Re-Assessing Modalising Expressions

Categories, co-text, and context

Edited by
Pascal Hohaus
Rainer Schulze

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CHAPTER 1

Modalising expressions and modality

An overview of trends and challenges

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1.   Introduction

It may be taken for granted that 'modalising expressions' (a term borrowed from Simpson 1993) and the concept of modality have never ceased to be a highly topical issue in linguistics, the main general rationale being the central position of this particular notion of evaluation fundamental to language. As a consequence, formal means for expressing obligation or necessity, for possibility and for desirability or volition in natural languages commonly form an essential part of descriptive grammars (Quirk et al. 1985; Biber et al. 1999; Huddleston & Pullum 2002), with reference to evaluative meanings representing an important subfield. Similar to a number of related languages, chiefly lexical and grammatical structures are used, for example in English, to encode obligation, possibility or volition, including the use of core modal auxiliaries, phrasal modals, one-word and two-word adverbs, verbs of knowledge and prediction, clauses, tag questions, generic sentences, categorical assertions, etc. (Portner 2009; Simpson 1993; Stubbs 1986). Haspelmath et al. (2005: 286–321) inform about the geographical distribution of structural features in different languages of the world and their morphological and/or syntactic encoding.

Based on research currently available from the 'modality area' (Biber et al. 1999: 485; Depraetere & Read 2006: 274; Quirk et al. 1985: 221), we take the following concepts in modality research for granted: Both Quirk et al. and Biber et al. divide the 'modality space' into two subtypes, i.e. extrinsic and intrinsic. Extrinsic modality offers a window on the "logical status of events or states, usually relating to assessments of likelihood: possibility, necessity, or prediction" (Biber et al. 1999: 485). This approach to modality can be likened to similar approaches (for example, Depraetere & Reed 2006), hereby focussing on alternative terminology such as 'epistemic modality' ("the necessity or possibility of the truth […] of

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propositions […]" (2006: 274)) or 'root modality' ("the necessity or possibility of the actualization of situations" (2006: 274)). By contrast, intrinsic modality is linked to "actions and events that humans (or other agents) directly control […]" (Biber et al. 1999: 485), hereby activating concepts such as permission and obligation (both frequently classified as deontic) and volition or intention (frequently classified as dynamic). Concerning ability, Quirk et al. link this concept to extrinsic modality since it "is best considered a special case of possibility […]" (1985: 221). Most of the relevant concepts in modality research can therefore be summarised in Table 1[1]:

Table 1. Intrinsic and extrinsic modality

	intrinsic	extrinsic	
+control **−assessment**	permission obligation volition (intention)	possibility and ability necessity prediction	**+assessment** **−control**

What looks like a rich representation of possible modal meanings in English, supported by dimensions such as human agency and/or cognition, is clearly an abstraction, since the suggested dichotomies of epistemic meaning (=extrinsic) vs. deontic meaning (=intrinsic) or even modalising expressions (= intrinsic and extrinsic) vs. non-modalising expressions represent a simplistic view. For example, information on the linguistic encoding of what and why/how speakers know, also known as evidentiality, is clearly missing. Similarly, debates possibly arise on the question whether verbal structures dominated by either *seem*, *try to*, *plan to*, *intend to*, *be inclined to*, *contemplate doing sth.*, or *dare to* whose morphological and syntactical properties differ significantly from prototypical modalising

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1.   It does not come as a surprise that debates on the theoretical status of modality as a grammatical category and on the core and/or potential semantic interpretations of modalising expressions have a longstanding tradition (Perkins 1983; Mitchell 1988; Palmer 1990; Mindt 1995; Hoye 1997; Mitchell 2003; Nuyts & van der Auwera 2016). One of the contested grounds is the issue of how many semantic interpretations or 'readings' and on which evidential basis can or should be assigned to modalising expressions. In addition to the presented distinction between intrinsic and extrinsic modality, various other classifications have been suggested, such as (to cite a few) Bybee, Perkins, and Pagliuca's (1994) classification into agent-oriented modality, epistemic modality, speaker-oriented modality and subordinating moods, Palmer's (1990) notions of propositional modality and event modality and Mindt's (1995) concept of 17 modalities.

expressions (i.e. exhibiting NICE properties) are sufficiently covered by the concepts in the table. A narrow conception of modality is likely to reject this view, a broader conception, however, would take account of their implicit modal flavour they doubtless exhibit (Hunston 2011). The editors prefer to take the latter stance.

2.   Modalising expressions in English as an area of research

Against the backdrop of a long-standing tradition of theoretical linguistic investigations, it is conspicuous that modalising expressions have again received increased scholarly attention in recent years, both in terms of individual papers (as, for example, in Arregui, Rivero & Salanova 2017 from a cross-linguistic perspective, in Eide 2020 with respect to Germanic languages or in Ziegeler 2019 with a focus on English) and book-length studies (e.g. Abraham 2020; Ayoun 2013; Chartrand 2016; Hohaus 2020; Kratochvílová 2018; Lassiter 2017; Maché 2019; Narrog 2012; Portner 2009; Wu 2019) focussing either on English, French, German, Mandarin Chinese or Spanish. Corpus linguists have been particularly active here, using empirical data both to revisit the issues presented in the foregoing and for opening the doors to new areas of enquiry.

Thus, the starting point for a re-assessment of modalising expressions is the wider availability of corpora and the technical opportunities to access and analyse these electronic data from the 1990s onwards. An early proponent of a first wave of re-assessment is Leech (2003) and Leech et al. (2009: 71–90), who probe into the correlation between modal auxiliaries in English and various units in the co-text by examining material from the 'Brown-family' (including the Brown corpus, the Lancaster-Oslo/Bergen corpus, The Freiburg-Brown corpus and the Freiburg-Lancaster-Oslo/Bergen corpus) and argue that modal auxiliaries are unevenly distributed and that emerging patterns in American English and British English are mostly dissimilar. In an attempt to explore the more recent history of American English using the *Corpus of Current American English* (COCA) as assembled by Mark Davies at Brigham Young University, Johansson (2013: 372–380) examines the linguistic development of *must*, HAVE *to*, HAVE *got to* and NEED *to* as (semi-)modals of obligation. His major findings are based on the observation that HAVE *to* and *must* are probably becoming less frequent, that HAVE *got to* is less frequent than HAVE *to* and *must* and that NEED *to* has increased in frequency considerably. Similar results, although based on the *Time Magazine Corpus of American English* developed by Mark Davies, can be obtained from Millar (2009). In a replication of Leech's exploration of changes in modal verb frequency, he is able to observe an increase of semi-modal verbs and shifts in usage.

Quite naturally, however, a second wave of re-assessments has emerged. This is a result of the broadening of the research focus of English linguistics beyond American English and British English, notably involving the analysis of a variety of additional corpus materials – most prominent among them the components of the *International Corpus of English* (ICE). Studies either extend the view to single postcolonial varieties of English or provide contrastive views of multiple varieties of different types, occasionally including learner Englishes (see, for example, Hansen (2018: 16–45) for an extensive survey of both diachronic and synchronic studies in this area). On a related note, it is worth mentioning that these studies often employ a broader conceptualisation of modality to be better able to account for the development of variation. This means that researchers do not only take a form-to-function approach and restrict their analyses to the canonical variant 'modal auxiliary + non-finite lexical verb' and its alternations (Biber et al. 1999), as was often done in earlier studies. In contrast, they use function-to-form approaches and consider the full range of formal variants used in the 'modality space', that is, in contexts where a different (non-standard) surface realisation is used to convey a meaning typically associated with modalising expressions in standard varieties (Collins 2009a, 2009b; Hansen 2018; Siemund 2013; Mesthrie 2008).

Learner Englishes constitute another area where recent contributions have given rise to re-assessments of earlier views. 'Modalising expression' and 'modal auxiliary' in particular is commonly considered as a 'learner-hard' feature, since the complex morphosyntactic surface forms have to be learned in addition to adequate semantic and pragmatic usage contexts. It seems intuitively plausible that the first language of the learners constitutes an important variable in the learning process. This is to say that learners with an L1 consisting of comparable structures to the L2 acquire these structures faster than learners whose L1 does not exhibit equivalent structures. However, recent corpus work, building on resources such as the *International Corpus of Learner English* (ICLE) (Nesselhauf 2009) and other data have shown that the effects of the native language of the learners may be contrary to expectations, as native languages typologically and structurally close to English such as Dutch or German do not necessarily lead to faster and more accurate target-language production of modalising expressions. Different learner strategies such as regularisation, avoidance of allegedly redundant markers, avoidance of plurifunctionality but also maximising salience and transparency turn out to be additional relevant factors in the acquisition of a second or foreign language and the use of modalising expressions (Deshors 2014; Gabrielatos 2013, 2019 and this volume on *if*-conditionals).

More recently, scholars have tried to integrate insights from Construction Grammar with those of Cognitive Grammar and Frame Semantics, sometimes bringing these together into a new account of modalising expressions (Boogaart &

Fortuin 2016; Hilpert 2016; Torres-Martínez 2019).[2] Constructs such as 'schemas', 'scripts', 'frames', 'idealized cognitive models' and 'domains' have been introduced to account for background knowledge communicators rely on when engaging in communication (e.g. Schank & Abelson 1977 or Fillmore 1982). Most of these constructs have, to varying degrees, been used to refer to knowledge configurations or frameworks that organize a communicator's memory for other communicators, states of affairs and events. It is assumed that these constructs subsume all forms of information, irrespective of the mode, i.e. visual or auditory, linguistic or non-linguistic.

3.   Aim of the present volume

While earlier work on the concept of modality was focusing mainly on the sentential level, more recently, the scope of frame-semantic or constructionist approaches has been extended. There is now a growing amount of work on the relationship between discourse patterns and constructions, both in a narrow and a broad sense, and particular collocational and colligational sequences that are partly institutionalised, conventionalised and firmly entrenched in the mind of the communicator(s). The organisation of the volume can be seen as a reflection of this tendency but also as an attempt at bringing together different strands of contemporary scholarly work on the concept of modality. All contributions subscribe to research frames with rich methodology, and all of their co-text (i.e. the immediate verbal environment, also conceptualized as figure) and context-based analyses (i.e. the broader situational, cultural and social background, also conceptualized as ground) account for the considerable diversity of methodological and theoretical approaches to the topic. Dealing with cross-linguistic differences (and similarities) and linguistic idiosyncracies alongside regular patterns, the papers assembled aim at finding explanations for linguistic structures on the basis of situated language use and the adaptive processes leading to recurrent language usage (see Figure 1).

Seen from this perspective, the contributions turn out to be situated in a broad usage-based approach to language. The claim that all the known linguistic systems emerge from usage activities and that these systems are sustained and reorganized

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2.   The main tenet of Construction Grammar is that "[the] totality of our knowledge of language is captured by a network of constructions" (Goldberg 2003: 219). In recent works, a pattern is characterised as a construction "as long as some aspect of its form or function is not strictly predictable from its component parts or from other constructions recognized to exist" and "patterns are stored as constructions even if they are fully predictable as long as they occur with sufficient frequency." (Goldberg 2006: 5).

by social processes (cf. conventionalization) and cognitive processes (cf. entrench-ment) put all the papers centre stage (cf. Schmid (2020) for a more recent dis-cussion of dynamic complex-adaptive models of language). Some of the papers, taking into account cognitive and communicative aspects of human behaviour, also probe the changing nature of language and the origins of structural patterns (Hilpert 2008, 2016). The observation that regularities and patterns in language arise from frequent language use is not only limited to English but this mecha-nism can be shown to be pervasive in other languages such as Japanese, German or Spanish, too.

| linguistic structure | equates with | conceptual structure |

language development

language use
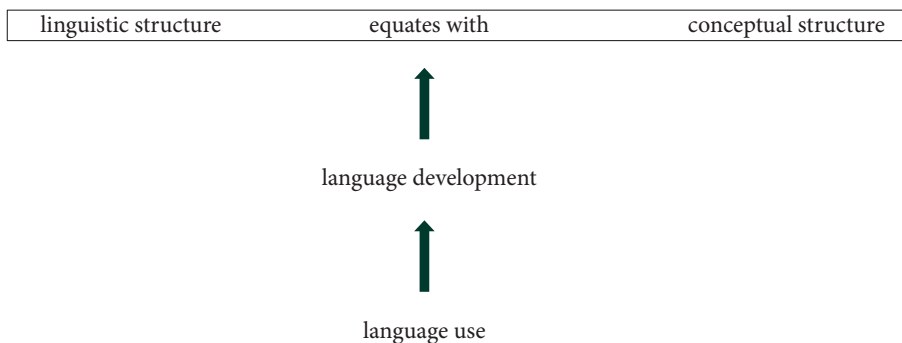
Figure 1. Linguistic and conceptual structure

4.   Organisation of the present volume

The first section of the volume *Moving to modal categories: Contesting categorical boundaries* comprises contributions that discuss issues relating to categorisation: the super-category of modality (Daugs), the category of scope (Narrog), impli-cations for categorisation in modality arising from a mixed-methods approach (Lorenz/Tizón-Couto) and the role of expert linguists in categorisation (Lampert):

In *Revisiting global and intra-categorial frequency shifts in the English modals. A usage-based, constructionist view on the heterogeneity of modal development* (Chapter 2), Robert Daugs explores the English modal-verb system from a con-structionist diachronic perspective. On the basis of Leech's dictum that English modal verbs are possibly on the decline, he is able to show that any uniform cat-egorization and characterization of units of the modality sphere is likely to fail. Using data from COHA and COCA, Daugs can show that the 'modality space' is in a process of restructuring and that the modals in English do not behave homo-geneously over the course of the 19th and 20th century. The results demonstrate

that modal verb instantiations should be treated as distinct constructions with unusual or idiosyncratic semantics and/or pragmatics: Taking for granted that *will not*, for example, is more directly linked to the concept 'unwillingness' gives rise to the assumption that particular constructions possibly constitute separate entries in the minds of communicators and are not simply products of simple derivations of base forms.

In *The scope of modal categories – An empirical study* (Chapter 3), Heiko Narrog shows how modal categories in Japanese may affect and combine part(s) of a sentence in meaning, i.e. a vital relationship that has been amply documented by scholars working on the relationship between modality and negation, for example. Based on the assumption that hierarchical relationships between grammatical categories obtain, an insight championed both by Role and Reference Grammar, Functional Grammar and Minimalism in the Cartography of Syntactic Structures, the author demonstrates that different modal categories have different scope. That is, in Japanese as a morphologically rich and head-final language, Narrog can identify and specify those categories each category is able to take scope over and those categories each category can be embedded in. For example, the marker of the category 'evidentiality' can be embedded in all categories except 'benefactive' and 'voice', thus exhibiting narrow scope.

In *Not just frequency, not just modality: production and perception of English semi-modals* (Chapter 4), David Lorenz and David Tizón-Couto touch upon the framework of grammaticalisation (or phonetic reduction in particular) and cognition (or speech perception in particular), which are interdisciplinary domains of knowledge par excellence, informed by tools and subsequent results taken from corpus linguistics and psycholinguistic experimentation. In a fine-grained analysis of V-*to*-V$_{inf}$ constructions in English, the paper demonstrates how the two verbal elements of the construction, i.e. the first being finite and the second non-finite, interact to produce a meaning with a modal flavour and how it might be possible to account for phonological and morphological reduction and contraction in the corresponding modalising expressions. Guided by research questions about the roles of frequency and reduction in creating variant forms of modalising expressions and questions about the interaction of production and perception in shaping mental representations of these forms, the authors set up two distinct studies and, in doing so, they make a case for triangulating corpus data with experimental data: The first study is a corpus study based on the *Santa Barbara Corpus of Spoken American English* (concerned with issues related to morphological reduction, contraction and cliticisation), the second study (concerned with issues related to perception and processing) is intended as a word-monitoring experiment in which recognition of the element *to* in V-*to*-V$_{inf}$ constructions is tested. Their

findings suggest that three different types of determinants or factors of phonetic realization can be isolated. Firstly, there are general experiential or cognitive factors (grammatical status, frequency); secondly, there are speech-internal factors (phonological properties, co-text, prosody); and thirdly, speech-external properties of the speaker and the speech situation.

In *How and why* seem *became an evidential* (Chapter 5), Günther Lampert provides 'a panoramic survey' of attitudes and views, culled from both monolingual dictionaries (*seem* as a hedging device that is used to weaken or to mitigate claims and make these appear less forceful) and expert studies, towards the proper treatment of English *seem* in linguistics. The author doubts whether *seem* has ever expressed evidential meanings and thus rejects arguments put forward by Diewald and Stathi (2019) in a recent paper. Based on a close reading of some of the fragments of Shakespeare's *Hamlet*, Lampert locates the meaning of *seem* in the semantic space between factuality and fictivity (or make-belief) and views all the other alleged meaning components as contextual effects, primarily based on textual evidence. While Diewald and Stathi claim that *seem* has grammaticalised into a monosemous evidential marker, located in the domain of indirect inferential evidentiality (2019: 210), Lampert considers the verb as being polysemous rather, evoking several evidential sub-senses. The observation that *seem* may enter distinct syntactic patterns (i.e. *seem* in co-construction with an infinitival predicative complement, *seem* in co-construction with a clausal subject, *it seems* in co-construction with a *that*-complement clause, *seem* in co-construction with a comparison clause, *seem* in co-construction with an adjectival predicative complement, *it seems* as a parenthetical (or comment) clause, in initial, final, and medial positions, *can't seem (that)*-construction or *would seem (that)*-construction) gives rise to the assumption that the specific meaning of *seem* is most likely determined by the construction it is part of. Questions concerning the categorical status of *seem* are thus most likely to be answered within the framework of Construction Grammar.

The second section of the volume, *Moving to modal co-text: Beyond clause and phrase units*, contains three papers, with each of these providing in-depth analyses of the immediate environment of selected modal expressions. Two chapters discuss conditionals, one of which with a focus on English from a constructional perspective (Gabrielatos) and the second one in terms of clausal integration as exemplified by conditionals in Japanese (Narrog). The third article elaborates on Talmy's (1988) modal system in examining complementation of modal nouns (Van linden/Brems).

In *Conditionals, modality, and Schrödinger's cat: Conditionals as a family of linguistic qubits* (Chapter 6), Costas Gabrielatos borrows from Fauconnier's mental spaces-approach and constructionist assumptions. The author views conditional

constructions as linguistic environments of indeterminacy in which the factuality, actuality or actualization of the content, emerging from the interaction of protasis and apodosis, is suspended and indeterminate. Two research questions determine the structure of the paper: (i) Can conditionals be seen as being modalising structures themselves? and (ii) Can they be viewed as being internally modalised? Although the connection between conditionality and modality has long been asserted, in that a conditional never expresses factuality or certainty, the author supports the interpretation that the modal flavour or modal load of a conditional is the result of the combined effect of the semantic nature of the subordinator and the type of structure. That is, his results support an explanation which is fully consistent with the tenets of Construction Grammar, since a given subordinator (such as *if* in the protasis as a 'space builder') can be a component of different constructions. In particular, Construction Grammar accounts for the interaction between all components of a construction in that morphosyntactic and/or lexical differences between constructions lead to semantic/pragmatic differences, and vice versa. The understanding of 'modalising' conditionals can be, according to Gabrielatos, enhanced by Schrödinger's thought experiment in which, on the analogy of the 'poison' and 'cat' spheres, conditionals are identified as linguistic qubits which in turn may invite implicatures based on particular co- and contexts related to the conditional.

In *Modal marking in conditionals – Grammar, usage and discourse* (Chapter 7), Heiko Narrog employs a functional-typological approach to conditionals, here to the use of conditionals in modern Japanese. Much work in syntax so far has studied the representation of modality in both coordinate combinations in which both clauses are relatively independent of each other, and subordinate combinations in which one is more or less dependent, semantically, grammatically or pragmatically, on the other, independent clause. Two important issues arising here are the extent to which modality is represented in the same ways across languages and whether different subtypes are realized in different grammatical positions. As Givón (2001: 43) or van Valin (2005: 209) have argued, different degrees of clause integration can be shown to exist, exemplified by special subordinating morphemes, by special word order, by special verb forms (often called 'participles'), or by a restricted distribution of the categories tense, aspect, or mood and modality. While English is assumed to be a head-initial language, the ordering of units in Japanese is considerably different, and this observation has some interesting ramifications. In complex clausal structures, Narrog is able to show that conditional sentences in Japanese are more tightly integrated than causal or concessive ones; moreover, *-(r)u = to* has been found to be an indicator of tight clause integration, whereas *nara* primarily functions as an indicator of loose clause integration. This distribution also affects the kind of modality marker or speech act type found either in the protasis (i.e. boulomaic, deontic and evidential markers) and inside

the apodosis (a directive or a commissive). As far as different discourse patterns are concerned, Narrog also identifies different systematic correspondences such as when a boulomaic marker occurs in the protasis and modal marker or construction (modal verb equivalent) in the apodosis, then the sentence expresses advice to the hearer; or a boulomaic marker in the protasis and imperative in the apodosis, then the sentence expresses a rhetorical permission to the hearer about an action that the speaker disapproves of; or an evidential marker *yoo* available in the protasis, then a declarative apodosis typically expresses apprehension. Or in terms of Hunston (2011): all the correspondences summarised above display negative semantic prosody.

In *Present-day English constructions with chance(s) in Talmy's greater modal system and beyond* (Chapter 8), An Van linden and Lieselotte Brems examine nominal *chance(s)* using both of qualitative and quantitative corpus-linguistic techniques based upon data from the British subcorpora of *Collins WordBank Online*. The fact that both lexical and modal meanings of nominal *chance(s)* co-exist can be shown by a more fine-grained analysis of distinct (complementation) patterns that can be found in the vicinity of the nominal. This study builds on Schmid's exploration of shell nouns and treats *chance(s)* as a noun that can "characteriz[e] and perspectiviz[e] complex chunks of information which are expressed in clauses or even longer stretches of text" (Schmid 2000: 14). On the basis of this analysis, the authors are able to set up distinct templates for the nominal, giving rise to a number of distinct slots for potential premodification and postmodification. For example, clausal complements of nominal *chance(s)* include *of*-gerundial clauses, *to*-infinitive clauses or phrasal clauses in the form of a prepositional phrase. All in all, the authors claim that the nominal can be found in a number of recurrent patterns or phrases with three distinct uses discernible: lexical, grammatical and caused-modal uses. While lexical uses of *chance(s)* are inherently addressable via tags, *really*-queries or *yes-no* questions, grammatical and caused-modal uses require different identification and specification techniques. The overall analysis shows that some uses of nominal *chance(s)* are functionally equivalent to modal auxiliaries, that some uses go beyond the functional reach of modal auxiliaries and that caused modality can be observed in augmented event structures. Translated into a force-dynamic framework, the study also reveals that causative verbs found in the vicinity of *chance(s)* typically encode the antagonist as subject whereas modal verbs encode the agonist as subject.

The third section of the volume, *Moving to modal context: Register, genre and text type*, contains four contributions that discuss the use of modalising expressions in the light of external criteria. This includes the evaluative patterns with respect to text types (Matsumoto), epistemic modals in different academic disciplines (Carrió-Pastor) and selected modal verbs in terms of their attraction to different

discourse modes (Furmaniak) as well as in terms of socio-political change in Hong Kong as being reflected in press news reports (Biewer/Lehnen/Schulz).

In *Evaluative modality in multi-verb sequences with* GO *as the first verb in English* (Chapter 9), Noriko Matsumoto examines selected multi-verb structures such as V-*to*-V, V-V-*ing*, V-*and*-V and V-V with GO (both in its literal and non-literal meanings) as the first verbal element and any transitive or intransitive verb in second position. With examples taken from *Collins WordBanks Online* (with a focus on British English), she provides a general classification of multi-verb sequences and links their distinct occurrences to different genres from the UK subcorpus (for example, newspapers, books, magazines, radio broadcast or informal speech). Matsumoto identifies selected non-literal uses of GO as attenuated GO-uses which she views as markers of evaluative modality. Her study is firmly based in the Hallidayan framework in which she explores the role of co- and context in the interpretation of literal and non-literal use of GO, dependent on the role of inflection on the first verbal element, the semantic and/or pragmatic type of the second verbal element and the relevant genres of language use.

In *Epistemic modals in academic English: A contrastive study of engineering, medicine and linguistics research papers* (Chapter 10), María Luisa Carrió-Pastor explores the peculiarities of academic English as found in specific fields of knowledge. She is particularly interested in the identification of phraseological patterns associated with epistemic modals in papers written in engineering, medicine and linguistics (fifty papers each). Epistemic modals were tagged, uploaded and processed with METOOL, a tool developed at the University of Wolverhampton (Research Institute for Information and Language Processing) in order to identify and specify particular rhetorical devices. The number of findings reveals 'modal sequences' that show that any proper discussion of patterns and/or constructions found in academic writing should necessarily incorporate information on the type of genre and/or text type they are found in. Following her analysis and findings, we have to assume that linguists tend to prefer modal adverbials to other modalising expressions, that linguists, in contrast to engineers and medical doctors, have a predilection for modal adjectives and that linguists have a penchant for mental state predicates such as *we think* or *the authors believe*. The corpus-driven approach in this study is mainly inspired by Hunston (2011) and supported by the Hallidayan framework.

In *On the (con)textual properties of* must, have to *and* shall: *An integrative account* (Chapter 11), Grégory Furmaniak employs an integrative approach since, according to him, traditional semantic descriptions of root and deontic modality fail to account for the semantic, pragmatic and discursive idiosyncrasies of modalising expressions. Furmaniak is especially interested in uncovering the specific discourse sequences (both spoken and written) in which they occur, thus looking

beyond the boundaries of sentences. These inter-sentential relationships are primarily based on correlations between the use of a form and a text type. Based on a 350,000-word corpus, stratified into seven discourse modes, *must, have to* and *shall* are analysed according to 32 formal and functional variables (including formal, semantic, pragmatic and textual variables), and the qualitative analysis is supported by the statistical software *Trideux*. For each modalising expression, Furmaniak is able to identify and specify a number of attractions and/or repulsions with some discourse modes, supplemented by information on different modal profiles according to the discourse mode in which they are used.

