require the biggest effort on part of the translator to ensure a correlation of the interpretative potential of both texts. Authoritative or authentic translations (Šarčević 1997: 20) within the framework of a multilingual legal system or supranational legal settings constitute sources of law and become legally binding instruments in the target legal systems.

Transparency as well as objectivity in legal translation can be achieved only with clear instructions given to the translator. Models like exhaustive translation-oriented text analysis by Nord (1991) or the more formalized Structured Translation Specifications as exemplified by Melby (2011) are of great help when integrated with specific legal aspects including all parameters which may have an impact on the translation process (Sandrini 2009, Wiesmann 2004: 82). This is why, "when selecting a translation strategy for legal texts, legal considerations must prevail" (Šarčević 2003: 2).

5 A layered model of legal translation

Legal translation represents a complex type of translation which is characterized by the intrinsic features of law as well as the situational parameters of the specific translation specifications. Within the theory of action, Madsen (1997) describes three decisive universes that cover „the essential factors that are relevant to translation of legal texts" (Madsen 1997: 291): the legal, the textual and the translator's universe. The legal universe covers the extra-linguistic reality, the world of legal actions, "the mechanisms of law" (Šarčević 1997: 55), i. e. the field of law with all its characterizing

features while the textual universe comprises the descriptions of legal actions fixed in a text and the third one encompasses all factors specific for the individual translation task. Madsen analyses the ties between the legal text and the legal reality and comes to the conclusion that „the cornerstone of a model for translation of legal texts must be the rooting of the legal text in a legal system" (Madsen 1997: 292), meaning that top priority should be given to the legal embedding and the legal effects of both the source as well as the target text. It would be difficult, though, to establish a hierarchy between these universes of action considering that the legal knowledge and the interpreting competence of the translator strongly influence her decisions and, consequently, the legal potential of the target text.

Having said that, the three universes or layers allow for a categorization and differentiation of the parameters in legal translation. The main parameter assigned to the legal universe is the role of the legal systems involved and the legal content or legal effects of the texts. What legal system does the source text belong to? In what legal setting is the source text originally used? What is the legal background of the addressee of the source text? Does the translator have the appropriate legal knowledge and training to assess the interpretative potential of the source text? And with respect to the target text: In what legal system will the target text be rooted? What legal action will be performed with the target text? In what legal setting will it be used? From what legal background do the receivers of the target text come? Is there an intentional shift with regard to the interpretative potential of both texts?

The parameters of language, textual features and purpose are assigned to the textual universe and the following questions must be asked: What type of text is the source text? Is the source text a legal binding text? Who is the author of the text? What is the language of the source text? What is the original communicative intent of the text? Who are the recipients of the source text, specialists or non-specialists? And with respect to the target text: What is the communicative intent of the target text? Who are the recipients of the target text (specialists or non-specialists)? What is the language of the target text and in which legal systems is it spoken? What will be the communicative setting of the target text?

Thirdly, the translator's universe is responsible for the following parameters: purpose and overall situation of the translation task, the person of the translator and his knowledge. What is the purpose of the translation and what are the specifications as outlined e. g. in the structured translation specification set (Melby 2011)? What are the interpretative capabilities of the translator? How much legal knowledge does he have? What is the status of the translator? Will the target text be an authoritative translation? Is there translation technology involved?

Combining this explicative approach with a juxtaposition of source and target text and the role of the translator as a mediator in between we propose a layered model of legal translation where each layer represents one of the three universes with the translator's universe representing a bridge which separates the source text from the target text as shown in the graphical scheme shown on this page. The schematic

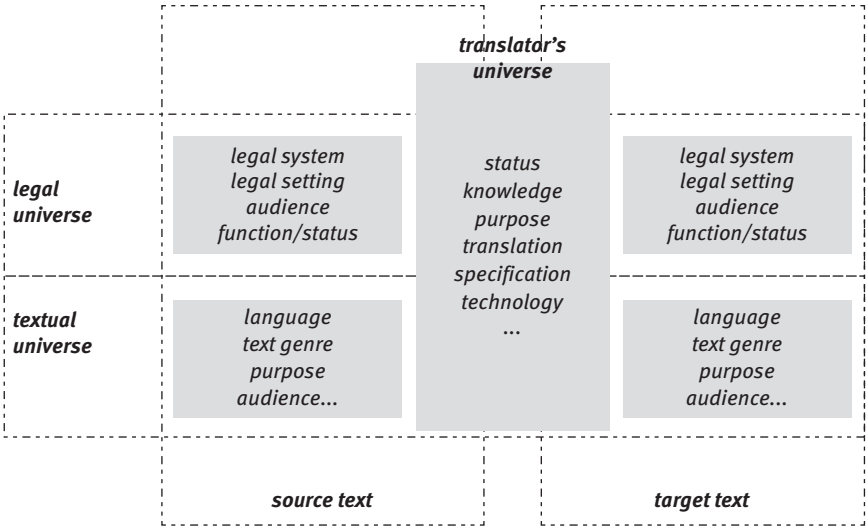


Figure 1: Layered model of legal translation.