In "*The future elected government should fully represent the interests of Hong Kong people*" – *Diachronic change in the use of modalising expressions in Hong Kong English between 1928 and 2018* (Chapter 12), Carolin Biewer, Lisa Lehnen and Ninja Schulz describe developments in the press news reportage of the *South China Morning Post* from 1928 to 2018. The authors seek to further the understanding of the close relationship between the diachronic development of modal expressions in Hong Kong English and the developments of the genre 'press news reports', the concomitant change of topics and the corresponding socio-political changes in Hong Kong. In one of these developments, especially the exceptionally high amount of back-shifted *will* and deontic *should* testify to these changes.

In showing that a usage-based perspective matters, most of the papers are data-driven, empirically oriented and studying real and authentic language rather than abstract representations of language. So, what all contributions share is their attempt to view language as a dynamic, adaptive and emergent system representing petrified and not so petrified structures of recurrent patterns, the latter based on frequent use (Hopper 1988). At the same time, recurrent patterns are seen as products of different and sometimes competing needs in the interaction (Bybee, Perkins & Pagliuca 1994). Thus, the volume brings together leading scholars in their fields, harnessing a wide variety of methods and exploring the dynamic relationship between form and function.

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Moving to modal categories

Contesting categorical boundaries

Revisiting global and intra-categorial frequency shifts in the English modals

A usage-based, constructionist view on the heterogeneity of modal development

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English modal verbs are claimed to be declining in their use in English (Leech 2011, 2013; inter alia), an assertion that is essentially based on aggregate frequencies of modals across register and time (Biber 2004). Since modals may be viewed as a prime example of paradigmatic organization (e.g. Diewald 2009; Diewald & Smirnova 2012), it seems only plausible to seek a generalization regarding their overall development. This approach, however, comes with a drawback, namely that it neglects the modal system's underlying heterogeneity. By utilizing both historical and contemporary language data from COHA (Davies 2010) and COCA (Davies 2008), I will argue that the obvious variability in the English modal system represents an important caveat against making generalizations across an entire category in terms of frequency shifts.

Keywords: modal constructions, contractions, diachronic Construction Grammar, COHA, COCA

1. Introduction

Despite the substantial research literature on issues related to modality already in circulation, English modal expressions continue to attract a great deal of interest within the linguistic community. With the advances in (diachronic) corpus linguistics since the 2000s, it is specifically the variation and change of modal verbs (e.g. *can, must*) that has become one of the main focal points, leading to numerous studies that, among other things, have investigated their overall development (e.g. Leech 2003; Leech et al. 2009), long-term individual trends (e.g. Daugs 2017), register- or text-type-specific changes (e.g. Biber 2004; Millar 2009), shifts

in collocational preferences (e.g. Hilpert 2012, 2016) and the emergence of new modals (e.g. Krug 2000; Lorenz 2013a). The general conclusion that can be drawn from these studies is that the English modal system has been in a long-lasting process of restructuring; moreover, according to prevailing opinion, modal verbs regarded as a group have been decreasing in their frequency of use for the better part of the last century. The evidence to support this claim is robust and the present paper will not argue against it. It will, however, advise caution that a generalization as large as the overall demise of modal verbs, which is essentially based on aggregate frequency counts, underestimates noteworthy individual trends in the data that render modal development much less homogenous than the proclaimed global demise actually suggests. To this end, this study provides a reassessment of the diachrony of modals in AmE that minds their individual trends rather than lumping them together under one umbrella category. By subscribing to the usage-based, constructionist framework laid out by Goldberg (2006) (CxG) and to Hilpert's (2013) notion of constructional change, I will argue furthermore that modal expressions, such as *will, 'll* and *won't, would* and *'d* or *can* and *can't*, which are traditionally subsumed under WILL, WOULD and CAN respectively, may actually be treated as (parts of) distinct constructions (cxns) that show quite divergent frequency shifts; see Lorenz (2013b) for a similar take on the status of *gonna*, Nesselhauf (2014) on the status of *'ll* and Daugs (to appear) on *won't, can't* and *'d*. Admittedly, this approach leads to a rather high level of granularity and seems to run counter to the aim of seeking the largest generalization possible. Yet, by keeping a close eye on individual expressions and their development, it may eventually be possible to identify new categories within the larger modal system that behave more homogenously than the entire class of modals as a whole.

The remainder of this paper is structured as follows. Section 2 provides a brief overview of the studies on modal development in English and their implications for this paper. In Section 3, the issue on what actually constitutes a modal cxn will be addressed by drawing on recent research by, for example, Hilpert (2016) and Cappelle & Depraetere (2016a). In Section 4, the results of this study are presented and linked to the rather heated debate between Millar (2009) and Leech (2011) on what is actually happening with and within the modal system. Before concluding this paper, Section 5 will discuss some implications a usage-based CxG approach might have on categorizing modal expressions using the negative modal contractions as an illustrative example.

2.   The diachrony of modals: Where we are at so far

The corpus-based research output on the diachrony of modal expressions is quite considerable and rehearsing it all here would neither be feasible nor revealing for

the purposes of this paper. Instead, the present investigation will mostly be limited to contributions that discuss the overall development of the modal category as a whole. In this regard, one of the arguably most prominent claims is that the class of modals has been declining in its frequency over the course of the 20th century (at least in BrE and AmE). This has largely been promoted in Leech (2003, 2004), Biber (2004), Leech & Smith (2009) and Leech et al. (2009) and has been confirmed in, for example, Leech (2011, 2013), Seggewiß (2012) and, with some reservations, Daugs (2017). By contrast, Millar (2009) and Mair (2015) come to different conclusions; while Millar (2009: 199) observes a general increase in the use of modals over the course of the 20th century, Mair (2015: 131–132) argues that, at least in AmE, there have been significant fluctuations in the development of the modals during that period which essentially even one another out so that no directed trend can be detected. Figure 1 visualizes the frequency shifts identified in some of the studies mentioned above.[1]
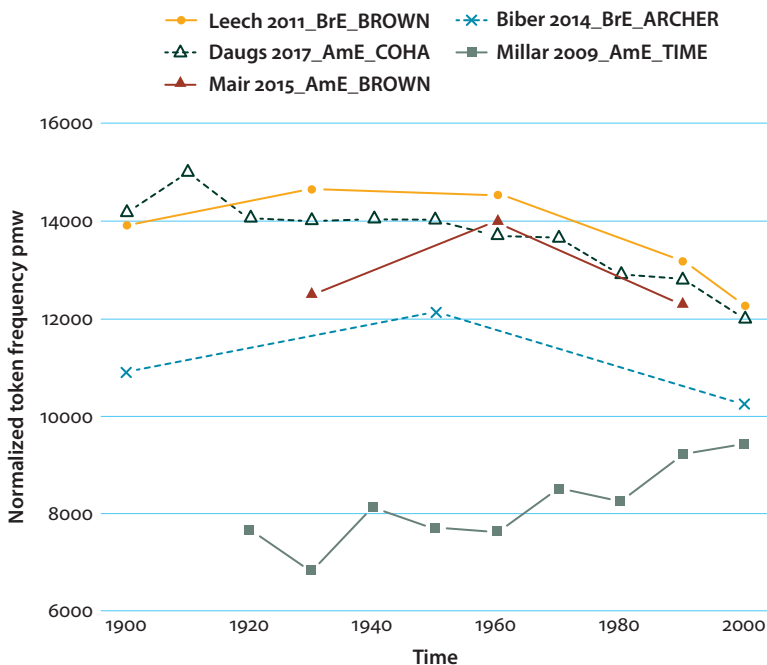
Figure 1. Frequency shifts in the overall use of modal verbs in BrE and AmE over the course of the 20th century[2]

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1. All data visualizations in this study were built using *R* (R Core Team 2017).

2. Given that ARCHER is divided into 50-year periods, Biber's (2004) data, as there are represented here, may only be regarded as an approximation.

Four out of five curve progressions behave quite similarly roughly after the mid-20th-century, indicating a clear downwards trend and thus supporting the proclaimed overall demise of modals in AmE and BrE; only Millar's data break rank, showing a general increase in the use of modals (Millar 2009: 199). The first half of the 20th century, however, clearly presents a less uniform picture with no common development discernible across all studies. Possible reasons for this divergence have been discussed at length in the respective studies; for example, corpus sampling and comparability (Leech 2011: 558–560; Mair 2015: 133) or corpus size and chronological gaps (or number of data points) (Millar 2009: 192–194). While it can be expected that all of these factors will play some role in this diachronic turmoil, the more pressing issue the present paper focuses on is how and why frequency shifts of the entire category of modal verbs are investigated. The 'how' can be answered straightforwardly, as the slopes in Figure 1 are simply the result of adding up the frequency counts of individual modals that are deemed to belong together. The studies mentioned above are largely congruent in terms of their selection of what counts as a 'core modal', namely *will, would, can, could, may, might, shall, should* and *must*, and it is common practice to provide information on their individual developments alongside the global trend.[3] To illustrate, Figure 2 below shows the individual trends of modals in 20th century AmE, as reported in Daugs (2017).

From Figure 2, it becomes immediately clear that the modals behave anything but homogenously over the course of the 20th century, neither maintaining their rankings in every case nor changing unidirectionally. Leech (2003, 2011, 2013) and Leech et al. (2009) have made attempts to identify smaller, more uniform groupings within the larger modal category based on frequencies, claiming that the high-frequency modals (*will, would, can, could*) remain stable as a group, while the low-frequency modals (e.g. *must, shall*) are essentially the ones that push the overall demise by becoming even more marginalized. Although this might seem to bring some order to the category, the data presented in Figure 2 do not support this approach, considering that the high-frequency modal *will* has the second largest contribution to the overall decline (right after *must*) and that, from a longer-term diachronic perspective, neither *can* nor *could* pattern congruently with *will* and *would*; see Daugs (2017) for a detailed discussion. Thus, the dichotomy proposed by Leech and his collaborators unfortunately does not resolve the heterogeneity issue, but simply recreates it on a lower level.

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3.   In some cases, also *need* + V_{INF} and *ought (to)* are included in the modal category as peripheral members (see e.g. Leech 2011 and Mair 2015).
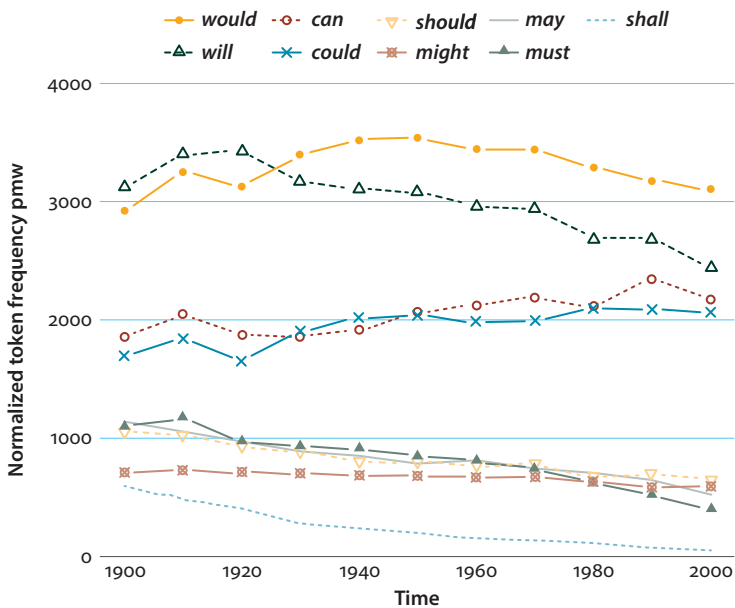
Figure 2. Frequency shifts of individual modals from 1900 to 2009 in COHA

This leads to the 'why' concerning an investigation into the overall development of the entire category in the first place. A typical starting point in analyzing a linguistic category is to identify the attributes shared by members of that category. For modal verbs, it is firmly established that they share a number morphosyntactic constraints that set them apart from the other verbal categories, namely lexical verbs (e.g. *walk, read, become*) and primary auxiliaries (BE, HAVE and, in some aspects, DO). Among these properties are their defective morphology (i.e. lack of non-finite forms and person-number agreement, e.g. *to may, *BE *mighting, *HAVE *musted, *she woulds*) and their complementation pattern with a bare infinitive (cf. e.g. *I will go* and *I hope go*) (Quirk et al. 1985: 127–128, 137; Huddleston & Pullum 2002: 75, 106–108). Based on purely formal grounds, it is therefore perfectly plausible to regard them as a clearly demarcated, homogenous linguistic category, which explains the interest in this category's development as a whole to some extent.

Semantically, however, such uniformity is difficult (if not impossible) to assess. Of course, we could simply postulate that all members of the modal category express 'non-factuality' or 'modality', but not much would be gained from such an approach, given that these terms (or rather the concepts behind them) are arguably too abstract to be revealing. Once any of the more fine-grained functional divisions is employed (see e.g. van der Auwera & Plungian 1998; Depraetere & Reed 2011), the variability within the modal category becomes obvious for

three reasons: (i) modals can usually be used to express more than one meaning (depending on co[n]text), (ii) the different meanings are not distributed equally within each modal verb, and (iii) the meaning distribution continues to change, i.e. specific meanings are becoming more conventionalized than others (see e.g. Leech et al. 2003: 232–234; Millar 2009: 202–204; Hilpert 2016). To illustrate, consider the examples in (1):

(1)   a.   He dialed Bug's number. "Excuse me, Mrs.   'permission' (deontic)
           Pass, <u>may</u> I speak with Bug, please?"
                       [COHA, FantasySciFi, 2003]

      a′. But Armstrong cautioned that even if she   'possibility' (epistemic)
           makes sacrifices, saves steadily, and earns a
           good return on her money, Ginsberg <u>may</u>
           run out of cash before she reaches age 81,
           the current life-expectancy for American
           women.   [COHA, WashPost, 2005]

      b.   We will be leaving in June. The weather <u>should</u>   'weak inference'
           be fine then.   [COHA, Play:Pianissimo, 2000]   (epistemic)

      b′. Anderson suggests schools <u>should</u> grant   'weak obligation'
           students a certain amount of time online   (deontic)
           each month, quickly granting more if the
           student needs it.   [COHA, CSMonitor, 2000]

While different uses for both *may* and *should* are possible in current language use, there are diverging trends observable towards the meanings encoded in (a′) and (b′), namely epistemic possibility on the one hand and weak deontic obligation on the other (Leech et al. 2009: 83–89). Such diversity casts some doubts both conceptual and methodological on whether it is feasible to report on general developmental trends of the modal category as a whole, considering the information loss such an approach brings about. As the following sections will show, this becomes even more noteworthy when the modals are investigated from a constructionist perspective.

3.   Modals and CxG: What are modal constructions?

Since CxG sets out to be a linguistic theory that aims to explain language in its entirety (i.e. on all levels of linguistic description), it comes as no surprise that its proponents have started to venture forward into the already widely discussed

linguistic domain of modality. Any such investigation presupposes an understanding of what constitutes a modal cxn; but this is less straightforward than perhaps expected.

CxG assumes that knowledge of language can be captured exhaustively by means of cxns (Goldberg 2003: 219; Croft & Cruse 2004: 255) and that cxns exist on all levels of specificity, from words to complex, abstract schemas (Goldberg 2013: 17). The cxn itself represents a unified whole that pairs a conventional form (with phonological, morphological and syntactic properties) with a conventional meaning (with semantic, pragmatic and discourse-functional properties) (Croft 2001: 18). With this in mind, it seems that little can be gained from adopting a constructionist perspective when it comes to modal verbs, as they simply constitute cxns themselves; basically, one could use the same data with merely a different label. To apply this to an example, consider the most general *must* cxn in Figure 3 below.
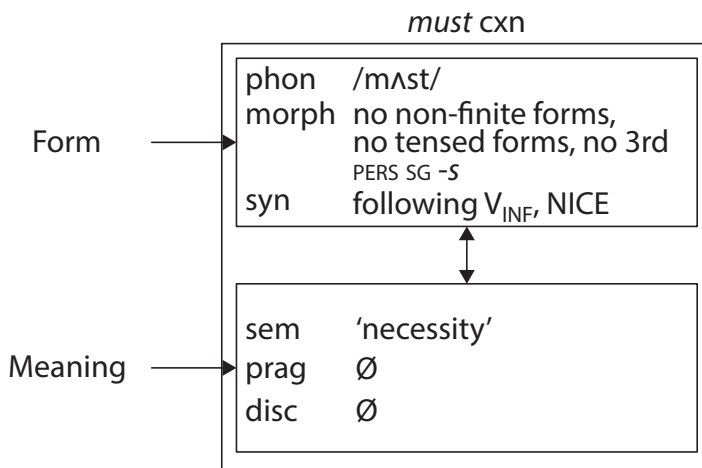
Figure 3. The symbolic structure of the *must* cxn

Albeit not being necessarily formalized in such a way, this particular view of the *must* cxn (which can be applied analogously to the other core modals as well) is arguably very much in line with the one widely held in corpus-based studies on modal development, as it captures well-known information about the verb itself. The cxn links the formal properties discussed in Section 2 above with the semantic value 'necessity' which comprises both 'deontic obligation' and 'epistemic necessity'; yet, at this level, neither of them can be specified, nor can the pragmatic

and discourse-functional properties.[4] Methodologically, retrieving the concrete instances of that cxn would simply involve searching for the modal verb *must* without specifying any syntactic configurations, which is how most of the studies mentioned so far (Hilpert [2016] is a notable exception) have proceeded. Viewed in this light, it is difficult to see any value added by submitting the modals to a CxG treatment. Concerns regarding the general adequacy and explanatory value of a constructionist approach to modality have been raised by Wärnsby (2002, 2016); see Trousdale (2016) for a critical and convincing response.

Fortunately, constructionist approaches (at least cognitive, usage-based strands) have more to offer in this regard in that "they have shifted the attention away from abstract patterns and meanings to relatively specific and concrete 'low-level' constructions" (Boogaart 2009: 231). The logic behind this approach is that *must*, as any other modal verb (and many other words for that matter), is rarely encountered in isolation in actual language use; rather we find it as part of larger chunks that may themselves be instances of cxns. Such chunks typically provide the necessary cues to identify whether deontic or epistemic meaning is conveyed.[5] Consider the following examples in (2).

(2) a. He's always been in motion, driving around, peddling his watches, golfing and gambling, skiing, screwing. He <u>must have</u> a heart like a city pump.   [COHA, Grandpa, 1999]

b. The task is that, in three days time, you <u>must bring</u> me three things in the world that I do not have.   [COHA, Play:Firebird, 1990]

The example in (2a) expresses 'epistemic necessity', which is common for the sequence *must* $V_{INF\_stative}$ (e.g. Bybee et al. 1994: 200), whereas the combination of *must* $V_{INF\_dynamic}$, as in (2b), typically has a 'deontic obligation' reading, particularly when coupled with an animate subject (e.g. Coates 1983: 21, 33–38).

It is here where, for example, Cappelle and Depraetere (2016a, 2016b) and Hilpert (2016) propose that modal cxns may constitute partly schematic templates, consisting of both the modal itself as the pivotal element and an open slot filled by a bare infinitive (e.g. [*must* V_{INF}], [*will* V_{INF}]). Although these templates would fail several of the tests that can be employed to detect the constructionhood of an

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4. Huddleston's (1980) NICE properties (i.e. operator function in negation, inversion, code and emphatic affirmation) were not discussed in Section 2, as these do not help distinguish between modals and primary verbs. They are, however, likely to be stored in some form in a modal (or any other auxiliary) cxn.

5. Note that not all combinations of *must* + V_{INF} strictly fall in either of the two categories. Formulaic expressions, such as, for example, *I must admit* or *I must say*, seem to function primarily as a discourse marker rather than conveying an actual obligation.

expression (e.g. non-compositional meaning, idiosyncratic constraints, deviation from canonical patterns),[6] Hilpert (2016: 69) argues that speakers' knowledge of a cxn also includes probabilistic knowledge about which verbal slot fillers occur more or less often with a specific modal than would be expected; moreover, each modal cxn has its very own collocational profile which is "not predictable from any other knowledge of language that speakers of English can be assumed to have" (Hilpert 2016: 70). Based on this assessment, it has been shown that the collocational preferences of modal cxns are subject to change which in turn suggests changes in the cxns' meanings; see also Hilpert (2008, 2012).

In line with this view, the present study revisits the development of the core modal cxns but also expands this group by a number of contractions, namely [SUBJ*'ll* V_{INF}], [SUBJ*'d* V_{INF}], [*won't* V_{INF}] and [*can't* V_{INF}]. While these are traditionally treated as pronunciation variants and therefore typically accounted for methodologically by adding their frequency counts to the respective full forms, there is evidence suggesting that they rather represent distinct cxns with specific collocational preferences. Consider, for example, the case of [*won't* V_{INF}]. To establish that we are in fact dealing with a cxn here, there must be evidence supporting that *won't* cannot simply be predicted on the basis of *will* or *will not* or any other existing pattern – that is, if we follow Goldberg's (2006) definition of what constitutes a cxn.

In terms of their form, it is obvious that *will not* and *won't* differ notably both in the phonological properties of their respective base as well as their syllable structure, as indicated in (3).

(3) *will not* | /wɪl‿naːt/ ↔ /woʊnt/ | *won't*
      | CVC‿CVC ↔ CVCC |

Instead of arguing that *won't* can be derived from *will not* by applying an idiosyncratic morphophonological rule, namely one that coalesces *will* and *not* and induces a unique type of base allomorphy, it appears to be far more plausible to simply assume a separate entry for *won't* in the minds of speakers, due to its unpredictable behavior. Even if speakers have abstracted a schema in the form of [X-*n't*], which is perfectly imaginable, given the decent number of possible instances (e.g. *couldn't, mustn't, needn't, daren't, doesn't*), *will* would still have to undergo the change from /wɪl/ to /woʊ/ to instantiate it, i.e. if we assume an active unification of *will* and [X-*n't*]. Yet, it is difficult to see any motivation for such a process. Rather

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6. See Hilpert (2014) for an overview.

won't is stored as a conventionalized unit that exists alongside *will* and a poten-
tial [X-*n't*] cxn. Continuing these lines of thought, it can then also be expected
that *won't* has a distinct collocational profile of its own. As any other modal, it
is typically combined with a bare infinitive and may thus also constitute a partly
schematic cxn in the form of [*won't* V_{INF}]. Clearly, such bigrams do not describe
a modal's collocational behavior exhaustively. In fact, Cappelle and Depraetere
(2016b: 86) argue that investigating "a modal's collocational preferences need not
– and […] should not – be restricted to the following lexical infinitive". Using *must*
as an illustrative example, they show how focusing on the larger co-text of a modal
can help uncover modal cxns beyond simple bigrams, for example, the fully speci-
fied idiom [*The show must go on*] or the partially filled discourse marker [SUBJ
must $V_{confess/say/admit}$]. The present paper agrees with this view and it should go
without saying that modals are typically integrated into larger sequences of which
some may constitute cxns themselves. For *won't*, consider the examples [*That dog
won't hunt*][7] or [SUBJ *won't* $do_{intrans}$][8]. In either case, both the following infinitive
and the subject need to be taken into consideration in order to identify the respec-
tive meanings of these cxns. An analysis of other distributional properties, such as
subject preferences (or perhaps also adverbial collocates), can therefore certainly
be rewarding. However, the focus here will rest on modal + V_{INF} combinations
only, as previous studies (e.g. Gries & Stefanowitsch 2004; Hilpert 2008; Dekalo &
Hampe 2018) have already shown the fruitfulness of this approach in providing
meaningful results.

　　To test whether there are any differences between the contraction and its full
form in terms of their collocational preferences in present-day AmE, a specific
form of collostructional analysis, namely distinctive collexeme analysis (DCA), as
proposed by Gries and Stefanowitsch (2004), can be carried-out. This method is
particularly suited for investigating the collexemes of functional variants; more spe-
cifically, it measures the association strength between a slot filler and a cxn over a
functionally similar cxn.[9] Applied to the present case, DCA identifies which verbal

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7.　<[*That dog won't hunt*]$_F$ ↔ ['sth. is expected to not fulfil its intended purpose'/'sth. is com-
pletely unrealistic or not feasible']$_M$>, as in (4):

　　(4)　　If your point was to sway voters from voting for Mitt Romney because he is incon-
　　　　　　sistent, <u>that dog won't hunt</u>.　　　　　　　　[COCA, nvdaily.com, 2012]

8.　<[SUBJ *won't* $do_{intrans}$]$_F$ ↔ ['SUBJ is not enough/acceptable/satisfactory']$_M$>, as in (5):

　　(5)　　I could just replay it in my head, but <u>that just won't do</u>.

　　　　　　　　　　　　　　　　　　　　　　　　　　[COCA, theblogess.com, 2012]

9.　The DCA was performed using Flach's (2017) *R* package {collostructions}.

slot fillers best distinguish between the [*won't* V_{INF}] cxn and the full form; see the results in Table 1 obtained from COCA (1990–2017) prior to its most recent update.

Table 1. The 25 most distinctive collexemes of [*will not* V_{INF}] and [*won't* V_{INF}] in COCA[10]

	[*will not* V]				[*won't* V]			
	Collex	Obs	Exp	FYE	Collex	Obs	Exp	FYE
1	be	11146	9567.9	111.03	get	2803	2261.5	103.58
2	tolerate	302	135.4	61.34	let	2413	1986.4	72.12
3	allow	525	319.3	41.01	say	1379	1098.1	57.86
4	seek	131	52	36.63	do	2383	2019.7	50.75
5	accept	343	200.2	31.50	know	1071	842.8	50.36
6	share	151	69.6	28.93	tell	980	765.4	49.42
7	stand	268	153.7	26.39	have	4422	3945	44.60
8	rest	103	43	25.63	need	774	601	41.23
9	occur	98	41.1	24.19	mind	299	209.8	36.94
10	suffice	74	28.2	23.05	hurt	600	461.1	35.14
11	receive	104	45.6	22.98	find	1101	903.9	34.11
12	succeed	104	46.5	21.80	talk	567	449.6	25.22
13	support	168	90.5	20.66	believe	681	554.2	23.44
14	permit	111	52.3	20.31	work	1344	1160.6	22.64
15	attempt	61	23.1	19.46	like	369	287.3	19.64
16	provide	125	63.9	18.23	see	1106	954.2	19.02
17	serve	82	36.3	17.87	matter	321	247.2	18.85
18	result	67	27.6	17.48	want	607	499.8	18.58
19	become	149	87.9	13.67	miss	257	196.3	16.33
20	lead	85	42.7	13.28	bother	213	159.6	15.90
21	survive	153	92.7	12.73	happen	1066	938.5	13.76
22	surrender	47	19.3	12.62	take	1353	1212.9	12.86
23	participate	55	24.1	12.54	feel	353	286.6	12.84
24	affect	176	112	12.04	notice	177	133.8	12.45
25	apply	51	22.8	11.11	budge	152	115.5	10.38

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10. The collostructional strength is calculated by using negative log10-tranformed *p*-values of a Fisher-Yates exact test (FYE) as an association measure. Also note that all verbs in Table 1 occur with either expression in COCA.

The first obvious observation is that the contraction distinctively attracts verbs that are on average notably shorter (roughly 0.7 syllables) than the verbs that occur with the full form. Furthermore, the data show that there is a relative preference for mental activity verbs (e.g. *know, need, like*) to co-occur with *won't* rather than *will not* in contemporary AmE, and, conversely, a strong relative attraction between verbs related to '(un-)willingness' (e.g. *tolerate, accept, permit*) and *will not* over *won't*. This provides a first approximation towards (possible) functional differences between *won't* and *will not* and underscores the status of [*won't* V_{INF}] as a cxn in its own right. Such differences are addressed in Daugs (to appear); based on data retrieved from the fiction section in COHA, he finds that, when combined with their most distinctive verbal collexemes, *will not* appears to have developed a relative preference over *won't* for expressing 'volition', whereas the contraction rather conveys 'epistemic' meaning.[11]

In the same vein, the arguments provided here (i.e. unpredictable formal properties, distinctive collocational/functional behavior etc.) also apply analogously to [SUBJ*'ll* V_{INF}], [SUBJ*'d* V_{INF}] and [*can't* V_{INF}], although it must be mentioned that the enclitics *'ll* and *'d* are different from the negative contractions in that they require both a subject-host and the bare infinitive to constitute a cxn; see Booij (2010: 15) for a similar take on bound morphemes. The present paper will not discuss their constructionhood further but will simply assume that status.[12] Viewing contractions as cxns entails that the choice between them and their respective full forms is lexically motivated rather than morphophonologically. The methodological consequences that follow from such a claim will be part of the discussion in the next section.

4.   A response to Leech's (2011) response to Millar (2009)

Before revisiting the developments of and within the English modal system based on the premises laid out in the last section, I will briefly rehearse the main arguments from Millar's (2009) study and Leech's (2011) critical response to it, given the contradicting results of these studies.

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11.   It should be noted, however, that DCA cannot reveal anything definitive about the actual collexemic profile of a cxn because it only highlights differences between functionally similar expressions and provides no information on their similarities. At that, it can model only a part of the distributional knowledge speakers are assumed to have of these cxns.

12.   For a full discussion on the constructional status of *'ll* see Nesselhauf (2014), on *'d* see Daugs (to appear), and on *can't* see Bybee (2010: ch.9) as well as Daugs (to appear).

On the basis of the TIME corpus (Davies 2007), Millar (2009) finds a general increase in the use of modals between 1923 and 2006. He notes, however, that this overall trend is mainly driven by *can, could* and *may*, while other modals, for example, *must* and *shall*, decline significantly (Millar 2009: 199–202). By contrast, Leech (2011) identifies an overall decrease in modal usage in both AmE and BrE over the course of the 20th century (based on COHA and the extended BrE component of BROWN), thus lending support to his previous (2003) claims regarding the demise of modals as a whole and the possible longevity of this trend. Leech's main point of criticism of Millar's results is the narrow view Millar adopts, i.e. he focuses purely on one publication (namely TIME magazine) that may not be representative of actual language as a whole (Leech 2011: 548–550). This criticism is valid insofar as modals are not dispersed evenly across different registers, which has been shown in, for example, Biber (2004) or Leech et al. (2009). Millar's (2009) results actually substantiate this claim. If modals do not occur to the same extent in all registers, they will hardly do so across all publications. The advantages of Millar's study over Leech's original (2003) investigation, namely corpus size, number of data points and chronological completeness, essentially became ineffective with Leech's (2011) response.

However, the present study would like to express some reservations against the final conclusion drawn in Leech (2011: 561) that "the frequency decline (in standard AmE and BrE) of the modal auxiliaries as a class is now past reasonable doubt". It is not the result as such that is puzzling, although counterevidence for this trend has been presented not only by Millar (2009) but also by Mair (2015); cf. Figure 1 above. It is rather the need to report on the development of the entire category in the first place that should raise some concerns, when, in the same breath, it is acknowledged that there are also modals that do not follow either proclaimed overall trend. The point is that the modal category typically receives special treatment in that its morphosyntactic coherence outweighs individual diachronic shifts. To make this perhaps more obvious consider a small gedankenexperiment.

Let us assume a linguistic category that consists of three members only of which both their individual frequency developments and the development of the entire category are investigated across three time periods (P1, P2 and P3). Furthermore, for the sake of simplicity, each member may only occur with a frequency of 1, 2 or 3 per period. The overall result reported is that this category remains stable at a frequency of 6 (i.e. the sum of all members combined) across the entire span. Even with such a setup, which obviously grossly oversimplifies the complexity of an actual linguistic category (as well as any corpus data), several scenarios can be created that cast doubt on the proclaimed stability; see Figure 4 for some examples.
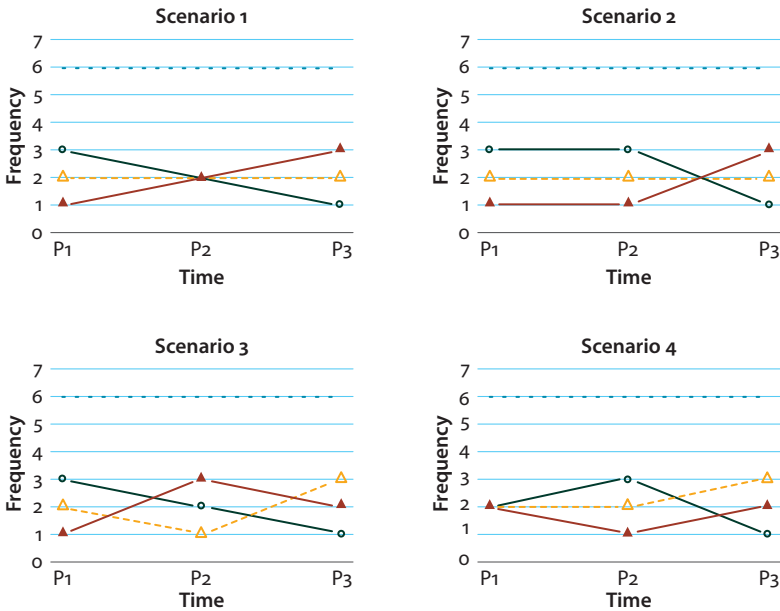
Figure 4. Fabricated developments in a fictitious linguistic category

When confronted with any one of these or similar scenarios within an actual linguistic category, it is arguably doubtful that the term 'stability' would be considered appropriate, even though the overall numbers (blue dotted lines) would indicate that. With regard to the core modal category, I assume that its special status is a remnant of a more structuralist approach to categorization according to which category membership is determined based on necessary and sufficient conditions. Admittedly, the core modals are identical in terms of their morpho-syntactic properties; this, however, seems less straightforward when it comes to their meanings, despite the fact that these are historically related (e.g. Bybee et al. 1994), and even more so, if the frequency shifts are taken into consideration. Perhaps, an argument could be made that the majority of the modals fall in line with the general development and the few that buck the trend (e.g. *would, can* and *could* in Leech's [2011] data) should not be overestimated at the cost of a larger generalization.

By contrast, the present study explicitly advertises to look more closely at individual developments; moreover, treating modals as cxns (or more specifically parts of partly schematic cxns) reveals much more variability within that category that at least construction grammarians may need to be mindful of. To illustrate this variability, consider the developments in Figure 5 below.
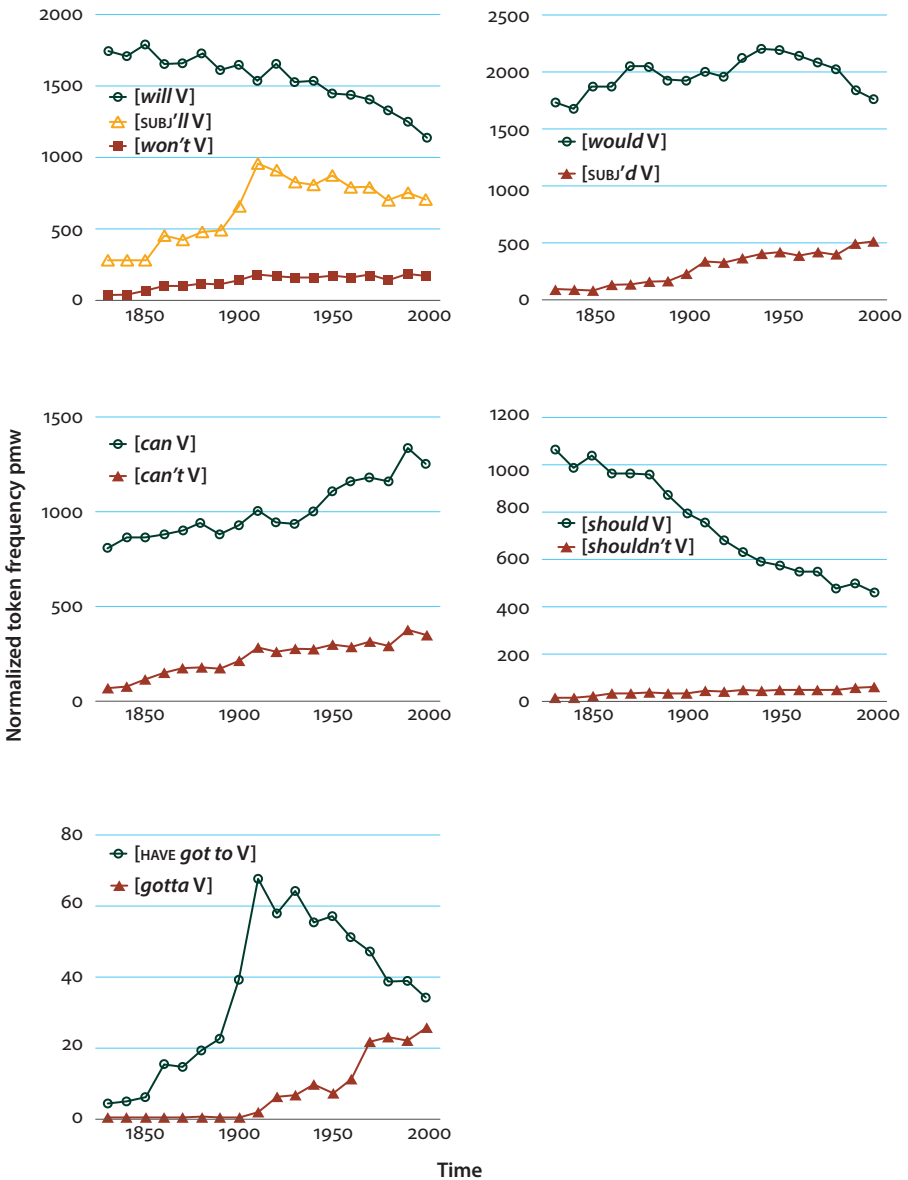
Figure 5. Changes in the use of selected (semi-)modal cxns between 1830 and 2009 in COHA

The graphs show the developments of different selected modal and semi-modal cxns that are often subsumed under a more general expression; for example, WILL for the cxns in the upper left-hand graph. Note, however, that only in the case

of [*can* V$_{INF}$] and [*can't* V$_{INF}$], both lower-level cxns clearly move in the same direction, whereas the other examples do not exhibit such unidirectionality. Furthermore, the curves for [HAVE *got to* V$_{INF}$] and [*gotta* V$_{INF}$] at the bottom left-hand side indicate that the caution that was warranted in the case of the modal cxns applies to semi-modal cxns alike. Several studies (Krug 2000; Boas 2004; Schmidtke 2009; Lorenz 2013a) have shown that reduced forms, such as *gonna, wanna* and *gotta* (have started to) lead a life of their own, i.e. emancipated from their original source forms, which is why they are also treated here as distinct cxns. Note that, although not previously discussed in this paper, [*shan't* V$_{INF}$] is also considered a cxn here, following Bergs (2008). Given its formal unpredictability, this seems justified. The present study also recognizes [*shouldn't* V$_{INF}$] as a cxn on account of its relative preference over the full form (also when inverted), its development in the opposite direction of affirmative [*should* V$_{INF}$], and its co-occurrence with certain verbs that has essentially led to more specified cxns with new, non-compositional meanings; for example, *You shouldn't have* as a response of 'gratitude'. For a full overview of the modal and semi-modal cxns selected to address the developments in the modal system see Figure 6 below.

To identify trends in the data, Hilpert and Gries (2009) recommend using Kendall's τ (Tau), a non-parametric correlation statistic that is particularly suitable for assessing trends in frequency data; values close to 0 indicate no discernible trend, values close to 1 or -1 an increase or decrease respectively. For each cxn its τ-value is based on normalized token frequency (pmw) and represented by means of a horizontal bar plot. The different colors correspond to the different levels of significance.

The results corroborate the previous claim regarding the heterogeneity within the English modal system. Consider the 'modal group' in the upper left-hand graph. While cxns such as [*shall* V$_{INF}$] or [*may* V$_{INF}$] show significant, near perfect, negative correlations between usage frequency and time, cxns like [*can* V$_{INF}$] or [SUBJ'*d* V$_{INF}$] can be found on the other side of that spectrum, exhibiting strong, positive correlations that are highly significant. Moreover, if we follow the 'standard' procedure and aggregate their frequencies, the result is merely a weak, non-significant decline in the use of these modal cxns as whole; see the lower left-hand window.

The semi-modal cxns, on the other hand, behave as expected, showing with but two exceptions (namely [HAVE *got to* V$_{INF}$] and [*supposed to* V$_{INF}$]) highly significant increases between 1830 and 2009, thus presenting a much more homogenous picture. As reported in earlier studies, the semi-modal cxns are still outnumbered by the modal cxn in PDE, here roughly 3:1, but, from the current perspective, the ones selected for this study are apparently very much capable of making up for the overall decline in the use of the modal cxns if, again, the frequencies are combined. How should these findings be interpreted? Obviously, the list of modal and semi-modal cxns presented here is not exhaustive. There is no doubt that there
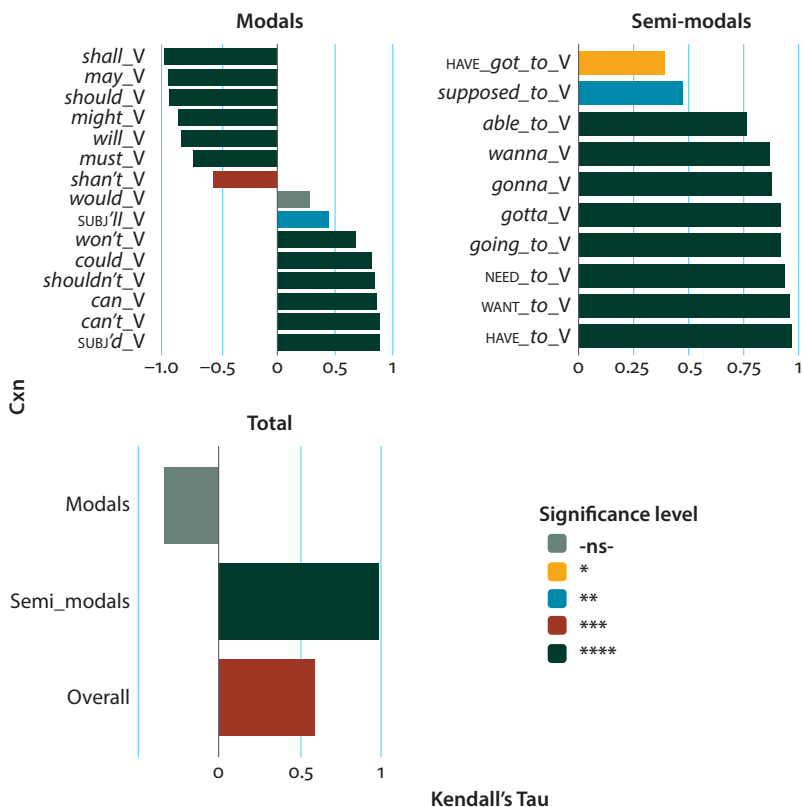
Figure 6. Frequency trends in selected modal and semi-modal cxns between 1830 and 2009 in COHA[13]

will be many more expressions that qualify as either a modal or a semi-modal cxn and adding other cxns will undoubtedly change the overall picture to a greater or lesser extent. Whether the present findings can be seen as counterevidence to Leech's propagated, significant, overall demise of the modal category (or Millar's claim of a general increase) and the inability of the semi-modals counterbalance that trend is perhaps debatable but certainly not the point the present study is trying to make. Here, the focus rather rests on the information gained from adopting a constructionist perspective and from prioritizing individual developments over global trends, before identifying clusters within the larger category MODALS.

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13. The following significance levels are distinguished: (*) $p_{\text{two.tailed}} < 0.05$, (**) $p_{\text{two.tailed}} < 0.01$, (***) $p_{\text{two.tailed}} < 0.001$, (****) $p_{\text{two.tailed}} < 0.0001$. All τ-values were obtained using the `cor.test()` function in *R*. The frequency data for every decade on which the τ-values are based are available from the author upon request.

To elaborate, a fundamental claim of usage-based CxG (or usage-based theories of language in general) is that frequency is essential to both speakers' linguistic knowledge and language change (Bybee 2010; Diessel 2011). With regard to the cxns in Figure 6, we might expect the ones exhibiting significant changes in their usage frequency over time to also be the ones that have experienced some sort of change in their underlying mental representation (or degree of entrenchment). However, since the cxns under investigation here are partly schematic, it is difficult to assess, on the basis of token frequencies alone, what these changes look like exactly, i.e. whether the schemas are actually affected as whole or only some of their respective instances (cf. Stefanowitsch & Flach 2016). Arguably, this problem would be amplified if one considers the entire category, that is, if a highly abstract cxn is posited that subsumes all modal cxns and organizes them in a cluster of paradigmatic oppositions (Diewald 2009; Diewald & Smirnova 2012). While it may theoretically be possible that speakers form such abstractions, it would mean that we are back to square one by not accounting for the modal category's internal heterogeneity neither methodologically nor conceptually. A more fine-grained analysis of modal development has the advantage that it is not only individual modal cxns that can be investigated in isolation but also their development relative to one another. The importance of relative frequency is emphasized strongly in Hilpert (2013) who argues that "[c]hanges in these frequencies will alter the cloud of exemplars that represents [a] construction in speakers' minds" (2013: 17). Even if contracted (semi-)modals, such as *won't* or *gotta*, are viewed purely as pronunciation variants of their respective uncontracted forms rather than distinct cxns, their developments relative to *will not* and HAVE *got to* respectively still suggest that there is something happening with the underlying mental representations that might be worth exploring. In either case, the developments discussed above constitute constructional changes in line with Hilpert's (2013) framework. Additionally, the fact that not all modal cxns mentioned above behave or develop in exactly the same way underscores this claim, as constructional changes apply selectively to single cxns rather than to an entire paradigm as a whole.

5.   What to split and what to lump?

This section addresses some potential consequences a rather fine-grained analysis, as the one presented above, may possibly have for the category MODALS. Because despite the fact that a usage-based, constructionist approach allows the researcher to shift the focus away from highly abstract patterns and categories towards more concrete cxns, it could be argued that the resulting level of granularity also introduces more complexity and renders the data less readily interpretable or rather

the conclusions drawn from them less elegant. A usage-based CxG approach to modality should not, however, be misinterpreted as merely a pedantic search for modal cxns (especially at a lower level) which are then only treated separately. The present study very much acknowledges the usefulness of grouping modal expressions in general, but also takes the view that, when investigating the historical development of modals (or any other linguistic unit for that matter), (relative) frequency, among other factors (e.g. functional overlap, formal resemblance, similar usage profiles), can play a role in identifying larger, more uniform groups. That is, if the developments of two or more expressions are similar enough, it may help the researcher uncover categories in a more data-driven, bottom-up fashion, which, from usage-based theory of language, may then perhaps also be cognitively more realistic.

To illustrate, Hilpert (2013: Chapter 3) investigates the development of the first and second person possessive pronouns *mine* and *thine* and their change to *my* and *thy* respectively between 1150 and 1718. By means of different statistical methods (e.g. cluster analysis, mixed-effects modelling), he comes to the conclusion that the pronouns' individual developments are so similar that they constitute a single constructional change rather than two isolated changes, which he sees as evidence for the existence of a more abstract constructional generalization (a so-called meso-cxn) speakers must have formed over these possessive pronouns in the time period under investigation (Hilpert 2013: 106–109). Hilpert thus provides empirical evidence that the first and second person pronoun forms form a natural category of which the third person is apparently not a member. Moreover, he shows that it is not only the status of an expression as cxn that can be determined in an empirical, bottom-up fashion, but also its level of schematicity.

Another example of a data-driven categorization, yet with a different focus and conclusion, is proposed in Lorenz (2020). He finds that the emerging modals *gonna, wanna, gotta* increasingly converge in their respective usage patterns in AmE over the course of the 20th century. But instead of arguing for a more abstract contraction cxn, he identifies a meta-cxn that captures the contractions' similarity and the analogical relationship to their full forms via horizontal links without recourse to a higher, more schematic level. Crucially, the observed developments are unique to *gonna, wanna* and *gotta*, i.e. other contractions that have emerged from the V *to* V$_{INF}$ cxn (e.g. *usta, oughta, tryna*) follow different paths.

Based on the data at hand, a rather cursory attempt can be made to group some modals into larger clusters. A set that seems to behave particularly homogeneously are (some of) the negative modal contractions. Next to their morphosyntactic similarity, they all share the functional properties 'not X' and 'colloquialness', whereas the latter seems to be waning as these contractions continue to disseminate into

more formal registers.[14] Furthermore, a closer look at their developmental trends in Figure 7 seems to support a unified treatment of these expression.
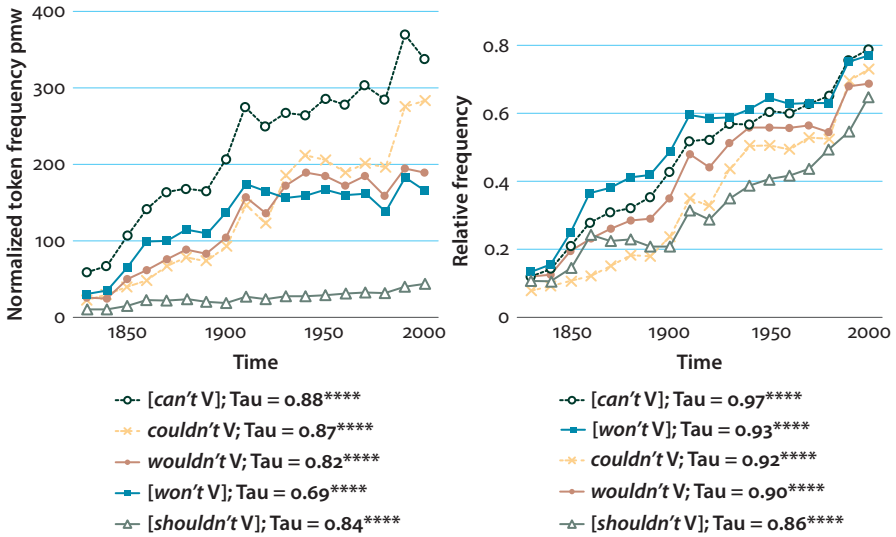
Figure 7. Absolute and relative development in usage frequency of specific negative modal contractions in COHA[15]

Despite the differences in their overall usage frequency, the progressions in the left graph show that each of these negative modal contractions have generally become more frequent between 1830 and 2009 in AmE. Even more noteworthy, the contractions behave very much alike in terms of their development relative to their respective full forms, as indicated by the graph on the right. By the 2000s, the chances of encountering a negative modal contraction over its uncontracted counterpart in contexts where both should theoretically be possible are roughly between two to four times higher. However, not all negative contractions follow this upwards trend. Forms like *needn't* or *mustn't* have become increasingly marginalized in terms of their absolute frequency after the 1910s and, unlike the contractions in Figure 7, they remain underrepresented in comparison to their respective full forms in COHA; see Figure 8.

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14.   The property 'not X' does not necessarily mean that the respective contraction is always the direct negation of the affirmative form, as argued in Bybee (2010) on the basis of *can* and *can't*.

15.   Note that the status of *couldn't* and *wouldn't* as cxns is yet to be determined. Given their relative preference over their respective full forms, it seems questionable to treat them as mere contracted pronunciation variants of *could not* and *would not*.
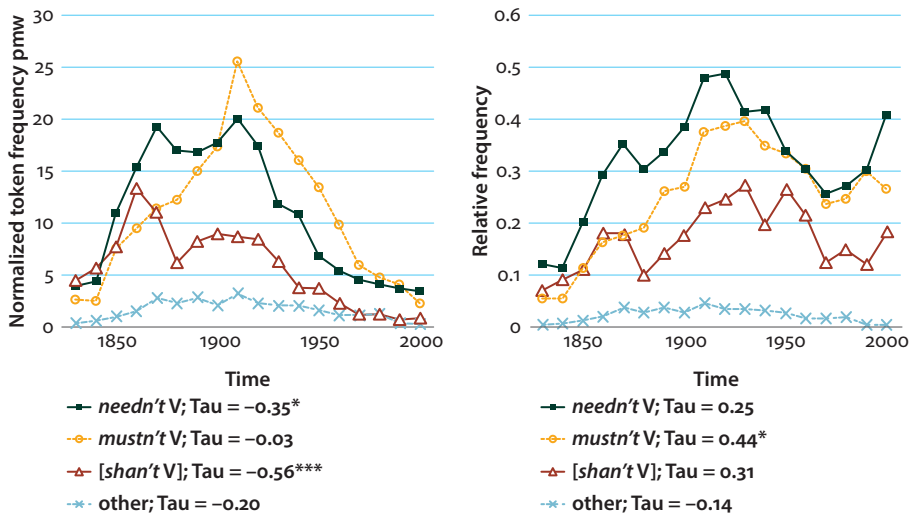
Figure 8. Absolute and relative developments of marginalized negative modal contractions in COHA[16]

What can we make of these findings? Obviously, the present analysis lacks the depth and precision that both Hilpert (2013) and Lorenz (2020) provide in their studies to argue for the existence of either a meso-cxn or a meta-cxn, but it provides a clue where to dig deeper. Since these cxn types describe different kinds of relationships in the construct-i-con, they are not necessarily mutually exclusive and may both apply to the present data. Whereas the meso-cxn represents a more abstract, partly schematic generalization across a set of cxns somewhere above the level of individual cxn types (cf. Traugott 2008; Hilpert 2013), the meta-cxn rather captures the horizontal relationship between near-synonymous expressions (cf. Leino & Östman 2005; Lorenz 2020).