representation brings all the factors into perspective attributing them to a specific layer. With the help of this structure we can analyze legal translation by selecting aspects from each layer and putting them into perspective. For example,the legal context and the communicative intent of the target text, or the type of text and its status and the status of the translation, and so on. The different perspectives on legal translation and the different functions of this type of translation can, thus, be represented.

It is the interaction of these multiple factors that make legal translation an interesting type of LSP translation: "If legal translation is unusually challenging, this can be attributed not to one particular aspect but rather to the cumulative effect of the various difficulties mentioned" (Harvey 2002: 182). This multifaceted and transdisciplinary aspect represents a challenge not only to the legal translator on the job but also to translation studies.

6 Conclusions

Legal translation work has long been a pillar of multilingual societies or organizations, but it has mostly failed to gain greater public recognition. Slowly, the perception by the public is changing and the importance of legal translation is increasingly recognized in research and training programs. The European Union has introduced the Directive 2010/64/EU on the right to interpretation and translation in criminal proceedings, the European Legal Interpreters and Translators Association (EULITA) has been founded and has already undertaken efforts to foster quality in legal translation

and translators training programs, as well as various other initiatives have recently been undertaken to increase the professionalization of legal translation.

However, it has to be stressed that a sound theoretical framework is necessary for all this. With the proposed layered model of legal translation all relevant aspects can be factored in when it comes to explain legal translation as a specific type of LSP translation, or when new training programs shall be planned, or even when one has to organize legal translation work.

References

Arntz, Reiner. 2001. *Fachbezogene Mehrsprachigkeit in Recht und Technik*. Hildesheim: Olms.

Berkenkotter, Carol, Thomas N. Huckin. 1995. *Genre Knowledge in Disciplinary Communication: Cognition/Culture/Power*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Busse, Dietrich. 2000. Textsorten des Bereichs Rechtswesen und Justiz. In Gerd Antos, Klaus Brinker, Wolfgang Heinemann and Sven F. Sager (eds.), *Text und Gesprächslinguistik. Ein internationales Handbuch zeitgenössischer Forschung*, 658–675. Berlin and New York: de Gruyter.

Cao, Deborah. 2007. *Translating Law*. Clevedon Buffalo Toronto: Multilingual Matters.

Chromá, Marta. 2009. Semantic and Legal Interpretation: Clash or Accord? In Susan Šarčević (ed.), *Legal Language in Action: Translation, Terminology, Drafting and Procedural Issues*, 27–42. Zagreb: Globus.

Cornu, Gérard. 1990. *Linguistique juridique.* Paris: Montchrestien.

Cornu, Gérard. 1995. Français juridique et science du droit: synthèse. In Gérard Snow and Jaques Vanderlinden (eds.), *Français juridique et science du droit.* Textes présentés au Deuxième Colloque international du Centre international de la common law en français (CICLEF), tenu les 20 et 21 septembre 1993 à Moncton, 11–19. Bruxelles: Bruylant.

Cortellazzo, Michele. 1997. Lingua e Diritto in Italia. Il punto di vista dei Linguisti. In L. Schena (ed.), *La lingua del diritto. Difficoltà traduttive. Applicazioni didattiche. Atti del primo Convegno Internazionale Milano 5–6 ottobre 1995*, 35–49. Centro Linguistico dell'Università Bocconi, Rome: Centro d'Informazione e Stampa Universitaria.

De Groot, Gerard-René. 2000. Translating Legal Information. In Giuseppe Zaccaria (ed.), *Journal of Legal Hermeneutics – Jahrbuch für juristische Hermeneutik: Translation in Law – Übersetzung im Recht*, 131–149. Münster, Hamburg and London: LIT.

De Groot, Gerard-René and Conrad J.P. van Laer. 2008. *The Quality of Legal Dictionaries: an assessment. Maastricht Faculty of Law Working Paper 6*. Maastricht: University of Maastricht.