To tentatively flesh this out for the present data, we can assume a meta-cxn that accounts for the relatedness between a negative modal contraction and its full form (e.g. [*won't* V_{INF}] and *will not* V_{INF} as near-synonyms) as well as the analogical relation between pairs of contractions and full-forms (e.g. [*won't* V_{INF}] and *will not* V_{INF} relate to each other in the same way as [*can't* V_{INF}] and *cannot* V_{INF}). Following Lorenz (2020), that meta-cxn could be formalized as <[AUX *not* V_{INF}] – [{*won't* / *can't* / …} V_{INF}]>.

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16. The category 'other' represents the aggregate token frequencies of the very rare contractions *mayn't, mightn't* and *daren't* followed by a bare infinitive.

A meso-cxn is no less conceivable. In Section 3, I have already mentioned the possible existence of a schema in the form of [X-*n't*] that speakers may have abstracted from the different *n't*-types that exist in English. For the present study, this schema would certainly have to be extended as to include the following bare infinitive – [X-*n't* V$_{INF}$] – not only to account for possible collocational preferences, but also to demarcate it from the negative contractions of the primary verbs BE and HAVE, which clearly have different syntactic distributions. While all negative modal contractions could, in theory, be instances of the meso-cxn [X-*n't* V$_{INF}$], it remains to be seen whether the cases in Figure 7 converge in their respective usage patterns beyond their development in text frequency (e.g. overlap in their col-lexemic profiles or variables pertaining to the speaker). If this is indeed the case, it might allow us to posit another meso-cxn for specifically that group. What is more, this meso-cxn might not only be instantiated by typical negative modal con-tractions, such as [*won't* V$_{INF}$] or [*can't* V$_{INF}$]. By the same token that forces us to distinguish between the modals and BE and HAVE, the contracted negative present tense form of periphrastic DO, namely *don't*, needs to receive some attention, as it shares its syntactic properties (i.e. its operator function in NICE and the following bare infinitive) with the other negative modal contractions. Although periphras-tic DO is traditionally not considered a modal expression, Budts and Petré (2020) argue that the overlap between the infinitival collocates of DO and the modals in Early Modern English, especially *will*, promotes the inclusion of DO among the modals, as speakers will have perceived specific forms of DO and specific modals as similar enough to assume a paradigmatic relationship. Again, the present study cannot claim to have employed the same rigor, but from the spine plot in Figure 9, it becomes clear that the diffusion of the cxn [*don't* V$_{INF}$] in COHA between 1830 and 2009 is remarkably similar to the patterns observed in Figure 7. Especially the phonological similarity between [*don't* V$_{INF}$] and [*won't* V$_{INF}$] invites analogy and may, in part, explain their similar developments.

To conclude, the issue regarding what to split and what to lump depends first and foremost on the research question. A first attempt was made to identify a coherent group of lower level cxns within the larger category MODALS by not only considering syntactic and functional properties, but also simple diffusion patterns. Some of the negative modal contractions show noteworthy uniformity in this regard. Yet, whether or not we are dealing with a meta-cxn or (multiple) meso-cxn(s) in their case, or whether [*don't* V$_{INF}$] is actually sanctioned by the same schema cannot be answered with certainty based on the present data. They might, however, facilitate further investigations, particularly a more encompassing treat-ment of this category beyond the traditional conception of what constitutes a modal.
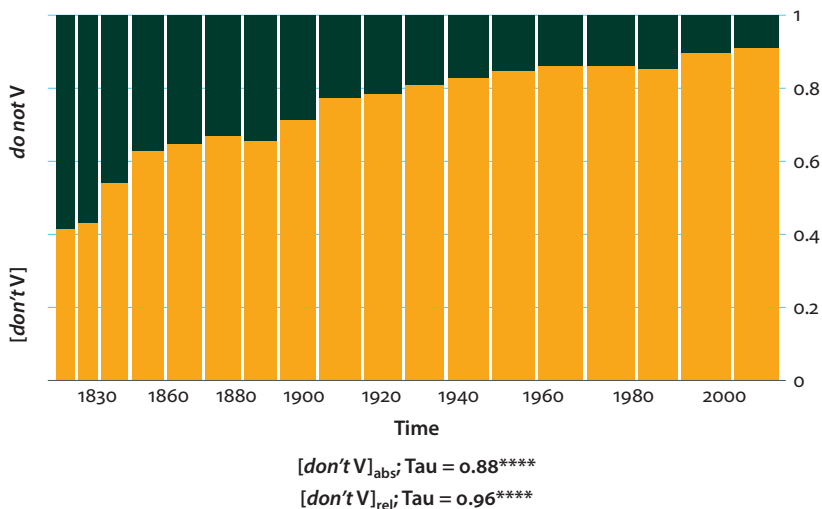
Figure 9. The spread of the [*don't* V_{INF}] cxn in COHA

6.   Conclusion

This study has tried to make the case that an investigation into modal develop-ment in English (more specifically AmE) has still something to offer, despite the noteworthy research output on this topic that exists already. By approaching the modal category and its development from a usage-based, constructionist perspec-tive, several lower-level modal cxns (e.g. [*will* V_{INF}], [*won't* V_{INF}] or [$_{SUBJ}$*'d* V_{INF}]) were identified and it was shown that their individual behavior can be described as anything but uniform. Based on this, it was claimed that it may be more fruitful, at least initially, to focus on individual trends rather than the development of the entire category as a whole, as the modal system behaves simply too heterogeneously to be accurately described by either a proclaimed overall demise (Leech 2011) or a general increase (Millar 2009). However, by zooming in on the developmental trends of lower-level modal cxns, it was possible to identify quite homogenous inter-categorial changes. This was particularly noteworthy for a group of negative modal contractions, whose similar diffusion might be evidence for the existence of possibly both a hierarchical meso-cxn abstracted from forms like [*won't* V_{INF}] and [*can't* V_{INF}] and a meta-cxn that captures the analogical relation between the these contractions and their full forms.

The resulting level of granularity this approach brings about may arguably be considered not very elegant but within a usage-based model of language probably cognitively realistic. While the present study does not mean to impose subscribing

to the same framework, it has hopefully shown some of its potential and has provided fresh perspective on a long-standing issue, i.e. the question about what is happing to the English modals.

Acknowledgements

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CHAPTER 3

The scope of modal categories

An empirical study

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This paper investigates the scope of modal categories. While it is hypothesized in many linguistic theories that different modal categories have different scope, there are only very few systematic studies that show differences. The language of investigation is Japanese, which has grammaticalized all cross-linguistically relevant modal categories and has a strict and transparent head-final structure, which is conducive to the study of scope. The results show that different modal categories indeed have different scope. However the scope properties of all modal categories do not all perfectly align to form a "clean" hierarchy. These problems can be solved if one distinguishes between 'active' scope (i.e. the categories some category can take scope over) and 'passive' scope (i.e. the categories some category can take scope under), and separates volitional (mainly deontic and boulomaic) from non-volitional (mainly epistemic and evidential) modal categories.

Keywords: modality, modal categories, evidentiality, scope, scope ambiguity, Japanese

1. Goals and scope of this paper

The scope of modal categories is interesting from two perspectives. On the one hand, it is an important aspect of the study of modal categories. From this perspective, the focus has often been on the particularly tricky relationship between modality and negation (e.g. Palmer 1995; De Haan 1997; Beukema & Wurff 2002; Byloo 2009) and scope ambiguity involved in it. On the other hand, the scope of modal categories is an important piece in the puzzle of clause structure, especially if one assumes hierarchical relationships between grammatical categories, which is the case in most modern theories of grammar. There have been suggestions that

modality is a single layer in hierarchical sentence structure (e.g. Nitta 1984, 1997). However, most modern theories of syntax, e.g. RRG (Valin & LaPolla 1997), FDG (Dik 1997; Hengeveld & Mackenzie 2008), and Minimalism in the Cartography of Syntactic Structures (Cinque 1999, 2001), suggest two or more sub-categories of modality that have different positions in the clause hierarchy, and accordingly different scope properties. These are usually minimally an epistemic and a non-epistemic modal category.

In this contribution, the focus is on the relationship between modality and categories of the verb phrase in general, with the purpose of revealing the scope properties of different semantic sub-categories of modality. We define modality as "a linguistic category referring to the factual status of a proposition. A proposition is modalized if it is marked for being undetermined with respect to its factual status, i. e. is neither positively nor negatively factual" (Narrog 2012: 6). The relevant modal subcategories will be defined in Section 2.

The analysis is based primarily on usage data, namely Japanese corpus data, supplemented by judgment where necessary. While those are data from a particular language, in accordance with practically all modern grammar theories concerned with scope I assume that semantic scope is essentially universal. Semantic scope is based on logical reasoning, and this is essentially language-independent. To give an example, in the relationship between an obligation and past tense, it is impossible to impose an obligation in the present on a past event. Therefore a past tense will not take scope under an obligation (deontic modality), unless in a counterfactual reading. Therefore the findings of this study can be applied to or compared with, findings in practically any other language. This does not preclude, of course, that different languages grammaticalize (or lexicalize) different modal categories with different semantic properties. Japanese has the huge advantage over many other languages for this type of study that it is strictly head-final (no mixed word order) and morphologically very rich. It has expressions for many modal categories, and the important verbal categories are also all grammaticalized at least to some extent.

In this paper, I will provide evidence that different modal categories indeed differ significantly with respect to scope. I will demonstrate how they differ and how they are positioned vis-à-vis other grammatical categories. I will further suggest that one needs to distinguish between 'active' scope (the range of categories some category takes scope over) and 'passive' scope (the range of categories some category takes scope over) of modal categories, because sometimes the range of categories some category takes scope over and is embedded in does not align neatly. Furthermore, I suggest that the scope properties of non-volitive, i.e., epistemic and evidential categories also differ fundamentally from those of

volitive categories, probably because of the association with different types of utterances.[1]

This paper will proceed as follows: In Section 2, the subjects of the study, that is, the modal and the non-modal categories, and their morphological properties, which are relevant for linearization, are introduced. Section 3 presents the data, and Section 4 their analysis in terms of scope. Section 5 summarizes the data and draws conclusions from them.

2.   Modality and other categories of the Japanese verb and verbal complex

In this section, I introduce the modal categories and the way they are expressed in Japanese (2.1), other categories such as tense and negation that interact with modality in the verbal complex (2.2), and lastly the morphology and general structure of the Japanese verbal complex (2.4). Since the structure is explained in the last Section 2.4 for the interested reader, I will not specifically refer to it in the "contents" Sections 2.1 and 2.2.

2.1   The modal categories

Japanese has grammaticalized all of the major cross-linguistically common modal categories.

First, the two most important 'volitive' modal categories, that is, those that imply an element of will, are 'boulomaic' and 'deontic' modality.

'Boulomaic' modality refers to the expression of necessity with respect to someone's volition or intentions. In English it is expressed by modals and semi-modals such as *shall* and *want to*. In Japanese, the suffix –*ta*-, the grammaticalized noun *tumori*, and the periphrastic constructions –*Te hosi*- are its major exponents.

'Deontic' modality refers to the expression of a necessity or possibility with respect to some social, moral or rational constraint, typically depending on authority. Obligation, permission, and their negatives, are the main instances of deontic

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1.   The term 'volitive' follows Heine (1995: 29) and denotes "[the existence of] some force (F) that is characterized by an "element of will" […], i. e., that has an interest in an event either occurring or not occurring". The source of this force can be one of the referents of the sentence, e. g. the subject, in the case of volitive expressions, the speaker, for instance with imperatives, or society as a whole or some group or organization within society. It can be very concrete or rather vague and abstract, as it is the case when society as a whole is the source of the force, and moral obligations are expressed (cf. Narrog 2012: 47).

modality. In English typical expressions include the modals and semi-modals *must*, *may*, *should* and *have to*. In Japanese the 'must'-like periphrastic construction *–(a) na.kereba nar.ana-*, the should-like suffix *be.ki*, and the 'may'-like periphrastic construction *–Te mo i-* are the major exponents. *–(a)na.kereba nar.ana-* and *be.ki* have different scope properties and are therefore split into 'deontic modality (1)' and 'deontic modality (2)'. 'May'-like *–Te mo i-* has not enough instances in our corpus to gain reliable data. It has therefore not been included in the study.

Secondly, the most important 'non-volitive' modal categories, that is, those that do not imply an element of will, are 'dynamic' and 'epistemic' modality, and indirect evidentials, to the extent that they are recognized as a modal category as well.

Table 1. Modal categories and their representative realizations in the Japanese verbal complex[2]

Category	Representative markers and constructions
Dynamic modality	*–(r)are-*, *–(r)e-* (potential; -v+f), *koto-ga deki-* (root possibility; N=p V+f); *–kane.ru* (impossibility)
Boulomaic modality	*–ta-* (intention; -a+f); *tumori* (intention; N); *–Te hosi-* (desire; -f A+f)
Deontic modality (1)	*–(a)na.kereba nar.ana-* (general necessity, -v+a+f V+a+f)
Deontic modality (2)	*be.ki* (valuative obligation; =a+f)[a]
Epistemic modality (1)	(a) *ka=mo sir.e.na-* (epistemic possibility; =p=p V+v+a+f; *ni tigai na-* (epistemic necessity – conclusion; =p V_n A+f)); (b) *hazu* (epistemic necessity/expectation; N)
Epistemic modality (2)	*dar.oo* (speculative; =v+f)
Evidentiality (1)	*–soo*(1) (predictive appearance; -na)
Evidentiality (2)	*yoo* (present/past-oriented appearance; N), *rasi-* (=a+f; distant appearance)
Evidentiality (3)	*soo*(2) (=p; hearsay)

a. *be.ki*'s inflection is confined to the adverbial form *be.ku* in stylized written language, and therefore the marker is written as *beki* in the remainder of this paper.

'Dynamic' modality refers to the expression of participant-internal and situational possibility. In English it is expressed by modals and semi-modals such as *can* and *be able to*. In Japanese, the suffix verbs *–rare-, –re-* and the periphrastic

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2. The markers that are listed in bold letters in this table are those that were chosen for the investigation in this study. Reasons for the choice are given below in Section 2.2.

construction *koto-ga deki-* are the typical exponents of this category. 'Epistemic' modality refers to a necessity or possibility with respect to a speaker's knowledge and beliefs. Typical instantiations in English are modals such as *must* or *may,* and adverbs such as *certainly* or *perhaps*. In Japanese, besides adverbs, periphrastic constructions such as the 'may'-like *ka=mo sirena-* and the 'must'-like *ni tigai na-*, the grammaticalized noun *hazu* and the particle *daroo* are representative instantiations. The particle *daroo* has quite different scope properties from the other exponents and is therefore kept separate as 'epistemic modality (2)'.

Lastly, evidentiality is usually considered as a category separate from modality, but evidentiality in terms of indirect evidence fulfills the definition of modality as it marks propositions as indeterminate with respect to factuality. In Japanese, indirect evidential categories have traditionally been treated on a par with epistemic modality and we will do so here too. The suffixes *–soo* and *rasi-*, the particle *soo*, and the grammaticalized noun *yoo* are typical exponents. I have divided them into three groups on the basis of their scope properties. All categories and their exponents are listed in Table 1.

2.2   Other categories

The Japanese verbal complex contains a large number of categories besides the modal ones. The list in Table 2 is not exhaustive, but provides the elements which are found in common grammatical descriptions of Japanese, and descriptions of Japanese modality (e.g. Hinds 1986; Iwasaki 2013; Narrog 2009).[3] It shows categories that are also common cross-linguistically. I have excluded referent honorification, politeness and word class conversion, not only because they are not common categories of the verbal complex cross-linguistically, but also because they don't interact with the other categories scope-wise, as argued in Narrog (2010). Conversely, person is probably the only cross-linguistically common verb category that is not grammaticalized in Japanese. However, it is semantically fundamentally different from typical verb categories like tense and aspect, and tricky to analyze in terms of scope vis-à-vis those categories. Therefore, its absence in Japanese is not a big loss for the purposes of this study. Subordinating moods have been excluded because they impose unique restrictions on other categories that can occur in their scope, and usually do not permit any other category to follow.

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3.   The only major omission in the list in Table 2 that I am aware of is constructions with the deictic verbs *kuru* and *iku* (V+*Te kuru*; V+*Te iku*). The reason is that they are polysemous between 'directionality' and 'aspect', and thus difficult to classify.

Table 2. Categories of the Japanese verbal complex, and their typical realizations[4]

Category	Representative markers and constructions
Voice	*–(r)are-* (passive), *–(s)ase-* (causative) (all -v+f)[a]
Benefaction	*–Te mora(w)-*, *–Te kure-* (speaker benefactives); *–Te yar-* (other benefactive) (all -f V+f)
Phasal aspect	*tuduke-* (continuous); *hazime-* (ingressive); *owar-* (egressive) (all V+f)
(Im)perfective aspect	*–Te i-* (stative), *–Te sima(w)-* (completive), *–Te ar-* (resultant state) (all -f V+f), *–tutu ar-* (continuous; -m V+f)
Internal negation	*–(a)na-* (-a+f), *–(a)n-* (-v+f)
External negation	*no=de=wa na-* ('it is not that'; p=p=p A+f); *wake=de=wa na-* ('it does not mean that'; N=p=p A+f)[b]
Tense	*–(r)u* (non-past; -f), *–Ta* (past; -f)
Mood	*–e/ro/yo* (imperative; -f); *–(y)oo* (hortative; -f); *–(a)mai* (negative hortative; -f)[c]
Illocutionary force modulation (IFM)	*ne* (=p), *yo* (=p), *zo* (=p), *ze* (=p), *sa* (=p), *wa* (=p), *ya* (=p), *ka* (=p), *kke* (=p), *kasira* (=p), *na* (=p) (and other particles)

a.   Some researchers do not regard causative as a 'voice' (e.g. Givón 2001b: 91), while others do (e.g. Shibatani 2006). In Japanese, the morphosyntactic parallels between the 'passive' and the 'causative' are striking, leading most students of this language to classify both categories together as voice.

b.   *Wake=ga na-* is regarded as a different construction.

c.   *(A)mai* is practically obsolete in Contemporary Japanese. Furthermore, it has a variant as a particle, *mai*. Thus, its morphological properties deviate from the other mood inflections, but it is not important enough for the modern language to give it separate consideration here.

2.3   Selection of markers and constructions

For the data study in Section 3, one marker was chosen to represent each category. These are written in bold letters in Table 1 and Table 2. For those categories where I had no frequency data (voice, benefaction, phasal aspect, referent honorifics, tense), the marker was chosen on the basis of practical considerations. These practical considerations are, (1) the marker should be semantically and morphologically compatible with as many other possible markers involved in the study; and (2) polysemous markers should be excluded as far as possible (leading to the exclusion of *–(r)are-* and *yoo*, for example). For those markers for which I had corpus frequency data from my previous study (Narrog 2009), as a default the most

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4.   The markers that are listed in bold letters in this table are those that were chosen for the investigation in this study. Reasons for the choice are given in Section 4.

frequent marker was chosen, unless the two practical considerations named above intervened. For example, illocutionary force modulation particle *yo* was preferred over the more frequent *ne*, because *yo* is semantically compatible with more of the other categories and markers than *ne*.[5] In the case of tense, past *–Ta* was preferred over *–(r)u*, which marks a default value for tense and aspect in Japanese, and often seems to be a formal placeholder. In the case of dynamic modality *–(r)e-* was complemented by *–(r)are-* and *koto=ga deki-* in contexts where it is morphologically incompatible with other elements. External negation, which always involves nominalization, and is pragmatically highly marked, was eliminated. With respect to epistemic modality (1), epistemic possibility *ka mo sirena-* represents the category in the sections below, but epistemic necessity *ni tigai na-* has exactly the same scope properties with respect to the categories tested in this study. Epistemic necessity/expectation *hazu* would have slightly different scope properties.

The default assumption is that the marker chosen to represent a category represents the category in the sense that all other markers in the same category have the same scope, but this may actually not always be the case. In an even more fine-grained study scope differences between different markers within one category may be detected.[6]

2.4 A note on verbal morphology

Modality is expressed in Japanese, like in many other languages, primarily in the verbal complex, and secondarily through adverbs. The subject of this study is the verbal complex, where the expression is more varied and systematic than through adverbs. Modern Japanese is strictly head-final, has an agglutinating, mostly suffixing morphology and relatively little irregularity. In the terms of the taxonomic structuralist approach by Jens Rickmeyer (1994, 1995), a word in Japanese has the following structure (Rickmeyer 1995: 42–43):

(1) $q_r \pm (L \pm s)_r \pm f$

At the core there is at least one lexeme (L) to which one or more prefix (q-) and one or more derivational suffixes (-s), and not more than one inflection (-f) can be

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5. The illocutionary force modulation particles are not only listed not exhaustively in Table 2, they also have different constraints on the type of proposition they embed, and there are ordering regularities among them, e.g. *yo=ne* vs. **ne=yo*. This is an area which cannot be explored sufficiently in this paper.

6. One category within almost certainly some scope difference can be found is voice. The passive appears to have a broader scope than the causative in Japanese.

added. Additionally to the words, the language has also so-called 'particles', clitic-like elements which can be added to the inflected word. The word extended by such particles is called the 'one-word-phrase', and since it is this unit which builds syntactic relations in the clause, the one-word-phrase and not the morphological word is the real equivalent of the 'word' in languages such as English or German. The internal structure of the one-word-phrase is presented as a formula in (2) (Rickmeyer 1995: 46): A one-word-phrase consists of a word (W) plus particles (p) which can be followed recursively by suffixes and inflections.

(2) $W \pm (=p \pm s \pm f)_r$

Table 3 shows which word class each element in a one-word-phrase may belong to. Elements preceded by an equation mark "=" are particles, those in small letters preceded by a hyphen are other suffixes. The shaded areas stand for possible recursion in each distributional class.[7] The line drawn between verbs and adjectives on the one hand, and the other word classes on the other hand, indicates that only the former take inflections (-f). The inflecting categories are the object of this study.

Table 3. The one-word-phrase in Japanese

	V	-v	-f	=v	-v	-f
	A	-a		=a		
q-	N	-n		=n		
	NA	-na		=na		
	ADV	-adv				
	ADN	-adn		=p		
	I					

While most elements are recursive and combinations are relatively free, Table 3 reveals one important constraint on morpheme order, namely that an inflection can never follow directly on another inflection. The class of inflections on verbs consists of the morphemes *–(r)u* 'non-past', *–Ta* 'past',[8] *–(y)oo* 'hortative', *–E/yo/ro* 'imperative', *–mai* 'negative hortative' *–Taroo* 'past speculative', *–(r)eba* 'conditional I', *–Tara* 'conditional II', *–Tari* 'exemplative', *–Te* 'gerund', and *–(a)zu* 'adverbial negative'. Also, a lexeme cannot follow a particle in the same one-word-phrase, and an inflecting particle suffixed to a verb or adjective must always follow another inflection. Furthermore, many suffixes only harmonize with a specific word class.

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7.   Adnominals (ADN) and interjections (I) are actually not recursive.

8.   The capital letter indicates a morphophoneme. The /T/ in *–Ta* has the allomorphs [t] and [d] depending on the morphophonemic environment.

For example, the suffix *–kar-* (-v) can only be suffixed to adjectives from which it derives morphological verbs, as in *atu-kat-ta* (A+v+f; hot+verbalization+past; 'it was hot'), and the causative suffix *–(s)ase-* is only suffixed to morphological verbs. Lastly, certain forms can only be added to certain inflectional forms and not to others. For example, the deontic suffix *beki* can normally only be added to the non-past tense form of a verb, and to nothing else (cf. Alonso 1980: 821).

The realization of verbal categories in Japanese is not confined to the morphological word nor to the one-word-phrase. For example, the most common marker of verbal aspect in Japanese is the stative (progressive, resultative, perfect) construction *–Te iru*. This construction goes across word borders since it consists of a verb ending on the gerund *–Te* and another, grammaticalized verb *iru* 'be', similar to an auxiliary in English. Thus, although aspect is a category closely associated with the verb, the construction is periphrastic. In fact, many periphrastic constructions like this are employed for the realization of verbal categories such as aspect, benefaction, directionality, and modality. We label the extended verb phrase including periphrastic constructions as the 'verbal complex'. Some adjectival forms must also be included in the 'verbal complex'. Adjectives in Japanese, unlike in Indo-European languages, have more verbal rather than nominal properties.[9] Also, verbal and adjectival forms cannot be strictly separated because some basic verb forms in Japanese require formal adjectival derivation (e.g. negation with *–(a)na-*) while some basic adjectival forms in Japanese require formal verbal derivation (e.g. past with *–kat.ta*).

3. The data

In order to establish the scope of the modal categories, we need to establish the possible linear order between modal and other categories, and check how far this linear order reflects semantic scope, and if not, what other motivations might be at work. Most of the grammatical judgments are fairly clear and were based on the author's knowledge. For judgments that are less clear I consulted a large corpus of Japanese (mixed genres; corresponding to a 40 million words in English, described in more detail in Narrog (2009), and finally the internet (Google search machine). The result is probably more permissive than if it were based on the grammaticality judgments of a single speaker or a small number of speakers. This has two reasons. First, the internet also contains instances that not all speakers may find acceptable, and thus reflects the upper borderline of what is grammatical in the

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9.   Nominal adjectives, e.g. *genki* 'healthy' are considered as a different word class.

language. Second, some combinations are good only in specific contexts which are difficult to imagine for an individual without usage data. Rare combinations found on the internet that are apparently due to spelling and style errors were excluded from the results. Frequencies are not shown because the approach taken here is essentially qualitative, and the goal is to show which combinations are possible and which not.

There are a number of "filling" elements or "lubricants" which help to circumvent the morphological restrictions that were introduced in Section 2, and allow speakers to express practically anything that makes sense and (mostly) in the right order of elements. These are particularly the already mentioned word class converters that circumvent the word class restrictions, but they also include constructions with light verbs, especially *s.uru* 'do' and *nar.u* 'become', and complementizers such as *yoo* and *koto*. I regard them as semantically practically empty and I admit constructions utilizing these empty elements in establishing possible orders of the meaningful elements. Doing so might be controversial, but any researcher who disagrees with my procedures can remove them from the results in order to correct the results according to their view.[10]

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10.   The rationale for admitting light verbs is as following. The decisive question in this paper is whether one functional category can enter the scope of another one. In my view, light verbs do not interrupt the scope relationship. That is, the scope relationship between categories A and B still holds, even if a light verb intervenes. See the example below with the deontic modality and inceptive aspect, and the additionally inserted light verb *nar.u* (*nat. te*) in fat letters. The light verb, in my view adds an 'inceptive' aspectual element, rather than lexical meaning.

(1a)   *si.nakereba*   *nar.ana.ku*   **nat**.*te*   *simat.ta*
        do-DEO[NEG-CON   become-NEG]-ADV   become-GER   CPV-PST
        'I've ended up having to do it'

In my view, the following scope relations hold:

(1b)   *simaw-(nar-(-(a)nakereba narana-(s-))))*

or, in terms of functional categories

(1c)   CPV(INC(DEO(do))))

That is, inceptive aspect embeds deontic modality if inceptive *naru* is added on it. Even if someone would not agree with the view of *nar.u* essentially adding an aspectual (inceptive) component, I still believe that cpvetive aspect is embedding the deontic modality, as in (1d):

(1d)   CPV(become(DEO(do))))

In the rest of this section it is shown category by category which markers of which category precede the marker of the modal category under investigation, the markers of which category follow it, and in which cases both is possible. One example per collocation is given, but for lack of space only pure morpheme order is provided without context. Some of the items are polysemous with senses that belong to a different category. If the different sense is not included in our list of categories, the collocations with that category are excluded as well. For example, *rasi-* designates both evidentiality and typicality. As typicality was not included in the list of categories (the typicality sense is common with nouns rather than verbs or adjectives), its collocations, which are different from the evidential ones, are excluded as well. Thus, if a collocation is possible but only with the marker in question adopting a different meaning/function, this is marked by "%". If two or more markers or constructions express the same category but exhibit different behavior, this is commented on. Combinations that are judged as morphologically impossible based on the criteria named in Section 2, and for which no alternative periphrastic construction is available either, are marked by an asterisk "*". Combinations that are morphologically possible but that don't occur because of semantic incompatibility (the combination does not make sense) are marked by the symbol "#". Combinations that show non-iconic order including scope ambiguity are marked by an exclamation mark "!", and are further commented on in Section 4. Finally, combinations marked by a question mark "?" are combinations on the borderline of semantic-pragmatic acceptability. As they can be found on the internet in small numbers but are only felicitous in specific contexts, their acceptability must be considered as controversial.

Table 4 shows dynamic modality, represented by *–(r)e-*, and *–(r)are-* in those cases where the latter morphologically complements the former. Because of the polysemous nature of *–(r)are-,* *–(r)e-* was the preferred choice wherever it was available.

Decisively, for semantic reasons, the same cannot be done with epistemic modality, although the morphosyntax of the construction is the same. Cf.

(1e) *#ka=mo   sir.e.na.ku   nat.te   simat.ta*.
      QUE-FOC know-POT-NEG-ADV become-GER CPV-PST
      'I have ended up/It has ended up that it may…'

That is, epistemic modal markers in general cannot take scope under inceptive aspect. I believe that this fact reveals the difference in (passive) semantic scope between deontic and epistemic modality.

Table 4. Dynamic modality

Linear order	Category	Expression
only follows	benefactives	(*–Te **mora**.e.ru*; #*–*(r)e.te ***mora(w)**-*)
	voice	(*–**(s)ase**.rare.ru*; #*–(r)e.**sase**.ru*)
both precedes and follows	phasal aspect	(*si-**tuduke**.rare.ru* and *–(r)e.**tuduke**.ru*)
	(im)perfective aspect	(*–Te i.rare.ru* and *– (r)e.te i.ru*)
	internal negation	(*–**(a)na**.i=de i.rare.ru* and *–(r)e.**na**-*)
	evidentiality (1)	(?*–**soo**=ni deki.ru* and *–(r)e.**soo***)
only precedes	boulomaic modality	(*–(r)e.**ta**-*; #*–**ta**.kar.are.ru*)
	deontic modality (1)	(*–(r)e.**na.kereba nar.ana**-*; #*–**(a)na.kereba nar.ana**.ku deki.ru*)
	deontic modality (2)	(*–(r)e.ru=**beki***; #***beki**.rare.ru*)
	tense	(*–(r)e.**ta***; #*–**Ta**.rare.ru*)
	epistemic modality (1)	(*–(r)e.ru=**ka=mo sir.e.na**-*; #***ka=mo=sir.e.na**.i.rare.ru*)
	epistemic modality (2)	(*–(r)e.ru=**daroo***; #***daroo**.rare.ru*)
	evidentiality (2)	(*–(r)e.ru=**rasi**-*; %***rasi**.ku nar.e.ru*)
	evidentiality (3)	(*–(r)e.ru=**soo**=da* #***soo**.rare.ru*)
	mood	(*–(r)e.ru yoo=ni si.**ro***; #*–**ro**=de i.rare.ru*)
	IFM	(*–(r)e.ru=**yo***; #***yo**=de i.rare.ru*)

Boulomaic modality is represented by the 'intention' marker *–ta-* in Table 5.

Table 5. Boulomaic modality

Linear order	Category	Expression
only follows	benefactives	(*–**Te morai**.ta*-; #*–ta.i=de **mora(w)**-*)
	dynamic modality	(s.a.)
both precedes and follows	voice	(*–**(s)ase**.ta-* and *–ta.ku **s.ase**.ru*)
	phasal aspect	(*si-**tuduke**.ta-* and *–ta.ku nari-**tuduke**.ru*)
	(im)perfective aspect	(*–**Te i**.ta-* and *–ta.ku nat.te **i**.ru*)
	evidentiality (1)	(?*–**soo**=ni si.ta-*; *–ta.**soo***)
	internal negation	(*–**(a)na.i**=de i.ta-*/(*–**(a)na.i** yoo=ni si.ta-*; !*–ta.ku **na**-*)
only precedes	deontic modality (1)	(*–ta.ku (nar.a)**na.kereba nar.ana**-*; #*–**(a) na.kerebanar.ana**.i=de i.ta-*)
	deontic modality (2)	(*–ta.ku nar.u=**beki***; #***beki**=de ari.ta-*)
	tense	(!*–ta.kat.**ta***; !*–**Ta**.ta-*)
	epistemic modality (1)	(*–ta.i=**ka=mo sir.e.na**-*; *ka=mo=sir.e.na.**kari**.ta-*)
	epistemic modality (2)	(*–ta.i=**daroo***; *daroo.ta-*)
	evidentiality (2)	(*–ta.i=**rasi**-*; %***rasi**.ku si.ta-*)
	evidentiality (3)	(*–ta.i=**soo**=da*; *soo=da-ta-*)
no collocation	mood	(*–ta.**ro***; *–**ro**.ta-*),

Table 6 shows deontic modality (1) with *–(a)na.kereba nar.ana-* 'must'.

Table 6. Deontic modality (1)

Linear order	Category	Expression
only follows	benefactives	(–***Te* moraw**.ana.kereba nar.ana-; #–*(a)na.*kereba nar.ana.i=***de mora(w)***-)
	voice	(–***(s)ase*.na.kereba nar.ana-; #–*(a)na.*kereba nar.ana.ku ***s.ase***.ru)
	phasal aspect	(*si-***tuduke**.na.kereba nar.ana-; –*(a)na.*kereba nar.ana.ku nari.***tuduke***.ru)
	dynamic modality, boulomaic modality	(s.a.)
both precedes and follows	(im)perfective aspect	(–***Te i*.**na.kereba nar.ana-; –*(a)na.*kereba nar.ana.ku nat.***te i***.ru)
	evidentiality (1)	(?–***soo=ni* si**.na.kereba nar.ana-; –*(a)na.*kereba nar.ana.***soo***)
	internal negation	(–***(a)na.i*** yoo=ni si.na.kereba nar.ana-;?–*(a)na.*kereba nar.ana.***ku na**-)
	deontic modality (2)	(?–*(a)na.*kereba nar.ana.i=***beki*** and ?***beki***=*de* na.kereba nar.anai)
only precedes	tense	(!–*(a)na.*kereba nar.anakat.***ta***; !*–***Ta**.na.kereba nar.ana-)
	epistemic modality (1)	(–*(a)na.*kereba nar.ana.i=***ka=mo sir.e.na**-; #***ka=mo=sir.e.na.ku*** na.kereba nar.ana-)
	epistemic modality (2)	(–*(a)na.*kereba nar.ana.i=***daroo***; *****daroo**.na.kereba nar.ana-)
	evidentiality (2)	(–*(a)na.*kereba nar.ana.i=***rasi***-; %***rasi.ku*** na.kereba nar.ana-)
	evidentiality (3)	(–*(a)na.*kereba nar.ana.i=***soo***=da; *****soo***=da na.kereba nar.ana-)
	IFM	(–*(a)na.*kereba nar.ana.i=***yo***; *****yo**.na.kereba nar.ana-)
no collocation	mood	(#–*(a)na.*kereba nar.ana.***kar.e***; #–***ro***=de na.kereba nar.ana-)

Deontic modality (2) is represented in Table 7 by *beki* 'should'.

Table 7. Deontic modality (2)

Linear order	Category	Expression
only follows	benefactives	(–***Te mora*.**u=beki; #*beki*=***de mora(w)***-)
	voice	(–***(s)ase*.**ru=beki; #*be.ku* ***s.ase***-)
	phasal aspect	(*si-***tuduke**.ru=beki; #*be.ku si-***tuduke***-)
	(im)perfective aspect	(–***Te i*.**ru=beki; #*beki*=***de i**-)
	dynamic modality, boulomaic modality	(s.a.)

(*Continued*)

Table 7. (*Continued*)

Linear order	Category	Expression
both precedes and follows	evidentiality (1)	(?–*soo=ni s.u=beki* and *beki=de ari.soo*)
	negation	(–*(a)na.i yoo=ni s.uru=beki*; ?–*(a)na.i=beki*; !*beki=de **na**-*)
	deontic modality (1)	(s.a.)
only precedes	tense	(!*beki=dat.ta*; !*–**Ta.beki***)
	epistemic modality (1)	(*beki=**ka**=mo sir.e.na-*; **ka=mo=sir.e.na.i=beki*)
	epistemic modality (2)	(*beki=**daroo***; **daroo=beki*)
	evidentiality (2)	(*beki=**rasi**-*; %*rasi.ku nar.u=beki*)
	evidentiality (3)	(*beki=**soo**=da*; **soo=da=beki*)
	IFM	(*beki=da=**yo***; **yo=beki*)
no collocation	mood	(**be.kar.**e***; **–**ro**=beki*)

Epistemic modality (1) is represented by *ka=mo sir.e.na-* in Table 8. This category is the first category in this order that follows more categories (and has them in its scope) than it precedes.

Table 8. Epistemic modality (1)

Linear order	Category	Expression
only follows	benefactives	(–***Te mora**.u=ka=mo sir.e.na-*; #*ka=mo=sir.e.na.i=de **mora(w)**-*)
	voice	(–***(s)ase**.ru=ka=mo sir.e.na-*; #*ka=mo=sir.e.na.ku **s.ase**-*)
	phasal aspect	(*si-**tuduke**.ru=ka=mo sir.e.na-*; **ka=mo=sir.e.na.i-**tuduke**-*)
	(im)perfective aspect	(–***Te i**.ru=ka=mo sir.e.na-*; #*ka=mo=sir.e.na.i=**de i**-*)
	dynamic modality, boulomaic modality, deontic modality (1), deontic modality (2)	(s.a.)
both precedes and follows	evidentiality (1)	(–***soo**=ka=mo sir.e.na-* and ?*ka=mo sir.e.na.sa.**soo***)
	internal negation	(–***(a)na**.i=ka=mo sir.e.na-*; **ka=mo=sir.e.na.**ku na**-**)
	tense	(*ka=mo sir.e.na.kat.**ta***; –***Ta**=ka=mo sir.e.na-*)
	evidentiality (2)	(*ka=mo sir.e.na.i=**rasi**-*; ***rasi**.i=ka=mo sir.e.na-*)
only precedes	epistemic modality (2)	(*ka=mo sir.e.na.i=**daroo***; #***daroo**=ka=mo sir.e.na-*)
	evidentiality (3)	(*ka=mo sir.e.na.i=**soo**=da*; #***soo**=ka=mo sir.e.na-*)
	IFM	(*ka=mo sir.e.na.i=**yo***; #***yo**=ka=mo sir.e.na-*)
no collocation	mood	(**ka=mo sir.e.na.kar.**e***; #*–**ro**=ka=mo sir.e.na-*)

*One can in fact find instances of *ka=mo sir.e.na.ku na-* on the internet, but they apparently do not involve negation semantically. The double negation has the same value as a single negation.

Table 10 demonstrates combinations with evidentiality (1) as represented by –*soo* denoting a prediction based on appearance. This is the first category which unilaterally follows specific other categories, i.e., has clearly wider scope than them. Nevertheless, it may be surprising to encounter an evidential morpheme with such a relatively narrow scope, especially in the light of theories that categorically assign very wide scope to evidentiality (e. g. Van Valin & LaPolla 1997; Cinque 1999). However, McCready & Ogata (2006) have already raised the issues of Japanese evidentials that operate within the proposition

The speculative particle *daroo* is the sole representative of epistemic modality (2). *Desyoo* is the polite form of *daroo*. Originally these morphemes consist of the future –*(y)oo* added to polite copula *des.u* and non-polite copula *da(r.u)*, respectively. As *daroo* is treated here as a single morpheme, *desyoo* is consequently considered a polite suppletive form of *daroo*. The combinations of *daroo* and *desyoo* are shown in Table 9.

Table 9. Epistemic modality (2)

Linear order	Category	Expression
only follows	benefactives	(–***Te mora**.u=daroo*; #*daroo=**de mora(w)**-*)
	voice	(–***(s)ase**.ru=daroo*; **daroo.**sase**-*)
	phasal aspect	(*si-**tuduke**.ru=daroo*; **daroo-**tuduke**-*)
	(im)perfective aspect	(–***Te i**.ru=daroo*; #*daroo=**de i**-*)
	internal negation	(–***(a)na**.i=daroo*; **daroo.**na**-*)
	evidentiality (1)	(–***soo**=daroo*; **daroo.**soo**=da*)
	tense	(–***Ta**=daroo*; **daroo.**ta***)
	dynamic modality, boulomaic modality, deontic modality (1), deontic modality (2), evidentiality (2), epistemic modality (1)	(s.a.)
both precedes and follows	n/a	
only precedes	IFM	(*daroo=**yo***; #***yo**=daroo*)
no collocation	evidentiality (3)	(#*daroo=**soo**=da*; #*da=**soo**=daroo*)
	mood	(**daroo.**ro***; #–***ro**=daroo*)

Evidentiality (2) is represented by the 'distant appearance' marker *rasi*- (Table 11), which is less polysemous than the more frequent marker *yoo* of the same category.

The following section serves to interpret the results presented in Table 4 to Table 12 with respect to the relationship between order of meaningful elements and scope, before a round-up in Section 6 follows.

Table 10. Evidentiality (1)

Linear order	Category	Expression
only follows	benefactives voice	(−***Te morai**.soo* and ?*si.soo=ni si.**te mora(w)**-*) (−***(s)ase**.soo* and −*soo=ni s.**ase**-*)
both precedes and follows	phasal aspect (im)perfective aspect internal negation dynamic modality, boulomaic modality, deontic modality (1), deontic modality (2), epistemic modality (1)	(*si-**tuduke**.soo* and −*soo=ni nari-**tuduke**-*) (−***Te i**.soo* and *si.soo=ni nat.**te** i-*) (!−*soo=ni **na**-* and !−***(a)na**.sa.soo*) (s.a.)
only precedes	tense evidentiality (2) evidentiality (3) mood IFM epistemic modality (2)	(−*soo=dat.**ta**;* *−***Ta**.soo=da*) (−*soo=**rasi**-*; %***rasi**.soo=da*) (−*soo=da=**soo**=da*; ****soo**=da.soo*) (−*soo=ni si.**ro**;* **si.**ro**.soo*) (−*soo=da=**yo**;* ****yo**.soo*) (s.a.)

Table 11. Evidentiality (2)

Linear order	Category	Expression
only follows	benefactives voice phasal aspect (im)perfective aspect dynamic modality, boulomaic modality, deontic modality (1), deontic modality (2), evidentiality (1)	(−***Te mora**.u=rasi-*; %*rasi.ku (nat.**te**) **mora(w)**-*) (−***(s)ase**.ru=rasi-*; %*rasi.ku nar.**ase**-*) (*si-**tuduke**.ru=rasi-*; %*rasi.ku nari-**tuduke**-*) (−***Te i**.ru=rasi-*; %*rasi.ku (nat.**te**) i-*) (s.a.)
both precedes and follows	internal negation tense epistemic modality (1)	(−***(a)na**.i=rasi-* and !*rasi.ku **na**-*) (*rasi.kat.**ta*** and −***Ta**=rasi-*) (s.a.)
only precedes	epistemic modality (2) evidentiality (3) IFM	(*rasi.i=**daroo**;* #***daroo**=rasi-*) (*rasi.i=**soo**=da*; #***soo**=da=rasi-*) (*rasi.i=**yo**;* #***yo**=rasi-*)
no collocation	mood	(%*rasi.ku si.**ro**;* #−***ro**=rasi-*)

Table 12. Evidentiality (3)

Linear order	Category	Expression
only follows	benefactives	(–*Te mora.u=soo=da*; **soo=de mora(w)*-)
	voice	(–*(s)ase.ru=soo=da*; **soo=da.sase*-)
	phasal aspect	(*si-tuduke.ru=soo=dai*; **soo=da-tuduke*-)
	(im)perfective aspect	(–*Te i.ru=soo=da*; %*soo=ni nat.te i*-)
	internal negation	(–*(a)na.i=soo=da*; %*soo=de na*-
	boulomaic modality, dynamic modality, deontic modality (1), deontic modality (2), evidentiality (1), epistemic modality (1), evidentiality (2)	(s.a.)
both precedes and follows	tense	(*soo=dat.ta* and –*Ta=soo=da*)
only precedes	IFM	(*soo=da=yo*; #*yo=soo=da*)
no collocation	epistemic modality (2) (s.a.)	
	mood	(%*rasi.ku si.ro*; #–*ro=rasi*-)

4. Scope analysis

Logically, there are four possibilities in the combination of two categories. They may either not combine (1) or combine (2). In case of combination, their linear order may reflect scope (2a), it may be ambiguous (2b), or it may not reflect scope (2c). Section 4.1 briefly discusses cases of non-combination (1), 4.2 of 'well-behaved' combination, that is, linear order reflecting scope (2a), and Section 4.3 the perhaps most interesting cases, namely those of scope ambiguity (2b). There is no section on scope reversal (2c) because there are no clear cases of scope reversal with the modal categories under investigation.

4.1 No combination

Some combinations in the tables of Section 3 were marked as morphologically impossible ("*") in only one direction. They can be divided into three groups. First there are combinations of modality and mood followed by some other category that are ruled out, e. g. *daroo.ta-* (epistemic modality plus boulomaic marker), or –*e/ro-tuduke-* (imperative plus phasal aspect). These combinations are morphologically impossible and at the same time they are also semantically-pragmatically

infelicitous, e.g., one cannot wish an epistemic state, etc. In these cases, the relationship between morphological incompatibility and semantic incompatibility is like the question of hen vs. egg. Arguably, morphological incompatibility (lack of expression) is a result of the fact that there never was a need for expression because the combination does not make sense. Viewed more superficially, however, it might be argued that the question of semantic compatibility arises if a combination is morphologically disallowed. From this view, morphology would have primacy.

A second, much smaller group, concerns combinations that should be semantically possible but are ungrammatical. I count among them *–*Ta.ta*- (PST+BOU); *–*Ta.nakereba nar.ana*- (PST+DEO), and *–*Ta beki* (PST+DEO). Because they cannot be morphologically realized, the reverse order exhibits scope ambiguity. They are going to be discussed in Section 4.3. Note that the actual order of meaningful elements in these cases is not entirely counter-iconic, that is, there is no entire scope reversal, since an interpretation where semantic scope matches the order of meaningful elements is also possible dependent on context.

Complete non-co-occurrence of two categories can be found only with mood. Mood, e.g. imperative, can neither embed deontic or epistemic modality, nor can it be embedded by markers of these categories. This behavior can be explained by the semantic-pragmatic relationship between these categories in question, since it is simply meaningless to (performatively) oblige someone to experience an epistemic or deontic state. The non-combinability of mood with certain other categories thus also conforms to the principle that morpheme combinations follow semantic scope.

4.2   No scope ambiguity

In the vast majority of cases, that is, those that are not explicitly discussed in Section 4.3 on scope ambiguity, the order of meaningful elements reflects semantic scope. "Reflects scope" means that at least there is no contradiction between scope and morpheme order.

In principle, there are two cases. In the first case, an element A can follow another element B but cannot precede it. If an iconic relationship between the order of meaningful elements and scope is assumed,[11] it follows that A cannot be

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11.   I am referring here to the so-called 'Proximity Principle', according to which "scope relations [in language are indicated] by translating them, at the code level, into ordering/ proximity relations" (Givón 1985: 208). From this principle, it can be derived that categories in the verbal complex with relatively narrow scope are placed closer to the predicate, and those with relatively wider scope are placed further from the predicate.

narrower in scope than B. This can be exemplified with benefaction and epistemic modality. Epistemic modality (1) can follow a benefactive (*kure-* 'give', *yar-* 'give', or *mora(w)-* 'receive'), as in ex. (3) but not precede it.

(3) *Kono keizi=wa   zikeɴ=o   kaiketu-si.te*
     DEM   detective-TOP case-ACC solve-do-GER
     kure.ru=ka=mo   sir.e.na.i
     BEN-NPS-EPI[QUE-FOC   know-POT-NEG]-NPS
     'This detective will perhaps solve the case for us.'[12]

The order of meaningful elements is benefactive-epistemic, corresponding to [[benefactive] epistemic], Japanese being a head-final language. The reverse order, epistemic-benefactive, i.e. *ka=mo sir.e.na.i=de kureru* is possible in terms of morphological combination[13] but is semantically-pragmatically completely odd and not found. That is, the epistemic marker can take scope over the benefactive, i.e., '[Perhaps [that detective will solve the case for our benefit]]', while the reverse scope, '[for our benefit [perhaps the detective will solve the case]' does not make sense.[14]

   In the second case, both orders are possible in surface structure, that is, an element A can both precede and follow an element B, and the order A-B and the order B-A stand for the opposite scope relationship. The following examples of past tense and epistemic modality (1) show how this actually works out (the examples are based on a corpus example that was simplified).

(4) *Kare=wa   moo   **k-ona.i=ka=mo**   **sir.e.na.kat.ta#***
     He-TOP   already come-NEG-NPS-EPI[QUE-FOC know-POT-NEG]-PST
     'Maybe he would not come anymore.'

(5) *Kare=wa   moo   **k-ona.kat.ta=ka=mo**   **sir.e.na.i#**.*
     He-TOP   already come-NEG-VBZ-PST-EPI[QUE-FOC know-POT-NEG]-NPS
     'Maybe he hasn't come anymore.'

The English translation may be ambiguous, but (4) expresses a past possibility about a future event at event time. In contrast, (5) expresses a present possibility about a past or perfect event. So, the scope relationship directly corresponds to the position of past tense inside (5) or outside (4) the modal expression.

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12. Language examples for which the source is not cited are constructed. Usually they are adapted from corpus examples but simplified.

13. Note constructions such as *si.na.i=de kure-* ([[not do] for me/us]).

14. Combinations blocked by morphological rules are discussed in Section 8.

4.3   Scope ambiguity obtains

Scope ambiguity occurs primarily between modality and negation, and second-arily between modality and tense.

As for negation, numerous scholars have noted scope ambiguity of modality and negation in English and cross-linguistically. Palmer (1995) in his study on modals of possibility and necessity and their negation is a prominent example. Interestingly, it is the scope relationship 'deontic necessity > negation' where cross-linguistically by far the most irregularity is encountered (cf. Palmer 1995: 465), and where the negative marker is most frequently ordered non-iconically with respect to the modal marker. Besides this, scope ambiguity with respect to nega-tion has been observed in the case of the 'mid-scale' modals (Horn 1978, Section 4; Givón 2001a: 394).[15] As De Haan (1997: 126–129) argues, 'should' in particular is probably cross-linguistically a uniscopal notion, or in other words, it "is inherently incapable of showing differences in scope" (De Haan 1997: 128).

This is also true for the Japanese marker of moral or common sense obligation, *beki* 'should' ('deontic modality (1)'). *Beki* normally cannot be directly preceded by the adjectival negation suffix *–(a)na-*, because of a morphological constraint that allows it to be suffixed only to morphological verbs.[16] Thus, when *beki* is followed by negation, the only order normally allowed, the scope of negation can be inter-preted in both directions. Cf. ex. (6):

(6)   *ShopaN=wa   ama.i=naNte   karugarusi.ku   kuti=ni*
       Chopin-TOP   sweet-EXM   light-ADV   mouth-ADV
       s.u=beki=zya   na.i=to   omo.u=no=sa.
       do-NPS-DEO-[ESS-TOP]   not.be-NPS-QUO   think-NPS-EMP-IFM
       '[I] think that one shouldn't say lightly that [the music of] Chopin is sweet'
                                              (Takehiko Fukunaga: *Kusa no hana*, 1956)

The intended meaning of *beki* in (6) could either be the negation of the appropri-ateness of saying that Chopin's music is sweet, or stating that it is appropriate not

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15.   'Mid-scale' modals are modals that express a medium degree of certainty (epistemic domain) or obligation (deontic domain), in contrast to such modals that express a high degree (e.g. *must*) or a low degree (e. g. *may*).