Delisle, Jean, Hannelore Lee-Jahnke and Monique Cormier (eds.). 1999. *Terminologie de la traduction*. Amsterdam: John Benjamins.

Di Lucia, Paolo. 1994. Introduzione: Tre opposizioni per lo studio dei rapporti tra diritto e linguaggio. In Uberto Scarpelli, Paolo Di Lucia (eds.), *Il Linguaggio del Diritto*, 9–23. Milano: LED Edizini universitarie di Lettera, Economia e Diritto.

Engberg, Jan. 2002. Legal meaning assumptions – what are the consequences for legal interpretation and legal translation? *International Journal of the Semiotics of Law* 4(15). 375–388.

Gémar, Jean-Claude (ed.). 1979. *La traduction juridique*. Numéro spécial de Meta 24.

Gémar, Jean-Claude. 1995. Le langage du droit au risque de la traduction. De l'universel et du particulier. In Gérard Snow and Jaques Vanderlinden (eds.), *Français juridique et science*

du droit. Textes présentés au Deuxième Colloque international du Centre international de la common law en français (CICLEF), tenu les 20 et 21 septembre 1993 à Moncton, 123–154. Bruxelles: Bruylant.

Gémar, Jean-Claude. 2002. L'interprétation du texte juridique ou le dilemme du traducteur. In Rodolfo Sacco (ed.), *L'Interprétation Des Textes Juridiques Rédigiés Dans Plus D'une Langue*, 103–142.Torino: Harmattan.

Gémar, Jean-Claude. 2007. Traduire le droit, ou le double langage de Thémis. Hermès 49. 149–155.

Gémar, Jean-Claude and Nicholas Kasirer (eds.). 2005. *Jurilinguistique: entre langues et droits*. Bruxelles et al.: Bruylant.

Harvey, Malcolm. 2002. What's so Special about Legal Translation? *Meta:Journal des traducteurs/ Meta: Translators' Journal* 47(2). 177–185.

Hoffmann, Lothar. 1993. Fachwissen und Fachkommunikation. Zur Dialektik von Systematik und Linearität in den Fachsprachen. In Theo Bungarten (ed.), *Fachsprachentheorie*, 595–617. Tostedt: Attikon.

Jackson, Bernard S. 1995. *Making sense in law: linguistic, psychological and semiotic perspectives*. Liverpool: Charles.

Jhering, Rudolf von. 1852. *Der Geist des römischen Rechts auf den verschiedenen Stufen seiner Entwicklung* 1. Teil, 4. Bd. 1852–1865.

Kerby, Jean. 1982. La traduction juridique: un cas d'espèce. In Jean-Claude Gémar (ed.), *Langage du droit et traduction. Essais de jurilinguistique*, 33–50. Montréal: Linguatech.

Kisch, Isaac. 1977. Gesprekken met Isaac Kisch. In J. Houdyn Beekhuis, J. M. van Dunné, Pieter Boeles and Arend Jan Heerma van Voss (eds.), *Acht civilisten in burger*, 110–120. Zwolle: W. E. J. Tjeenk Willink.

Kjær, Anne Lise. 2007. Legal Translation in the European Union: A Research Field in Need of a new Approach. In Krzysztof Kredens and Stanisław Goźdź-Roszkowski (eds.), *Language and the Law: International Outlooks*, 69–95. Frankfurt am Main: Peter Lang.

Kocbek, Alenka. 2009. A Targeted Approach to Legal Translation. In Susan Šarčević (ed.), *Legal Language in Action: Translation, Terminology, Drafting and Procedural Issues*, 27–42. Zagreb: Globus.

Madsen, Dorte. 1997. Towards a Description of Communication in the Legal Universe. *Fachsprache*, 19(1–2). 17–27.

Melby, Alan K., Arle Lommel, Nathan Rasmussen and Jason Housley. 2011. *The Container Project*. Presented at the First International Conference on Terminology, Languages, and Content Resources, Seoul, South Korea, 10–11 June 2011. http://www.linport.org/downloads/2011-07-container-project.pdf (accessed 30 July 2017).

Meylaerts, R. 2011. Translation Policy. In Y. Gambier, L. van Doorslaer (eds.), *Handbook of Translation Studie Volume 2*, 163–168. Amsterdam-Philadelphia: John Benjamins.