16.   Cf. Alfonso 1980: 820–1: "-BEKI compounds with verbs and verbs only…Notice that the negative expression is formed by using a negative final verb, and not by putting a nega-tive form of the verb with –BEKI" (cf. also Teramura 1979: 201; Shirakawa et al. 2001: 201). However, *beki* (historically *besi*) can be preceded by negation (*–(a)n-* or *–(a)zar-*) in *kanbun*-style. I found one example of *–(a)n.u=beki* in my large database. Relatively many examples of *–(a)n.u beki* and the supposedly ungrammatical *–(a)na.i=beki* can be found on the internet.

to say that Chopin's music is sweet. There is no salient difference between both interpretations, so this is hardly decidable.

Similarly, when negation follows a grammatical marker of volition (in this case, *–ta-*), there is ambiguity as to whether the negation is inside or outside the scope of the marker, as has been pointed out by Kawashima (2004). Cf. ex. (7):

(7)   *Kurusi.i.   **Kurusimi.ta.ku   na**.i.   **Sini.ta.ku   na**.i.*
        painful-NPS suffer-VOL-ADV not.be-NPS die-VOL-ADV not.be-NPS
        '[This is] painful! I don't want to suffer! I don't want to die!'
                                                (Morio Kita: *Nire no Hitobito*, 1964)

Although the interpretation 'not [want [to suffer/die]]' is also possible, an interpretation with the reverse scope 'want [not [to suffer/die]]' makes more sense. Note that as with *beki*, morphological constraints make it difficult to produce the iconic order 'negation – modality' in surface structure.[17] The same kind of scope ambiguity can also be observed with the evidential *rasi-*, as in (8):

(8)   *Hayakawa=wa warai=nagara mi.te   i.ta=ga,   sukosi=mo*
        (name)-TOP   laugh-SIM   see-GER be-PST-AVS a.little-FOC
        ***keibetu-si.te   i.ru=rasi.ku=wa   na**.kat.ta.*
        contempt-do-GER be-EVI-ADV-TOP not.be-VBZ-NPS
        'Hayakawa laughed while watching but he didn't seem to look down on
        [him]'   (Sane'atsu Mushanokōji: *Yūjō*, 1920)

Rasi- in this sentence designates an inference based on visual impression. Again, there is little if any difference in interpretation between [not [seem [to look down on]]] and [seem [not [to look down on]]], although in this case Japanese (like English) offers the possibility to express both orders. The same ambiguity holds also for *–soo* (evidentiality (1)), where also both forms are available (*–na.sa.soo* 'seems not to' and *–soo ni na-* 'does not seem to'), but the forms are semantically interchangeable.

As for tense, "tense" in the context of Japanese usually refers to past tense as the marked tense. This is also the case in this study. There are a number of deontic, boulomaic, and epistemic modal markers in Japanese whose interpretation is ambiguous if co-occurring with past tense (cf. Narrog (2009; Chapter 16), Takanashi (2004, 2006) for more details). Among the modal markers investigated in this study, this applies to *beki, –(a)nakereba naranai*, and *–ta-*. The facts are illustrated by examples (9), (10) and (11).

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17.   As noted in the explanation to Table 9, though, periphrastic constructions indirectly embedding negation, such as *–(a)na.i yoo=ni si.ta.i* 'want to do so as not to' and *–(a)na.i=de i.ta.i* ('want to be not doing') are possible.

(9)   *Yappari,*   *Takasi=ni*   *soodaɴ-si.te*   **ok.u=beki=dat.ta.**
as.suspected (name)-DAT advice-do-GER put-NPS-DEO-COP-PST
'As I had already suspected before, I should have asked Takashi for advice.'
(Yūji Tsuruoka: *Yonjūgo Kaiten no Natsu*, 1991)

(10)   *Soo*   *it-ta*   *tiiki=to,*   *motto* *haya.ku=kara,*   *tuyo.i*
this.way say-PST region-COM   more early-NMZ-ABL strong-NPS
yuukoo   *kaɴkei=to*   *soogo* *kaɴkei=o*   **hakat.te**
friendship relationship-COM mutual relationship-ACC plan-GER
ok.ana.kereba   **nar.ana.kat.ta!=ɴ=da!=to**   *yatoo*
put-NEG-COND become-NEG-VBZ-PST-NMZ-COP(-NPS)-QUO opposition
iiɴ=no   *hitori=ga,*   *teeburu=o tatai.te…*
delegate-GEN   one.person-NOM table-ACC knock-GER
'"We should have strived much earlier for friendship and close relationships
with those regions", [said] one of the committee members from the
opposition knocking on the table.' (Sakyō Komatsu: *Nihon Chinbotsu*, 1973)

(11)   "*Soo=ka…*   *Sore=wa zaɴneɴ=dat.ta=naa.*"   *Watasi=mo*
this.way-QUE that-TOP unfortunate-COP-PST-IFM 1s-FOC
at.te   **mi.ta.kat.ta.**
meet-GER see-BOU-VBZ-PST
'["I wanted to bring you together"] "Oh, that's a shame" [I said]. I also had
wanted to meet him / Me as well, I wish I had met him."'
(Kōtarō Sawai: *Isshun no Natsu*, 1982)

In (9), *beki* is followed by past tense, but it is unlikely that an actual obligation
in the past is reported. More likely, *beki* expresses the judgment of the speaker at
time of speech that some event in the past, namely, 'ask Takashi' should have been
realized. The scope is then (MOD (TNS)), despite the reverse morpheme order.
The past event is counterfactual.[18] The same holds for *–(a)na.kereba nar.ana-* in
(10), although with *–(a)na.kereba nar.ana-* this phenomenon is rare. Usually *–(a)
na.kereba nar.ana-* is translated as *must*, but English *must* does not allow this inter-
pretation, so it needs to be replaced by *should* in the translation of this example.

If all instances of *beki* with past tense behaved like in (9), the combination of
beki and past would instantiate complete scope reversal. However, rarely one can

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18.   There is a strong parallel between *beki* and English deontic *should* and *ought to*. As
Declerck (1991: 379) notes, *should* and *ought to* followed by a perfect infinitive often may
imply 'unreality (nonactualisation)'. Furthermore, this construction is a normal means to
express reproach in English.

find examples in which a mere past obligation is reported, as is the default with –*(a)na.kereba narana-* and past (cf. Narrog 2009: 205–206).

With the boulomaic markers, specifically –*ta-* as in (11), the same reverse interpretation is available, although it is not as common as with the aforementioned deontic markers. In this example, –*ta-* out of context is open either to an interpretation as 'I wanted to meet him', i.e. ((MOD) TNS), or to an interpretation as 'I wish I had met him', i. e. (MOD (TNS)). In the actual context of the sentence, the latter is meant.

In summary, we find a number of cases involving modal categories with scope ambiguity, but there is no single example of complete scope reversal. Two subcases of divergence between linear order and scope can be distinguished. In one case, ambiguity exists although both surface orders are available (e.g. evidentiality (1) with negation –*(a)na.sa.soo* and –*soo=ni na-*). In a second case only one surface order is available.

5.   Summary and discussion: The scope of modal categories

In Sections 3 and 4, we have tried to determine the scope of modal categories relative to each other and to other categories analytically by listing (1) the categories each category is able to take scope over, and (2) the categories each category can be embedded in. Ideally, we would expect that categories line up consistently in their scope properties, resulting in a hierarchy without any contradiction.

However, unfortunately, this is not the case. For example the marker of the category evidentiality (1) can be embedded in all categories except benefactives and voice, and thus seems to have a pretty narrow scope, namely exactly the same as dynamic modality. However, when it comes to which categories evidentiality (1) can take scope over, it is much wider than dynamic modality.

So, it is not possible to simply arrange the categories linearly in one table. Instead, we have to split them in two tables. Table 13 shows a hierarchy of categories taking scope under other categories. We label this as 'passive scope'. In contrast, Table 14, shows a hierarchy of categories taking scope over other categories. We label this as 'active scope'.

So, first, Table 13 lists the categories tested here in order of their 'passive' scope. The symbol "<" indicates that the category in the left column can be embedded by the category in the top row, while an "n/a" indicates that it cannot. Combinations of members of the same category were not tested, and therefore the respective boxes are crossed out. The less embedding a category allows, the lower and further right on the horizontal axis, it is positioned in the table.

Table 13. Order of meaningful elements by 'passive' scope

	ben	voi	pha	ipv	neg	dyn	evi1	bou	deo1	deo2	evi2	epi1	tns	evi3	epi2	moo	ifm
ben	/	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
voi	<	/	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
pha	<	<	/	<	<	<	<	<	<	<	<	<	<	<	<	<	<
ipv	<	<	<	/	<	<	<	<	<	<	<	<	<	<	<	<	<
neg	<	<	<	<	/	<	<	<	<	<	<	<	<	<	<	<	<
dyn	n/a	n/a	<	<	<	/	<	<	<	<	<	<	<	<	<	<	<
evi1	n/a	n/a	<	<	<	<	/	<	<	<	<	<	<	<	<	<	<
bou	n/a	<	<	<	<	n/a	<	/	<	<	<	<	<	<	<	<	<
deo1	n/a	n/a	<	<	<	n/a	<	n/a	/	<	<	<	<	<	<	<	<
deo2	n/a	n/a	n/a	n/a	<	n/a	<	n/a	<	/	<	<	<	<	<	<	<
evi2	n/a	n/a	n/a	n/a	<	n/a	n/a	n/a	n/a	n/a	/	<	<	<	<	<	<
epi1	n/a	n/a	n/a	n/a	n/a	n/a	<	n/a	n/a	n/a	<	/	<	<	<	n/a	<
tns	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	<	<	/	<	<	n/a	<
evi3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	<	/	n/a	n/a	<
epi2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	/	n/a	<
moo	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	/	<
ifm	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	/

Table 13 shows that in terms of their 'passive' scopal behavior illocutionary force modification has the widest scope and benefaction has the narrowest scope. Among the modal categories, dynamic modality, boulomaic modality and evidentiality (1) have a very narrow scope and epistemic modality (2) has the widest scope, with other modal categories in between.

It is impossible to give an example of a verbal complex which contains all the elements listed in Table 13, primarily because various modal categories are incompatible with each other. (12) is a perhaps contrived but nevertheless grammatical example of a verbal complex containing 8 categories in iconic order.

> (12) *Kodomo=o*   *aruk.**ase-hazime.te i.soo**=ni=mo*
>   child-ACC   walk-CAUS-PHA-IPV[GER+BE]-EVI1-ADV-FOC
>   ***na.kat.ta**=daroo=ne.*
>   NEG-VBZ-TNS-EPI2-IFM
>   '[S]he certainly wouldn't have looked like having begun to let the child walk, would she?'

Table 14 shows the categories of Table 13 in order of their 'active' scope. The symbols and the principles of arrangement are the same as in Table 13.

Table 14. Order of meaningful elements by 'active' scope

	ben	voi	dyn	bou	pha	ipv	deo1	deo2	evi1	neg	moo	evi2	epi1	tns	evi3	epi2	ifm
ben	/	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
voi	<	/	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
dyn	n/a	n/a	/	<	<	<	<	<	<	<	<	<	<	<	<	<	<
bou	n/a	<	n/a	/	<	<	<	<	<	<	<	<	<	<	<	<	<
pha	<	<	<	<	/	<	<	<	<	<	<	<	<	<	<	<	<
ipv	<	<	<	<	<	/	<	<	<	<	<	<	<	<	<	<	<
deo1	n/a	n/a	n/a	n/a	<	<	/	<	<	<	<	<	<	<	<	<	<
deo2	n/a	n/a	n/a	n/a	n/a	n/a	<	/	<	<	<	<	<	<	<	<	<
evi1	<	<	<	<	<	<	<	<	/	<	<	<	<	<	<	<	<
neg	<	<	<	<	<	<	<	<	<	/	<	<	<	<	<	<	<
moo	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	/	n/a	n/a	n/a	n/a	n/a	<
evi2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	<	<	/	<	<	<	<	<
epi1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	<	n/a	n/a	<	/	<	<	<	<
tns	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	<	<	/	<	<	<
evi3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	<	/	n/a	<
epi2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	/	<
ifm	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	/

Many categories differ not much with respect to their positions in both tables. Voice and the benefactives, for example, have both the narrowest active and passive scope. However, in some cases, the orderings based on 'active' and 'passive' scope diverge slightly. These are primarily negation and evidentiality (1), which simultaneously have a relative wide 'active' scope but can be embedded by many other categories on the one hand, and dynamic modality and mood on the other hand, which conversely have a relatively narrow active scope but cannot embed many other categories themselves as well. Another case, in which 'passive' and 'active' scope does not neatly align is evidentiality (3) taking scope under tense, unlike epistemic modality (2), but showing wider scope properties than epistemic modality (2) with respect to embedding in subordinate clauses (cf. Narrog 2009: 220, 222, 227). Embedding in subordinate clauses is another useful but complex criterion that we have not included in the data for this paper.

The data show that unlike suggested in some previous research (e.g. Nitta 1984, 1997), that it is an illusion to assume that each grammatical macro-category, such as modality, tense or aspect, in its entirety occupies a specific layer of clause structure, cleanly embedding other categories and being embedded in yet other

categories. Instead, each macro-category must be split into numerous subcategories that occupy different positions in clause structure. This is especially true for modality. Dynamic and boulomaic modality have very narrow scope, some epistemic and evidential categories have fairly wide scope, and deontic and some epistemic categories are in between. Furthermore, there is considerable overlap among categories. Besides the extremes of voice and benefaction on the one hand (narrowest scope) and illocutionary force modulation on the other (widest scope), few categories can be said to clearly form a specific layer. I have discussed the fit of the Japanese data with specific models of grammar in some detail in Narrog (2009; Chapter 19), and will forego the same discussion here.

Furthermore, we have noticed with the evidential (1) that it has wide active scope properties but narrow passive scope properties. In contrast, the volitive modalities (and also dynamic modality) have consistently narrow active and passive scope properties, and even the volitive mood that we tested had narrow active scope properties although it has passive scope properties that indicate wide scope. This leads us to the insight that something is fundamentally different between volitive and non-volitive modalities. First, volitive modalities except volitive moods, can all be used 'descriptively', that is can be embedded in past tense or negated, leading to their narrow scope properties. On the other hand, even if they are used performatively, that is clause-finally, there are still certain categories like tense which they will not scope over, since they have an inherent future-orientation (it does not make sense to oblige or want a past event except with a counterfactual interpretation).

In performative use,[19] non-volitive modalities are associated with statements and assertions while volitive modalities are associated with volitive speech acts like commitments and commands. If a boulomaic or deontic marker is used performatively, it will not be modified by tense or aspect or negation, that is, it has different passive scope properties than in descriptive use, but outwardly, it has still the same active scope properties for the semantic reason just mentioned. Therefore, although it is possible to arrange volitive and non-volitive categories in one hierarchy, it would seem to make more sense to have a separate hierarchy for each set of categories, as in Table 15 and Table 16, corresponding to their performative

19.   "To the extent that a linguistic form qualifies a proposition with respect to the current speech situation (including speaker and hearer), it is used performatively. To the extent that it does not qualify a proposition with respect to the current speech situation, it is used descriptively" (Narrog 2012: 42)

use in different utterance types. Note that dynamic modality does not have salient performative uses, and it could fit into either hierarchy.

Table 15. Hierarchy of volitive modal categories

Non-modal categories	Modal categories
	Illocutionary modification
	Moods (imperative, hortative)/ deontic & boulomaic modality in performative use
Tense, (Internal) Negation	Deontic modality 2 (valuative obligation, recommendation)
Perfective/Imperfective aspect	Deontic modality 1 (necessity)
Phasal aspect	Boulomaic modality
Benefactives Voice	

Table 16. Hierarchy of non-volitive modal categories

Non-modal categories	Modal categories
	Illocutionary modification
	Epistemic modality 2 (speculative), (epistemic mood)*
Tense	Evidentiality 3 (reportive) Epistemic modality 2 (epistemic possibility, necessity)
(Internal) Negation	Evidentiality 2 (inferential evidentiality)
Perfective/Imperfective aspect	Evidentiality 1 (predictive appearance)
Phasal aspect	Dynamic modality
Benefactives Voice	

*"Epistemic mood" refers to the epistemic use of the mood inflection *(y)oo*. It was not included in previous studies (Narrog 2009, 2010) because this use is not fully productive anymore in Modern Japanese, and is also associated with a number of "frozen" (idiomatic) uses which obscure more regular patterns. It can be assumed, though, that in its regular use it is essentially at the same level as its Modern Japanese successor, "Epistemic modality 3" *daroo*, since *daroo* is morphologically derived from *(y)oo*, and has to a large extent taken over its functions.

The question is to which degree this hierarchy might also be applicable to other languages. As stated above, I consider the semantic mechanism behind scope as universal. However, modal categories in different languages are not exact equivalents. For example, Japanese *ka mo sirena-* is generally an equivalent for English *may*, but it can be transparently put into past tense, which is not the case with *may*, for which the erstwhile past tense *might* has idiosyncratically developed present

usage. Likewise, *–(a)nakereba narana-* is much more flexible and transparent in its combinability than *must*. In this sense, there is unique value in analyzing the scope of modal expressions in each individual language.

Lists of abbreviations

Morphological categories

A =	lexical adjective	=n	particle noun
-a	suffix adjective	NA	lexical nominal adjective
=a	particle adjective	-na	suffix nominal adjective
ADN	lexical adnominal	=na	particle nominal adjective
-ADN	suffix adnominal	q-	prefix
ADV	lexical adverb	r	recursive
-ADV	suffix adverb	s	derivational suffix
-f	inflection	V	lexical verb
I	interjection	-v	suffix verb
L	lexeme	=v	particle verb
N	lexical noun	W	word
-n	suffix noun		

Functional categories

ABL	ablative	EVI	evidential
ACC	accusative	EXM	exemplative
ADV	adverbial	FOC	focus
ASP	aspect	GEN	genitive
AVS	adversative	GER	gerund
BEN	benefactive	HON	honorific
BOU	boulomaic (modality)	IFM	illocutionary force modulation
CAUS	scausative	INC	inceptive
COM	comitative	IPV	imperfective aspect
CPV	completive	MOD	modality
COND	conditional	MOO	mood
COP	copula	NEG	negation
DAT	dative	NMZ	nominalization
DEM	demonstrative	NPS	non-past
DEO	deontic (modality)	PHA	phasal aspect
DIR	directional	POL	politeness
DYN	dynamic (modality)	POT	potential
EMP	emphatic	PST	past
EPI	epistemic (modality)	Q	question
ESS	essive	QUO	quotative

SIM	simultaneity	VOI	voice
TNS	tense	VOL	volition
TOP	topic	VBZ	verbalization

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Not just frequency, not just modality

Production and perception of English semi-modals

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We review reduction and contraction in modalizing expressions of the type V-*to*-V_{inf} from the perspective of production, perception and mental representation. A corpus study of spoken American English shows reduction/contraction as a continuous process which is subject to phonological and communicative constraints. Generally, reduction (articulatory ease) is restricted by a tendency to retain cues to morphological structure (explicitness). For perception, a word-recognition experiment shows that listeners use probabilities to cope with reduction; reduction also promotes 'chunking', i.e. accessing frequent sequences as single units. The combined evidence suggests that 'chunking', reduction and contraction are not a self-propelled process, even given high frequency or semantic bleaching. Rather, they are subject to intuitive negotiations in speaker-hearer interaction. Methodologically, we make a case for triangulating corpus and experimental data.

Keywords: semi-modals, chunking, phonetic reduction, contraction, entrenchment

1. Introduction

This paper considers modal items that emerge from the construction 'verb + *to*-infinitive' (V-*to*-V_{inf}). Several English constructions of the form verb + *to*-infinitive have been classified as semi- or quasi-modals (Biber et al. 1999: 484ff; Collins 2009: 15ff). Some are known to undergo contraction (e.g. *gonna, wanna*) and have therefore been argued to form a class of 'emerging modals' (Krug 2000), while contractions also diverge from their source forms (cf. Berglund & Williams 2007; Lorenz 2013a, b). Contraction itself has been described as a frequency effect (e.g.

Bybee 2006), but has also been linked to the modal-like status and grammatical-ization of the item (e.g. Krug 2000: 217).

Our focus is on the variation in surface realizations that comes about through frequency of use and phonetic reduction. The semi-modal contractions *gonna, gotta* and *wanna* can be seen as precedent cases of how reduction can create new variants, which usage frequency then establishes as entrenched modal items (cf. Lorenz 2013a). The existence and emancipation of these items raises the question whether some kind of '*to*-contraction paradigm' could serve as a pattern to produce other, similar items from other, similar sources. Proposals along this line have been made, e.g. for *hafta* and *usta* (Pullum 1997), albeit mostly on purely formal grounds and without empirical evidence.

We think that the emergence of (reduced) modal items can only be fully understood if both speech production and perception are considered. This calls for triangulation of data and methods. We present and combine data from realizations in natural speech (spoken corpus data) and word recognition of reduced items (experimental data). Following from general findings ('conservative reduction' on behalf of speakers, flexible access paths available to hearers), the combined evidence sheds light on reduction and univerbation in modal items. The main argument will be that high frequency does not straightforwardly lead to reduction and univerbation. We will suggest that for new modal items to arise out of reduced forms, it takes favorable conditions on several levels: high frequency, phonological properties that allow for the gradual disintegration of morpheme boundaries, and a modal-like status that follows from semantic non-compositionality.

To set the stage, we will define the modalizing V-*to*-V$_{inf}$ construction (1.1); outline the role of co-text and context as well as other factors of reduction (1.2); briefly review the current state of research from corpus and experimental perspectives and discuss the purpose of bringing the two perspectives together (1.3). We then review a corpus study of four relevant items – *have to, used to, need to, trying to* – in spoken American English (Section 2). Section 3 adds the perspective from a word recognition experiment comprising a longer list of V-*to*-V$_{inf}$ items. Finally, we discuss the findings in terms of conditions for reduction and entrenchment, considering the roles that modal semantics and usage have to play (Section 4).

1.1   Modality, *to*-infinitives and V-*to*-V$_{inf}$ as a modalizing construction

We take the pattern 'verb + *to*-infinitive' (V-*to*-V$_{inf}$) to be a modalizing construction. Modality is a wide semantic field. In English linguistics, it is often approached from the meanings that the modal auxiliaries express (such as obligation/necessity, permission/ability, intention/future), but it clearly comprises far more than that. By way of collection, Bybee and Fleischmann (1995: 2) note that it "covers

a broad range of semantic nuances – jussive, desiderative, intentive, hypothetical, potential, obligative, dubitative, hortatory, exclamative, etc." While one can try to break all these nuances down, for example into root and epistemic or subject-internal and -external modalities (see Depraetere 2015 for an overview), attempts at a unifying definition of the gamut of modalities necessarily cast a wide and rather loosely-knit net: "the addition of a supplement or overlay of meaning to the most neutral semantic value of the proposition of an utterance, namely factual and declarative" (Bybee & Fleischmann 1995: 2); "a speaker's judgment that a proposition is possibly or necessarily true or that the actualization of a situation is necessary or possible" (Depraetere & Reed 2006: 269); "[modality] does not refer directly to any characteristic of the event, but simply to the status of the proposition" (Palmer 2001: 1).

The construction V-*to*-V$_{inf}$ creates modality in the sense of these general definitions. This may be more or less obvious depending on the matrix verb. Most linguists would immediately agree that (1) and (2) are 'modal-like'; (3), (4) and (5) would probably be accepted into this category at decreasing rates. For example, Biber et al. (1999: 484, 709f) classify *have to* and *be going to* as 'semi-modals', *want to* as a member of a set of "relatively fixed expressions with meanings similar to the modal auxiliaries" (484), and items like (4) and (5) as simply representing a general pattern 'Verb + *to*-clause' (709).

(1)   We have to sing at the party.

(2)   We're going to sing at the party.

(3)   We want to sing at the party.

(4)   We intend to sing at the party.

(5)   We hope to sing at the party.

A criterion for a 'modal-like' status is idiomaticity, i.e. that the item's semantics is not fully transparent from the verb and *to* (Biber et al. 1999: 484; Collins 2009: 20). This reflects a view that modality is an outcome of grammaticalization, here semantic bleaching. However, in terms of semantics, example (4), which is transparent, is very close to (3), which is more idiomatic. Consider also example (6), which can be read as a transparent composition or as expressing habitual aspect (cf. De Smet & Cuyckens 2005), which would then qualify it as a semi-modal.

(6)   We like to sing at parties.

Also regarding (lack of) transparency, Biber et al. (1999: 707) remark that the common reduction to *wanna* shows that *want to* "is acquiring semi-modal status", so that a propensity for cliticization and reduction of *to* marks a modal-like status

(see also Krug 2000: 217; Collins 2009: 19). However, *wanna* is a conventional-ized form and not fully equivalent to *want to* (cf. Lorenz 2013a); and phonetic reduction in spoken language is conditioned by many factors and not restricted to grammaticalized items, as will be seen in the course of this article.

What is the modal meaning of the V-*to*-V$_{inf}$ construction, then? In general, the infinitive expresses the neutral proposition ('sing at the party' in 1–5 above), while the matrix verb provides the status of the proposition in the speaker's or subject's judgment of possibility and probability, that is, it specifies the modal-ity. Treatments of the semantics of *to*-infinitives show this in detail. Thus, Duf-fley (2006: 26) argues that since *to* is (originally) a preposition, the *to*-infinitive provides an image schema of "movement leading to a point", which can be elab-orated and extended (see also Verspoor 1999: 511). In this 'movement towards goal' schema, the proposition is a goal that has not yet been reached, it denotes a potential event or state rather than an actualized fact. In Morita's (2012: 37) words, "the infinitive builds a possible world", which is incorporated and assessed as a possible scenario in the real world. If possibility and potentiality are at the core of the semantics of the *to*-infinitive, then V + *to*-infinitive is clearly a modalizing construction: possibility and potentiality are the stuff that modality is made of.

Egan (2008: 94–99) groups *to*-infinitive complements into three semantic types: 'Forward-looking', referring to "a likely alternative in the projected future" (98); a 'general' sense which profiles a situation "as likely to occur on a more or less regular basis" (97), and 'judgment', which expresses the likelihood of an event to be true (98). A further distinction is made between different-subject and same-subject constructions (Egan 2008: 20, 24). In same-subject constructions (such as (1) to (6) above), the matrix verb and the infinitive complement share the same grammatical subject; in different-subject constructions, they do not (such that in (7), the subject of *want* is not the subject of *sing*). As (7) is formally a different construction (V-NP-*to*-V$_{inf}$), we will focus here on (a set of) same-subject constructions, which typically take 'forward-looking' (as in examples (1) to (5)) or 'general' sense (as in (6)). This also excludes passive forms, which have an implicit subject (8).

A further restriction has to be made with purposive *to*-infinitives (example (9)). These take the form V-*to*-V$_{inf}$ but the matrix verb does not refer to the 'possi-ble world' status of the proposition of the *to*-infinitive; rather, it denotes an action performed by the subject with the purpose of achieving the situation expressed by the *to*-infinitive (cf. Schmidtke-Bode 2009: 1; Rudnicka 2019: 87–88). Thus, pur-posive *to*-infinitives are not modalizing constructions.

(7)   I want the gospel choir to sing at the party.

(8)   The gospel choir was asked to sing at the party.

(9)   She only works to make money.

1.2   The role of co(n)text: Speech-internal vs. speech-external factors

We consider in this paper the phonetic realization of various V-*to*-V$_{inf}$ items, and the effect of their reduction on speech perception. Phonetic reduction in these items has been argued to be a function of a modal-like status, i.e. grammaticalization, leading to forms such as *gonna* and *gotta* particularly in highly grammaticalized items (Krug 2000: 176f). On the other hand, reduction may be solely a consequence of the frequency of the sequence (Bybee 2006). Yet, neither grammatical status nor frequency can fully account for reduction, especially when the specific forms of reduced variants are considered. It is here that contextual and co-textual factors come into the picture. The situational context can affect both the rate of reduction and of usage of pronunciation variants; predictability of an item from the linguistic co-text (Jurafsky et al. 2001; Seyfarth 2014; Barth 2019) affects the likelihood of reduction as such. Phonological properties of an item and its immediate co-text often determine the degree of reduction and the resulting phonetic forms (see Shockey 2003: 14f for a summary). Prosodic factors such as speech rate and stress patterns also bear on the realization of linguistic units in strings of speech. Taking these together, the notions of co-text and context are even too narrow to capture all that affects pronunciation and articulation in spontaneous speech. In particular, speech-internal aspects go beyond co-text in that they include properties of the item itself and of the acoustic and articulatory realization of an utterance (rather than just the words and constructions used).

Thus, we can make a broad distinction between three types of determinants of phonetic realization. Firstly, there are general experiential or cognitive factors (grammatical status, frequency); secondly, there are speech-internal factors (phonological properties, co-text, prosody); and thirdly, speech-external properties of the speaker and the speech situation. The two studies presented hone in on the effects of these factors in relation with a modalizing construction that has received plenty of attention as regards cognitive motivations but not as much concerning speech-internal and -external triggers and limitations.

1.3   Converging evidence: Production and perception

There have been repeated calls – especially in cognitively oriented strands of linguistics – to combine different methods in research on language (Gilquin & Gries 2009; Arppe et al. 2010; Schönefeld 2011; Horch 2019). One purpose of this paper is to show that considering evidence from production and perception hand-in-hand provides solid ground for usage-based linguistic research. Such triangulation can be an explicit part of a research design (exploring one hypothesis by more than one method; cf. Angouri 2018), or it can be a way of connecting independent findings from methodologically different studies – such as corpus and experimental

research producing converging evidence of the mental representation of linguistic structure.

Corpus studies have contributed much to our understanding of the semantics and syntactic embedding of modal items (e.g. Leech et al. 2009; Aarts et al. 2015; Jäger 2018; Cappelle et al. 2019). Speech corpora provide a window on the 'real life' usage of modalizing expressions, which in turn allows insights into how speakers conceptualize and express modalities. Formal theorizing should, at least, take this evidence from actual language use into account. For example, sentences like *Teddy is the man I want to win the race* have been said to 'block' contraction to *wanna* (cf. Lakoff 1970); in reality, such sentences are scarcely ever found. On the other hand, corpus data reveal many other factors that lead to preferring or avoiding the contraction in spontaneous speech, which can provide more detail on the status of the contraction in grammar. A particularly relevant point for the present purpose is that speech corpora allow us to analyze details of pronunciation and prosody (cf. Jurafsky et al. 1998; Raymond et al. 2006; Ernestus & Warner 2011). In modalizing expressions, phonetic reduction is an important aspect of usage, given that they are often associated with grammaticalization.

However, corpus data can only provide structures on the surface. We can only infer how these structures are represented in the speaker's mind (cf. Schmid 2010), or how they are processed by the hearer(s) (except in the case of outright misunderstandings). This is especially relevant with respect to pronunciation and phonetic reduction, as reduction may induce difficulties on the hearer's side. Applied to modal items, reduction is not only a correlate of modality and grammaticalization, but also an aspect of speech that could be more demanding on the hearer in terms of decoding the speech signal, simply because the signal is less complete. To take the hearer's side into account, we need experimental designs that allow us to study speech perception.

A number of experimental studies have focused on the perception of reduced items. Regarding reduction in individual words, it has been shown that increasing reduction deteriorates recognition (Ernestus et al. 2002), and that full canonical forms are somehow privileged in auditory lexical decision tasks (Ernestus & Baayen 2007; Ranbom & Connine 2007; Pitt 2009; Tucker 2011; Pitt et al. 2011). More specific experiments have pointed out, for instance, that the cues hearers employ to process reduced words are of varying strengths: acoustic cues "override probabilistic cues based on preceding context" (van de Ven & Ernestus 2017: 377), that is, perception of the signal itself has priority over information from co(n)text. Research on multiword sequences has found that the memorization of a high frequency sequence (or 'chunk') may cause a delay in the recognition of a component part: word-monitoring studies have dealt with the word *of* in sequences comprising a Noun + *of* (e.g. *kind of*; Sosa & MacFarlane 2002) or the word *up* in sequences comprising a Verb + *up* (Kapatsinski & Radicke 2009). Nonetheless, the

connection between the effects of frequency information and reduction of multi-word sequences has largely remained untapped in experimental designs.[1]

The two studies we combine in this article shed light on the interplay between predictability and reduction as regards V-*to* sequences in the modalizing construction V-*to*-V$_{inf}$. We provide evidence that speakers do not always reduce articulation of frequent items as a function of frequency, but rather tend to preserve morphological transparency ('conservative reduction'); and that hearers have two possible routes to access entrenched sequences: as an easier-to-process string of elements (procedure strengthening) or as a memorized unit (chunking). Note that the *or* in the previous sentence does not imply that these two routes are mutually exclusive. A dynamic view of entrenchment (cf. Schmid 2018), taking into account phonetic form in production and phonetic cues in perception, is key to understanding the different courses that a particular V-*to*-V$_{inf}$ item might take towards grammaticalization and a more established status as a modality expression.

These findings can be placed in a framework of grammaticalization that involves gradual univerbation and phonetic erosion. We discuss the results of the studies in light of the fact that V-*to*-V$_{inf}$ items are modalizing expressions, and consider the ramifications for the ways of expressing modality in English.

2.   Corpus study: Realizations of frequent V-*to*-V$_{inf}$ items in speech

The first study we summarize is a corpus investigation of four V-*to*-V$_{inf}$ items, namely *have/has to, used to, trying to, need to* (Lorenz & Tizón-Couto 2017). We explored what realizations occur in spoken American English data and what the conditions of their occurrence reveal about potential variant representations. Given that established contractions exist for *going to* (*gonna*) and *want to* (*wanna*), our main interest was in seeing how coalescence and contraction are actualized in the four items above and whether they show analogies to the *gonna/wanna* type.

The data were drawn from the speech recordings of the Santa Barbara Corpus of Spoken American English (SBC; Du Bois et al. 2000–2005), yielding 634 tokens (356 *have to*, 76 *used to*, 106 *trying to*, 96 *need to*). In order to catalogue the realization variants, we focused mainly on the quality of the /t/ sound in *to* as 'full', 'reduced' (lenition) or 'zero' (elision), and the fricative (/v/ or /z/) in *have/*

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1.   At least with regard to perception and processing. On the production side, there are elicitation experiments showing that phonetic durations are reduced in high frequency sequences (Arnon & Cohen Priva 2013) and in words that are predictive of the given syntactic structure (Gahl & Garnsey 2004).

has/used to as voiced versus devoiced. We took /t/-lenition (and -elision) to be the main indicator of coalescence (cf. Broadbent & Sifaki 2013), because it does not usually occur word-initially but is frequent in word-medial positions, especially in monomorphemic words (e.g. the flap in *city* [sirɪ], cf. Patterson & Connine 2001).

What we find is a wide array of variation, as can be expected in natural speech situations. Nonetheless, some realizations are more likely than others. In *have to* and *used to* fricative devoicing is quite frequent (ca. 60%), but reduction of /t/ is rare (ca. 14%); these features are correlated: where /t/ is reduced, the preceding fricative is usually voiced. We will therefore refer to the variants as "hafta"/"usta" (devoiced fricative) and "havda"/"uzda" (/t/-lenition), respectively. *Trying to* shows a high rate of /t/-lenition ("tryinda", ca. 60%); /t/-elision in *trying to* ("tryna") and lenition in *need to* ("needa") are less common (22%).

We then analyzed the influence of several factors of variation that have been associated with reduction and that cover speech-internal and speech-external aspects. The relevant factors are briefly introduced here.

> Speech rate: Rapid speech environments promote articulatory reduction, whereas the repeated occurrence of a reduced form in slow speech indicates that this form is more strongly represented in speakers' minds. The measure reported in this study is syllables per second (syll/sec) in the linguistic environment, namely the conversational turn in which the item occurs, excluding the item itself.
>
> Following sound: The first sound of the item following *to* was coded for place of articulation; since vowels and pauses/disruptions have been associated with fuller forms (Fox Tree & Clark 1997; Raymond et al. 2006: 71), our focus is on this category as a reduction-disfavoring environment.
>
> Stress accent: We coded the stress accent on the main verb as 'heavy' or 'light' (consider *We HAVE to go* versus *We have to GO*). Reduction typically occurs on less accented syllables and items (Greenberg et al. 2002; Shockey 2003: 22; Raymond et al. 2006).
>
> Speech situation: Conventional contractions (like *gonna, gotta* and *wanna*) often carry a connotation of informality and colloquialness (Boas 2004; Lorenz 2013a: 184). To assess formality in the present data, we defined three categories of speech situation, 'private', 'professional' and 'public', based on the file descriptions in the SBC documentation.

We summarize the most important findings here; the figures in this section illustrate the modeled effects in the original study (Lorenz & Tizón-Couto 2017: 18–25), resulting from logistic regression models for *have to* and univariate statistical tests for *used to, trying to*, and *need to*.

2.1   Realizations of *have to* / *used to*

2.1.1   *Fricative devoicing*

The most common realization of *have to* and *used to* is with a devoiced /v/ or /z/, that is, with a fricative that is assimilated to the following voiceless /t/ (roughly 60%: 53% for *have to* and 83% for *used to*). In the regression model for *have to*, SPEECH RATE and STRESS ACCENT significantly determine the variation. Fricative devoicing is favored in slow speech (Figure 1: left panel). It is also more likely when a heavy stress accent is on *have* (Figure 1: right panel). Moreover, devoicing occurs across phonetic environments (FOLLOWING SOUND) and speech situations.
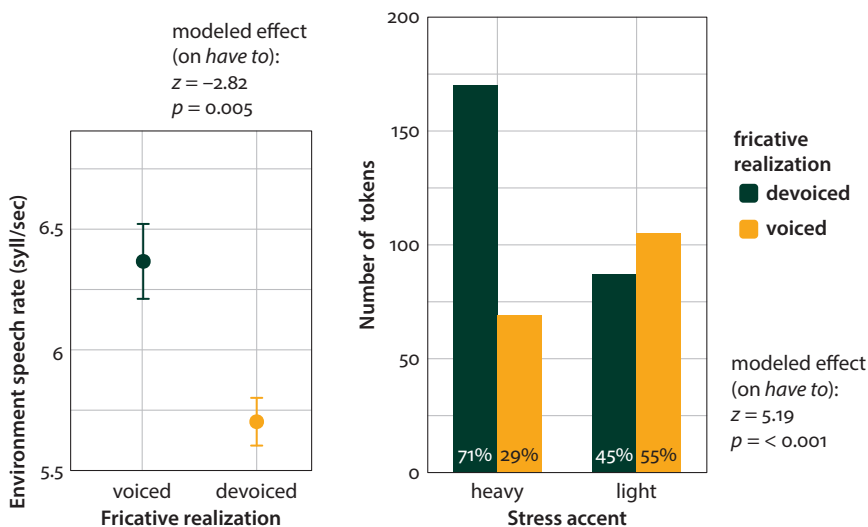
Figure 1. Effects of SPEECH RATE and STRESS ACCENT on /v/ realization in *have to* / *used to*. (Left panel: mean and standard error; right panel: bar heights represent raw token numbers, the values inside the bars show the share of the variant in the given category)

The finding that fricative assimilation in *have to* and *used to* is most prominent in slow speech indicates that the forms with [f/s] are firmly entrenched pronunciation variants. These variants are used irrespective of the speech situation and thus show no evidence of indexing a social or register category such as the 'colloquialness' feature attributed to *wanna* (Boas 2004). They may be an outcome of coalescence – the assimilation of the fricative to the voiceless /t/ is a natural phonetic consequence if *have to* / *used to* are perceived as single units. Nonetheless, they are 'hearer-oriented' and conservative in terms of transparency in that they still allow morphological parsing of the structure on behalf of the listener.

2.1.2   */t/-lenition*

Despite the high frequency of *have to* and *used to* (promoting their coalescence), forms like "havda" and "uzda" are rare and rather restricted (roughly 14%). This seems to be due to the preceding fricative, which is not a typical environment for /t/-lenition. The reduction of /t/ in *have to* is tied to rapid speech or light accent: rapid speech promotes /t/-lenition in stressed items, whereas unstressed items generally have a higher rate of lenition (Figure 2: upper panel). Moreover, /t/-lenition is very unlikely when *have to* occurs before pauses or speech disruptions, that is, it is avoided in 'non-reduction environments' (Figure 2: lower panel).

modeled effects (on *have to*):
sp.rate: $z = -2.72$, $p = 0.006$
stress light: $z = 2.25$, $p = 0.024$
sp.r.*light: $z = -2.17$, $p = 0.030$

modeled effects (on *have to*):
$z = 0.67$, $p = 0.009$
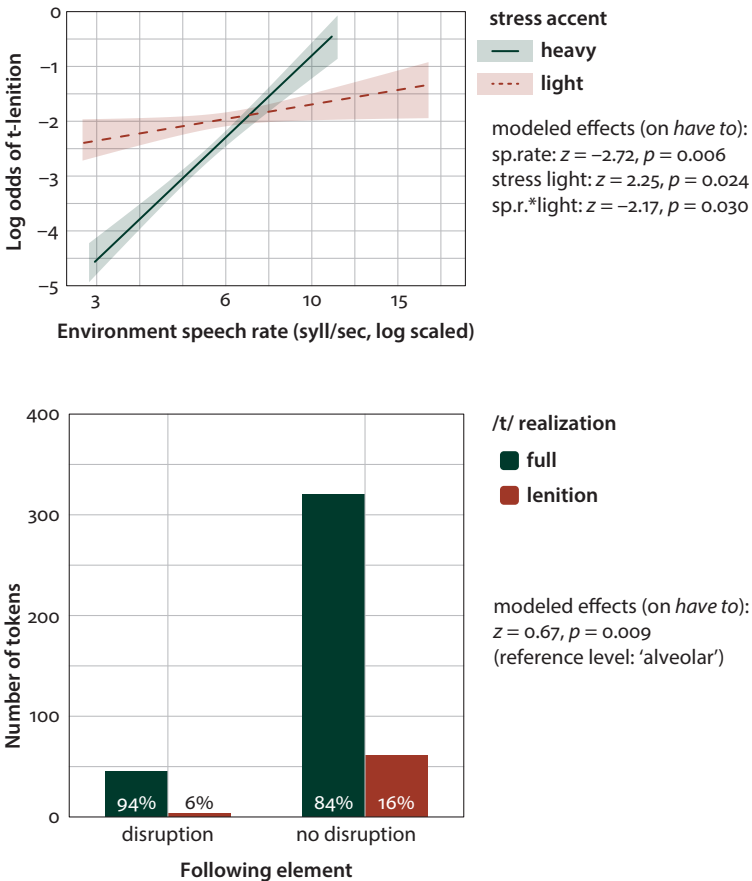(reference level: 'alveolar')

Figure 2. Effects of environment speech rate and following element on /t/-lenition in *have to / used to*

As regards formality, /t/-lenition/elision is associated with informal situations ('private conversation'). As shown in Figure 3, it is dispreferred in the more formal, careful speech of professional settings.
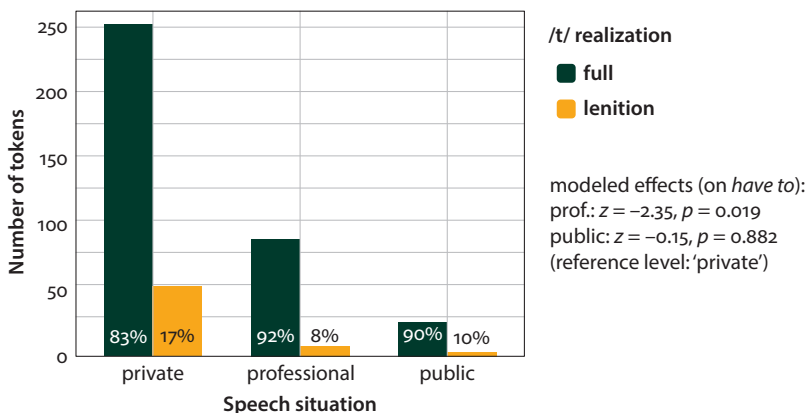
**Figure 3.** Effect of speech situation on /t/-lenition in *have to / used to*

In sum, /t/-lenition in *have to* and *used to* is conditioned by speech rate and stress accent, avoided before pauses and associated with informal speech situations. It thus shows the symptoms of on-line articulatory reduction occurring in a fast flow of speech and in situations where speakers may be less careful about their pronunciation (i.e. in private conversations). In this regard, /t/-lenition might be seen as a 'speaker-oriented' adaptation that simply reduces the articulatory effort for the speaker.

2.2   Realizations of *trying to / need to*

For the realizations of *trying to* and *need to*, the question of fricative devoicing obviously does not apply, but the situation regarding /t/-lenition is more complex. When treated as a chunk, they provide the environment typical of /t/-flapping in American English (preceding vowel or nasal). Consequently, the rate of /t/-lenition is high, at least in *trying to* (60.4%). A reduced /t/ in *need to* ("needa") is rarer (21.9%), as is /t/-elision in *trying to* ("tryna", 23.6%).

There is no statistically significant effect of speech rate, phonetic environment or stress on /t/-lenition (/t/ > [ɾ]) in *trying to*, so the form "tryinda" appears to be rather unconstrained. By contrast /t/-elision (/t/ > /∅/) in *trying to* ("tryna") and lenition in *need to* ("needa") pattern together in terms of frequency as well as constraints. Similar to "havda"/"uzda", "tryna" and "needa" are extremely rare before speech disruptions; they are thus avoided in 'non-reduction environments' (Figure 4: upper panel). Also, in both *trying to* and *need to* the most strongly reduced forms are tied to light stress accent (Figure 4: lower panel).
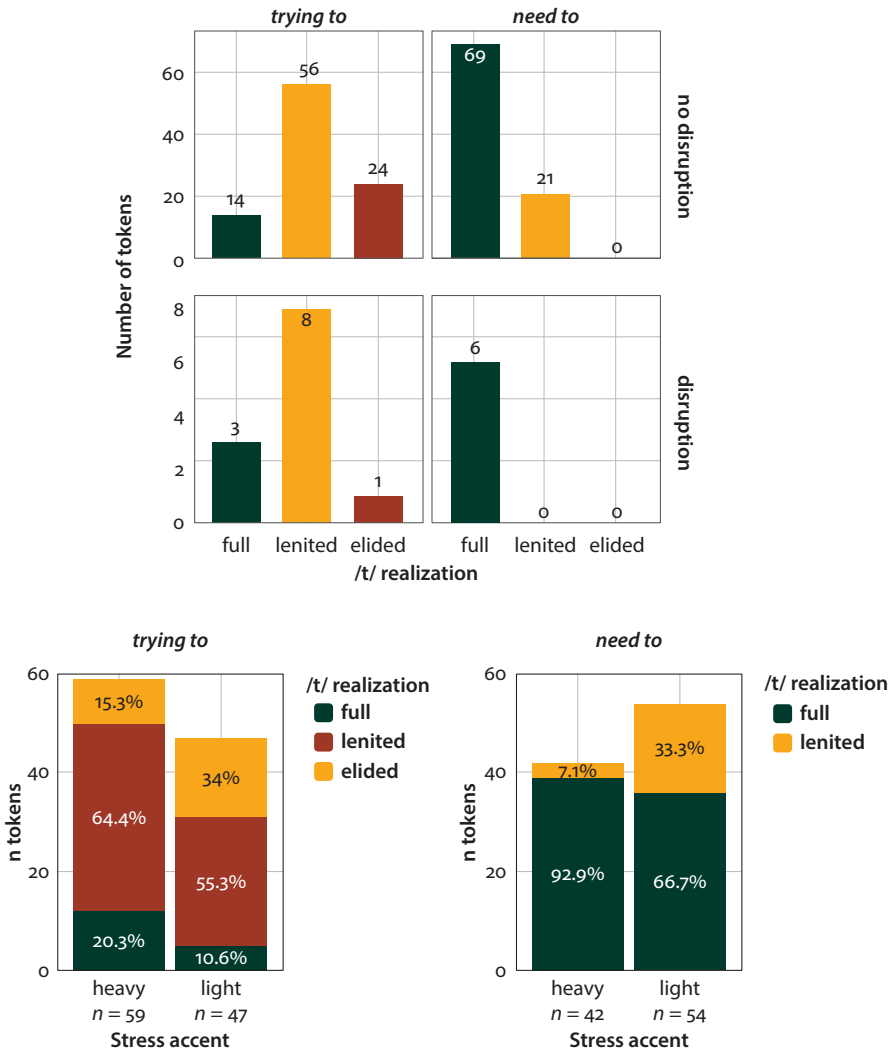
Figure 4. Upper panel: /t/ realization in *trying to / need to* with and without following speech disruption (token numbers). Lower panel: /t/ realization in *trying to / need to* by speech situation (bar heights represent token numbers, values inside bars show shares of variants)

A modest reduction of /t/ in *trying to* appears as a common routine in usage. Yet it takes an extra step to reduce the /t/ to a degree which obscures the underlying morphological structure (i.e. the presence of *to*), rendering "tryna" / "needa". These forms are more restricted. Firstly, before pauses, where articulatory reduction is not to be expected, "tryinda" occurs frequently, but "tryna" and "needa" are virtually absent. Secondly, these reduced forms very rarely occur with a heavy stress accent. We conclude from this that /t/-lenition is firmly entrenched in language

users' mental representation of *trying to*, whereas lenition in *need to* and elision in *trying to* are less entrenched and rather tend to occur by (speaker-oriented) articulatory reduction.

Overall, we see patterns of coalescence and reduction in *have/used/need/trying* + *to* V_{inf}. Yet, forms like "havda", "uzda", "tryna", "needa" do not line up with the established contractions *gonna/wanna/gotta*, despite the potential force of analogy that these may exert. Rather, their usage is similar to phonetic reductions of *going to* ([gɔɪnə], [gɔːndə]) and of *gonna* (e.g. [ənə], [nə]), as reported in Lorenz (2013b). Compared to a full rendering of *gonna* ([gɔnə]), its reduced variants occur at a rate of 15% and are strongly correlated with rapid speech and co-text (in particular first person singular subjects). Lorenz (2013b) argues that unlike the use of *gonna* as such, these forms are outcomes of on-line phonetic reduction. Given the parallels in relative frequency and occurrence conditions, the argument extends to the strongly reduced variants of *have to, used to, need to* and *trying to*.

3. Experimental study: Chunking and frequency information in speech perception

The corpus study has shed some light on (reduced) variants of modal expressions that emerge through frequency and chunking, and on how phonological and morphological structures constrain the freedom to reduce what is frequent. In interpreting these constraints, we have alluded to the hearer's need for clarity. Our second study (Lorenz & Tizón-Couto 2019) is directly concerned with perception and processing. In a word-monitoring experiment we tested recognition of the element *to* in V-*to*-V_{inf} constructions. The aim was to see how reduction affects recognition when frequency and probability are taken into account.

An effect of chunking has been found by Sosa and MacFarlane (2002) and Kapatsinski and Radicke (2009), where elements of a highly frequent collocation (e.g. *sort of, give up*) are recognized more slowly because listeners initially access the bigram as a single unit. However, when chunking is not at play, the frequency of a sequence increases its predictability and therefore facilitates word recognition (Kapatsinski & Radicke 2009; Arnon & Snider 2010). Likewise, a word may be predictable from its transitional probability, that is its likelihood of occurrence given the previous word (cf. Simpson et al. 1989; Frank & Willems 2017). Our experiment tested how listeners tap into this information when faced with reduced word forms.

3.1 Design and method

The participants (native speakers of American English, n = 38) heard recorded sentences and had to respond to hearing the word *to* by pressing a button as

quickly and accurately as possible. The input included 42 target items containing a V-*to*-V$_{inf}$ construction, each with a different verb before *to* (10–12); they were interspersed with control items (containing *to* in a different construction) and distractors (containing no *to* at all).

(10)   If the camel is sick, we have to give him his medicine.

(11)   I know it's necessary but I hate to see the monkey locked up in that cage.

(12)   When the penguins are around, we pretend to like the way they dress.

Each target item was recorded in two conditions: 'full' and 'reduced', referring to the pronunciation of *to*. Full pronunciations consisted of a full [t] and a short [ʊ]; reduced forms had a flap [ɾ] and a schwa [ə] (e.g. *pretend to* as "pretenda"). See Lorenz & Tizón-Couto (2019: 755–757 for detail).

The test variables were CONDITION (full or reduced), FREQUENCY and TRANSITIONAL PROBABILITY (TP). Drawn from the 'Spoken' section of the Corpus of Contemporary American English (Davies 2008–), FREQUENCY was measured as the normalized frequency of the given verb form with a *to*-infinitive complement, and TP as the relative likelihood [0,1] of a *to*-infinitive occurring after a particular verb. For example, *have to* V$_{inf}$ has a very high frequency (951.4 per mil, log = 6.86) but a rather low TP (0.136), whereas *deign to* V$_{inf}$ is the opposite (frequency 0.03 per mil, log = −3.6; TP = 0.941). A number of control variables were included, but they are not relevant to this summary.