Moréteau, Olivier. 2005. Premier pas dans la comparaison des droits. In Jean-Claude Gémar and Nicholas Kasirer (eds.), *Jurilinguistique: entre langues et droits*, 405–430. Bruxelles et al.: Bruylant.

Nord, Christiane. 1991. *Text Analysis in Translation. Theory, Method, and Didactic Application of a Model for TranslationOriented Text Analysis*. Amsterdam and Atlanta, GA: Rodopi.

Nord, Christiane. 1997. *Translating as a purposeful activity: functionalist approaches explained*. Manchester: St. Jerome Publ.

Nord, Christiane. 2012. Quo vadis, functional translatology? *Target* 24. 26–42.

Pelage, J. 2000. La traductologie face au droit. ASTTI/ETI. 125–131.

Pommer, Sieglinde. 2006. *Rechtsübersetzung und Rechtsvergleichung: translatologische Fragen zur Interdisziplinarität*. Frankfurt am Main, Wien et al.: Peter Lang.

Sacco, Rodolfo. 1990. *Introduzione al diritto comparator*, 4th edn. Turin: G. Giappichelli.

Sacco, Rodolfo. 2000. Language and Law. In Giuseppe Zaccaria (ed.), *Journal of Legal Hermeneutics – Jahrbuch für juristische Hermeneutik: Translation in Law – Übersetzung im Recht*, 113–129. Münster, Hamburg, London: LIT.

Sandrini, Peter. 1996. *Terminologiearbeit im Recht. Deskriptiver begriffsorientierter Ansatz vom Standpunkt des Übersetzers* (IITF Series 8). Wien: TermNet.

Sandrini, Peter. 1998. Übersetzung von Rechtstexten: Die Rechtsordnung als Kommunikationsrahmen In L. Lundquist, H. Picht and J. Qvistgaard (eds.), *LSP Identity and Interface. Research, Knowledge and Society. Proceedings of the 11th European Symposium on Language for Special Purposes*, 865–876. Copenhagen, August 1997.

Sandrini, Peter. 1999. Translation zwischen Kultur und Kommunikation: Der Sonderfall Recht. In Sandrini, P. (ed.), *Übersetzen von Rechtstexten. Fachkommunikation im Spannungsfeld zwischen Rechtsordnungen und Sprachen*, 11–37. Tübingen: Gunter Narr.

Sandrini, Peter. 2009. The Parameters of Multilingual Legal Communication in a Globalized World. *Comparative Legilinguistics. International Journal for Legal Communication* 1. 34–48.

Šarčević, Susan. 1997. *New Approach to Legal Translation*. The Hague: Kluwer Law Internat.

Šarčević, Susan. 2000. Legal Translation and Translation Theory: A Receiver-Oriented Approach. In ASTTI/ETI. (ed.), La traduction juridique: Histoire, théorie(s) et pratique / Legal Translation: History, Theory/ies, Practice. Proceedings, Geneva, 17–19 February 2000. Bern/Geneva: ASTTI/ETI. 329–347. http://www.tradulex.com/Actes2000/sarcevic.pdf (accessed 21 February 2012).

Savigny, Friedrich Carl von. 1814. Grammatica del diritto. In U. Scarpelli and P. DiLucia (eds.). 1994, *Il linguaggio del diritto*, 55–58. Milano: LED.

Sparer, Michel. 1979. Pour une dimension culturelle de la traduction juridique. In Jean-Claude Gémar (ed.), *Meta* 24, numéro spécial: La traduction juridique. 68–94.

Tallon, Dennis. 1995. Français juridique et science du droit: quelques observations. In Gérard Snow and Jaques Vanderlinden (eds.), *Français juridique et science du droit.* Textes présentés au Deuxième Colloque international du Centre international de la common law en français (CICLEF), tenu les 20 et 21 septembre 1993 à Moncton, 339–349. Bruxelles: Bruylant.

Vermeer, Hans J. 1996. *A skopos theory of translation: (some arguments for and against)*. Heidelberg: TextconText.

Wiesmann, Eva. 2004. *Rechtsübersetzung und Hilfsmittel zur Translation*. Tübingen: Gunter Narr.

Wroblewski, Jerzy. 2000. The problem of legal translation. In Giuseppe Zaccaria (ed.), *Journal of Legal Hermeneutics – Jahrbuch für juristische Hermeneutik: Translation in Law – Übersetzung im Recht*, 151–160. Münster, Hamburg and London: LIT.

Index

https://doi.org/10.1515/9783110228014-030