3.2   Results and interpretation

We fitted the log-transformed response times (n = 1,367) to a mixed-effects generalized additive model (GAMM, cf. Wood 2006). With CONDITION (full vs reduced) as a moderator variable, the model tests how the effect of reduction is affected by the test variables FREQUENCY and TP.

The results are shown in Figure 5. As expected, reduced forms lead to longer response times, but this varies with frequency and transitional probability. For frequency (left panel), the curves for the two conditions both show faster responses with increasing frequency up to a point at around log frequency = 3. At higher frequencies, this trend continues with full forms while responses to reduced forms become slower. A 'chunking effect' of high frequency is thus observed for reduced forms only, and the gap between the full and reduced variants widens at high frequencies. The right panel shows that recognition of reduced forms profits from higher TP, while full forms are not affected. At very high TPs, the difference is almost completely levelled; it seems that when an item is highly predictable from the immediate context, reduction does not delay its recognition.
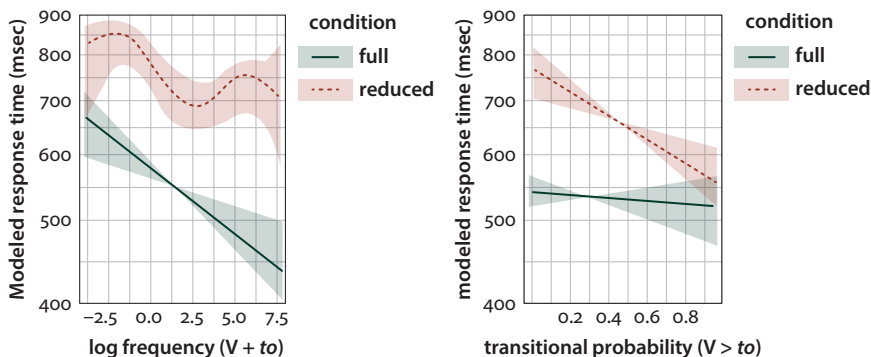
Figure 5. Estimated response times by CONDITION and LOG FREQUENCY (left) / TP (right) [Figure 4 in Lorenz & Tizón-Couto 2019]

We interpret these findings as evidence for a gradient notion of entrenchment and chunking (cf. Blumenthal-Dramé 2018). Entrenchment may come as 'procedure strengthening', where a highly frequent or probable sequence is easier to process as a string of individual elements (cf. Hartsuiker & Moors 2018). On the other hand, entrenchment can lead to chunking, such that the sequence is accessed as a single item. Both are present in our results. Procedure strengthening is seen at work where frequency facilitates the recognition of full forms and where high transitional probability helps listeners to overcome the difficulty of processing a reduced item. Chunking explains the delayed responses to reduced high-frequency items.

This leads to two broad conclusions. The first is that listeners have a tacit knowledge of frequency and probability, and that they benefit from this knowledge when faced with reduction in the input. The second conclusion is that language users do not inevitably treat high-frequency collocations as chunks. The activation of a holistic representation depends not only on frequency but also on the phonetic form of the input. We discuss in the next section how these general conclusions may interact with the modalizing function(s) of the V-*to*-V_{inf} construction.

4.   Synthesis and discussion

We will now attempt a synthesis of the findings on production and perception that were presented in the preceding sections. What are the roles of frequency and reduction in creating variant forms of modalizing expressions? How do production and perception interact in shaping the mental representations of these forms? And are the observed processes general or is modality itself a conditioning force?

The corpus study on realization variants of frequent V-*to*-V$_{inf}$ items provides evidence of coalescence in those items. There is a wide range of variation in the pronunciation of *have to, used to, trying to* and *need to*. The variants reflect different degrees of reduction and appear to be negotiated in speaker-hearer interaction. The most frequent forms are not strongly reduced, though they do involve adaptations that are expectable when V-*to* is treated as a single unit by the speaker: fricative devoicing in *have to / used to* and /t/-lenition in *trying to*. In spite of the coalescence that such adaptations suggest, these forms still give the hearer a cue to the boundary between V and *to*. More radically reduced forms which are less transparent in terms of internal morphological structure, such as "havda"/"hava" and "tryna", occur rarely and typically under strongly reduction-favoring circumstances (rapid speech, light stress accent, informal speech situations). Thus, speakers tend to avoid opaque forms and rather produce a signal that allows hearers to access and understand the sequence compositionally. This is what we have called 'conservative reduction'.

The word monitoring experiment shows that, on the hearer's side, there are strategies to recover reduced forms in speech. These strategies involve at least two perceptual processes. On the one hand, frequently encountered collocations can be accessed as single units (chunking); on the other hand, hearers can predict upcoming items based on a tacit knowledge of how a sequence is likely to continue (procedure strengthening). Evidence for chunking in high-frequency items was found, but only in their reduced variants. Thus, whether hearers access a frequent V-*to* sequence as a chunk depends on the form of the input. The effect of procedure strengthening is also contingent on input form: when faced with a reduced input, hearers profit more clearly from transitional probability, that is, they draw on co-textual information to identify the reduced item.

Combining these findings, we can derive a few general points on the interplay between speech production and perception. The frequency and probability of word sequences clearly plays a role in this, as do phonological and semantic aspects. We connect these general points to the question of what forms of V-*to*-V$_{inf}$ items are available to speakers of English to express modality.

4.1   Not just frequency

It may be seen as the most basic mechanism of speaker-hearer interaction that speakers will tend to reduce their articulatory gestures, while hearers require a sufficiently clear signal in order to process the input (cf. Lindblom 1990). The tendency to reduce has often been associated with frequency; any word or sequence of words that is frequently repeated will become a routine that is produced with

less articulatory effort (Bybee 2006: 714f). Since modalities are often expressed, modal markers are generally good candidates for becoming frequent and undergoing reduction. The contraction pattern observed in some high frequency V-*to* sequences (*going to > gonna*; *want to > wanna*) seems to follow this logic. These items have undergone univerbation, such that *gonna* is a single item and (increasingly) independent from the sequence *going to* (cf. Lorenz 2013a, b). The pattern of *to*-contraction has mostly been assumed to be couched in grammaticalization, that is, the semi-modal status of *going to* propels the use and conventionalization of *gonna* as a simple modal marker (Krug 2000; Bybee 2003a: 155f).

Our studies, however, provide evidence that the route from frequency to reduction and univerbation is not straightforward. Consider first the finding from the perception study that for high-frequency collocations, mental representations of a chunked item and a compositional sequence co-exist. It is reduction that activates and reinforces the chunked representation and thus promotes univerbation. With this in mind, the realization variants found in our corpus study reveal restrictions on frequency-driven reduction and univerbation in two ways.

Firstly, high frequency does not necessarily lead to contraction: in analogy to the case of the more established contractions, we might expect that a (very) high frequency sequence such as *have to* would be likely to be reduced to "hava" or "haffa". However, what we have seen is that the production of such drastically reduced forms is inhibited by a 'phonological hurdle' in *have to* and *used to*: the fricative preceding the /t/ sound makes it difficult for (radically) reduced variants to become more frequent in speech, as this phonological constellation inhibits a gradual reduction of /t/ (because /t/-lenition is disfavored after fricatives, and because the fricative is often devoiced). Thus, speakers will rarely produce tokens that fully collapse the word boundary, unless the contextual ingredients for severe reduction are present. The scarcity of a clearly contracted variant of a frequent V-*to* item stalls its progress towards univerbation.

Secondly, a phonological structure that is prone to reduction does not necessarily lead to univerbation. The most reduced/coalesced forms for *trying to* and *need to*, namely "tryna" and "needa", would be likely candidates for the club of established contractions (*gonna, wanna, gotta*) by analogy on the basis of phonological similarities. Yet, while "tryna" and "needa" show slightly higher relative frequencies than "havda"/"uzda", they too are not commonly used and tied to reduction-favoring conditions. To explain the lack of a conventionalized contraction for *trying to* and *need to*, we might compare their overall frequencies to those of *going to* and *want to*. It could then be claimed that they are just not sufficiently frequent to be driven down the path of univerbation. However, the story cannot be that simple. For example, the overall frequency of *got to* in current American

English is not higher than that of *trying to* and *need to*.[2] Yet, the contracted form (*gotta*) is clearly conventionalized; the contraction emerged at a time when *got to* was very frequent, and it is now emancipated enough to hold its ground (and perhaps even outlive the full form). Another contraction, *oughta* (from *ought to*), was at one point close to getting conventionalized, even though *ought to* has never been highly frequent (Leech et al. 2009: 80ff). Both *got to* and *ought to* show the phonological preconditions for a gradual reduction to *gotta/oughta*, yet the fates of the contractions do not follow parallel or predictable paths.

4.2   Not just modality

Modality and its forms of expression are notoriously variable. There are always several options available to express a given modality, which may differ in nuances or in their pragmatic associations. This shows most clearly in the variation of the central modals with semi-modals and lexical constructions (*We must work / We have to work / It is necessary that we work*). We can see such variation in somewhat finer detail in the different items of the V-*to*-V_{inf} construction and their realizations. In what follows, we will spell out our findings in terms of what variants are available to the speaker to express modalities. This comes with the obvious caveat that V-*to*-V_{inf} is almost always in variation with other structures (central modals, *that*-complementation, etc.).

We have already established that the structure 'V + (non-purposive) *to*-infinitive' is a modalizing construction, in which the matrix verb defines the modality. Thus the difference in the modalities of *try to* and *attempt to* is in the (small) difference between the meanings of *try* and *attempt*. There are only a few V-*to*-V_{inf} items that are semantically non-transparent, e.g. *going to, have to, (have) got to*, and *used to*. The modality of necessity/obligation of *have to* cannot be inferred from the semantics of the verb *have*. Diachronically, this is an outcome of grammaticalization and semantic bleaching, cf. e.g. Fischer (2015) (*have to*) and Neels (2015) (*used to*). In addition, *want to* shows signs of metaphorical extension beyond the semantics of *want* towards deontic obligation/necessity through 'projected volition' (Krug 2000: 148; Verplaetse 2003). We will propose that this semantic bleaching plays a role in reduction and univerbation (contra purely frequency-based accounts) but it cannot be treated as uncoupled from frequency (contra 'traditional' formal accounts).

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2.   In the SBC *got to/gotta* have a slightly higher frequency than *trying to* and *need to*. In COCA, the frequency rank is as follows: *trying to > need to > got to/gotta*. In the spoken section of COCA, *need to* and *got to/gotta* have almost the same frequency. Diachronically, *got to/gotta* is declining, *need to* has recently seen a massive increase (cf. Daugs 2017; Jäger 2018: 179–184).

There is a set of conventionalized contractions – *gonna, wanna* and *gotta* – that are clearly modal items, variants that speakers can choose to use and that even occur in writing. These items are not only distinguished (to different degrees) from their full forms, they also show associations between each other: there are emerging analogies in their usage, and they share a pragmatic association of 'informality' (Lorenz 2020).

The present article has been more thoroughly concerned with reduced forms which are not clear-cut variants. In production we find that "hafta" and "tryinda" may be planned pronunciation variants, but they come with little demand for interpretation on behalf of the hearer, neither morpho-syntactically (access as a single chunk) or pragmatically (informality). In perception we see that high frequency and reduction together lead to a chunking effect. We interpret this as follows. The pattern V + *to*-infinitive is a modalizing construction, that is, any matrix verb in the V slot will receive a modal interpretation. Chunking can lead to a structural reanalysis, that is an alternative parsing as [V *to*] V_{inf}, where [V *to*] is a modalizing item. Its modal interpretation is a property of this item, rather than the construction it is embedded in. The role of reduction here is firstly that it can reinforce chunking (as the perception experiment has shown), and secondly that it can create new pronunciation variants. The observed variants (in the corpus study) show how even strongly chunked/coalesced items do not easily break loose from their source construction.

Thus, there are several layers of modalizing expressions in, or emerging from, the V-*to*-V_{inf} construction, and there is always a potential for grammaticalization towards more auxiliary-like forms. As Bolinger (1980: 297) famously stated: "the moment a verb is given an infinitive complement, that verb starts down the road of auxiliariness. It may make no more than a start or travel all the way. The difference between *I plan to go* and *I will go* is one of degree". But the road of auxiliariness is no freeway. There may be roadblocks on both levels, form and meaning.

On the level of form, degrees of chunking are evident in frequent items, but strong reduction does not automatically follow and is subject to phonological restrictions; a reduced form that is distinct enough from the full form to be perceived as a distinct item will only emerge under favorable conditions (i.e. high frequency and phonological properties that allow for gradual reduction). This has been the case with *gonna*, but doesn't seem to be so for *have to* or *used to*. On the level of meaning, the construction's modal semantics in items like *I plan to go* or *I'm trying to work* is tied to the main verb's lexical meaning. If the verb is important in interpreting the construction, this may encourage compositionality and discourage the emergence of a distinct reduced form. This semantic factor has not hindered *gonna* (lexical *go* was already bleached out in *going to*), but seems to be a hurdle for *tryna* or *needa*.

4.3   Converging evidence and the role of reanalysis

We have noted above that reduction is often assumed to be concomitant with (or part of) grammaticalization (cf. Hopper & Traugott 2003: 154ff; Bybee 2003b: 615ff). Modality and modalizing expressions are a typical site for grammaticalization (cf. Ziegeler 2011), and the precedent contraction cases of *gonna/wanna/gotta* have rightly been analyzed in a framework of grammaticalization (Krug 2000; Lorenz 2013b; Mair 2017). Therefore, we consider the connection of reduction with processes of grammaticalization, namely structural and semantic reanalysis. Structural reanalysis is here coextensive with chunking, i.e. a reanalysis from 'V + *to*-infinitive' to '[V *to*] + V_{inf}' and its potential phonological consequences. Semantic reanalysis is a bleaching of the verb's meaning in [V *to*] as a modal marker (e.g. *have* in *have to* has largely lost its 'possession' sense). Our corpus and experimental studies, pulled together, provide converging evidence on the issue of how reduction might cooperate with reanalysis, if conceived as a hearer-based procedure.

In speech perception, we have shown that frequent multiword sequences allow for two possible processing paths, a compositional access to the parts of the sequence or a direct link to the item resulting from the memorized chunk. The chunked path, which implies a structural reanalysis to a single item, is activated when reduction is at play. It appears that phonetic reduction (on the side of the speaker) is critical for prospective reanalysis (on the side of the hearer).

Similarly, we conclude from the corpus study that there is a shared tendency of coalescence for high frequency V-*to*-V_{inf} sequences, that is, at least a low-level reanalysis from 'V + *to*-infinitive' to '[V *to*] + V_{inf}'. A wider conclusion seems warranted that dovetails with the notion of grammaticalization: forms with a more clearly established grammatical status, i.e. those that have undergone semantic reanalysis (*have to, used to, going to, want to*) are often produced as coalesced variants in speech (by reduction or assimilation of sounds at the word boundary). Hearers then experience these coalesced variants more habitually and, as a result, are more likely to shape a holistic representation for the whole that involves a non-compositional interpretation. Thus, phonetic reduction (by the speaker) is critical for structural reanalysis (by the hearer), and structural reanalysis may reinforce semantic reanalysis.

Overall, the evidence from the two studies suggests that the interplay between frequency and reduction is central for reanalysis. The view from grammaticalization suggests a specific role for semantic reanalysis in that semantically bleached items are more likely to be reduced. We can now put all these pieces together. In Table 1, frequency, reanalysis and reduction are combined in a brief sketch accounting for the different types of variants of V-*to* items investigated in our corpus studies (Lorenz 2013a, b; Lorenz & Tizón-Couto 2017; Tizón-Couto

& Lorenz 2018). The five scenarios outlined show three conditions on an 'ideal' route to an auxiliary-like, independent contraction: (a) the sequence is frequent and has an established coalesced variant, (b) the V-*to* bigram has been (or can be) reanalyzed with a more general sense (movement -> futurity in *going to > gonna*; possession -> obligation in *have to* > "hafta"), and (c) the phonological conditions are favorable to the fusion of V and *to*, i.e. gradual reduction of /t/ that blurs the V-*to* boundary. All of these conditions (together) are only met in the first scenario (I).

Table 1. Development scenarios for V-*to* bigrams in the V-*to*-V$_{inf}$ construction

	Conditions			
	frequency and coales-cence	semantic reanalysis / bleaching	fusion-favoring phonological conditions (/t/-lenition at morpheme boundary)	Outcome
(I)	✓	✓	✓	*gonna, wanna, gotta* as conventionalized contractions
(II)	✓	✓	✗	"hafta", "uSta" as established variants; "havda", "uzda" as articulatory reduction
(III)	✓	✗	✓	"tryinda" as established variant; "tryna", "needa" as articulatory reduction
(IV)	✗	✓	✓ / ✗	"appearda" (*appear to*), "likeda" (*like to*) as articulatory reduction
(V)	✗	✗	✓	"intenda" (*intend to*), "hayda" (*hate to*) as articulatory reduction

The first scenario (I) is where all conditions are favorable to complete univerba-tion: V-*to* items that are frequent and coalesced, that show semantic divergence from the respective verb in other constructions, and whose phonological proper-ties license the incremental /t/-reduction that tears down the internal morpheme boundary. The outcome are the contractions *gonna, wanna* and *gotta*, which are clearly distinct from their source forms, fully conventional in spoken language and emancipating from their source items in terms of usage and function.

Scenario (II), represented by *have to* and *used to*, still seems like a perfect grammaticalization setting; the items have the same properties as in (I), except that they disfavor /t/-lenition at the morpheme boundary. The outcome is pro-nunciation variation but no contraction that is distinct enough to run the course of emancipation.

As suggested in scenario (III), *trying to* and *need to* are frequent and exhibit favorable phonological conditions for univerbation (i.e. a flapping environment at the V-*to* juncture), but "tryna" and "needa" cannot be said to have become fully conventionalized contractions. What restrains them is that the semantics of the matrix verb (*try* / *need*) is too 'transparent' in terms of the lexical meaning conveyed – the meaning of *try* in *trying to* and *need* in *need to* cannot be clearly distinguished from their use outside the V-*to*-V$_{inf}$ construction. This makes the V-*to* items less prone to reanalysis and univerbation.

There are cases of at least some degree of semantic bleaching in less frequent items such as *appear to* (taking evidential meaning, cf. Aijmer 2009) and *like to* (with habitual meaning, De Smet & Cuyckens 2005). Their phonological conditions make /t/-lenition more or less likely, but the reduced form is not conventionalized in either case (scenario IV). Finally, favorable phonological conditions are also found in transparent items like *intend to* V$_{inf}$ or *hate to* V$_{inf}$ (scenario V), but these simply lack the frequency to establish coalescence and reduced pronunciation variants.

It follows from the summary above that frequency and articulatory reduction alone do not suffice as a trigger for a contraction to become conventional; structural and semantic reanalysis could not achieve this on their own either. For a contraction to become fully established, these three key ingredients (frequency, reanalysis and reduction) combine so that semantic and phonetic form conspire to promote univerbation. In other words, there is a loss of compositionality in both form and meaning; this case conforms to Bybee et al.'s (1994: 20) 'parallel reduction hypothesis', i.e. a "dynamic coevolution of meaning and form".[3]

This is, of course, a rough sketch – frequency and coalescence are a matter of degree, and the semantic and phonological conditions can probably not be taken as knock-out criteria. Yet, we think that it provides a template that shows the ecology in which reduction and contraction develop, or, to extend Bolinger's (1980) metaphor, the landscape that the road to auxiliariness has to navigate. We may speculate on how this applies to other cases of contraction. For example, with the central modals, we get the contractions *will* > *'ll* and *would* > *'d* (which are also emancipating, cf. Nesselhauf 2014; Daugs forthcoming), but not *should* > **'d, must* > **'st, can* > **'n*. Here it is the glide /w/ in the onset that allows for fusion through gradual reduction.

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3. 'Parallel reduction' simply states the correlation of semantic and phonetic reduction – Bybee & Moder (2017) spell this out specifically as a consequence of chunking and loss of compositionality.

5.   Conclusion

This paper has presented an investigation of different realizations of modal expressions of the type V-*to*-V$_{inf}$. The focus has been on attested effects of frequency, namely coalescence/chunking and phonetic reduction. When looking at this from a cognitive perspective (as we did here), the central question is about the status of realization variants as mental representations. Since mental representations underlie the production of utterances and are accessed in their perception, it is clear that valid insights are best obtained by combining the findings from speech production and perception. Thus, we explored the variants of frequent items and their usage patterns in data from a speech corpus; the role of frequency and chunking were targeted in a perception experiment.

The combined results show how processes of reduction and assimilation lead to variation and new variants, and how hearers profit from frequency information to cope with reduced input. In a nutshell, frequency and grammaticalization can lead to reduction and univerbation, but this process is not inexorable. We have seen that articulatory reduction – promoted by factors such as speech rate, prosody, situation – can lead to variant phonetic forms and strong reduction. At the same time, we observe 'conservative reduction', i.e. a tendency in speakers to balance ease of articulation against maintaining morphological transparency. In perception, hearers can often process elements more easily when they occur in a frequent or predictable sequence, that is, they apply frequency information in a compositional manner; yet we also find that reduction can be a cue to accessing a 'chunked' representation. It seems that hearers are as flexible (and perhaps reluctant) as speakers when it comes to fusing a frequent bigram into a single unit.

For pronunciation variants to take hold and conventionalize as contractions, it takes favorable conditions in speaker-hearer interaction and in the cycle of production and perception. These conditions include frequency-based chunking, semantic bleaching and reduction-favoring phonological properties. These are the ingredients that can explain why *gonna, wanna* and *gotta* have caught on as conventionalized contractions and are getting emancipated from their source forms, while pronunciation variants such as "havda", "uzda", "tryna", "needa" or "preferda" have not joined their ranks.

On the methodological level, we hope to have shown that even with intricate and at times elusive phenomena like modality and pronunciation variation, linguistic research has much to gain from carefully triangulating evidence from corpora and experiments. Corpus data alone can only provide indirect evidence on mental representations. In the present case, it would have left us guessing about the role of chunking and variant representation on the hearer's side; moreover, our analysis of speech corpus data was necessarily restricted to high-frequency items.

Experimental designs can generate data to fill these gaps (in this case by directly addressing questions of mental representations and chunking, and by including a larger set of items), but they alone will not give us an idea of the range and detail of variation that we find in natural speech data.

We think that in an ideal research cycle, corpus studies will represent an inductive stage, that is, the observations from usage data can serve to generate and refine hypotheses on the underlying mental representations. Experimental methods are most useful at deductive stages, where specific hypotheses are tested with designs that allow for a narrow focus on the variable in question and control over confounding factors. Modal expressions are important to any description of language, so researchers of modality will need/want/try to explore the possibility and necessity – as well as their own volition – to answer their research questions with a varied set of methods.

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CHAPTER 5

How and why *seem* became an evidential

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Conceived as an instance of critical meta-linguistics, this study traces how and why the expert literature has come to categorize *seem* as a marker of evidentiality. This by now common claim is seen to depend not on a more adequate account of the data, but on (axiomatic) decisions guided by underlying ideologies, the formation of theory communities, and the belief in semantic essences. As foils for comparison, my contribution will offer panoramic surveys of the earlier conceptualizations of *seem* in terms of impression-based qualifications and hedging. To start off, the article will present my own view on *seem*, which assigns the verb an invariable meaning associating two alternative conceptualizations held at the same time, where one (say, the factive) is attentionally foregrounded in one context while the other (the fictive) is backgrounded.

Keywords: evidentiality, hedging, categorization, meta-linguistics, factuality, fictivity

1.   Introduction

In the most recent word frequency list of American English, based on data from the *Corpus of Contemporary American English, seem* takes rank 165; only 37 verbs have higher frequencies, see <https://www.wordfrequency.info/free.asp?s=y>. So, for any user of English, it would be reasonable to know what meaning(s) might be associated with *seem*. To find this out, many people today will consult on-line dictionaries; there, *seem* is described as conveying (subjective) impressions qualifying states or situations in terms of the conceptual contrast of appearance and reality. Or, we learn that in using *seem* speakers or writers can make their claims less forceful. Such views have a long history; they are already found in the *seem*-entry of Samuel Johnson's 1755 *Dictionary of the English Language,* where the meaning of the verb is paraphrased as 'to make a show,' 'to have the appearance of truth,'

'an appearance without reality'; or, Johnson (1755, Vol. 2, n.p.) writes, *seem* can be used as a means to express 'slight affirmations.'

By contrast, if we consult the expert linguistic literature on *seem*, the result will be entirely different: There, *seem* is seen to relate to many diverse categories and concepts: Among them, we find non-factuality; epistemic modality, or, more broadly conceived, epistemic stance; (inter-)subjectivity; perception, inference; evidentiality, information source, hearsay; attitudes toward knowledge; reliability; lack of commitment, and hedge.

When we try to sort out these categorizations in terms of their emergence in the history of the discipline, three basic strands may be distinguished: Besides the 'impression'-view on *seem*, the verb has frequently been assigned the function of a so-called *hedge*. This category, so termed since George Lakoff's seminal 1972 article, contains an open set of lexical expressions through which speakers/writers can mitigate the force of their claims and assertions, with the effect that they become less liable or accountable for the message's content. Though basically a pragmatic notion involving speakers' strategies of 'hedging', the category associates a generalizable epistemic meaning: Hedges are located in "the region of uncertainty that lies between *yes* and *no*" (Halliday 2004: 147).

In the third strand of *seem-research*, which mainly derives from studies in linguistic anthropology and typology, *seem* is typically viewed as *a*, or perhaps even *the*, prototypical marker of evidentiality–a category whose members are, very roughly, taken to refer to information source (see, e.g., Aikhenvald 2003: 1); or, in a more elaborate formulation, *seem* is seen to relate the claim associated with an assertion (more technically, its proposition) to the source of information or the ground the speaker/writer has available for making that claim. Since this definition of *seem*'s meaning implies a speaker-based indexical function, *seem* is often analyzed as a deictic expression. And, finally, by combining strands two and three, *seem* has been described as an *epistential* (see Faller 2002: 87), that is, as a form that syncretistically instantiates both evidential *and* epistemic meanings, with either meaning component fore- or backgrounded.

Given this complex research situation, my contribution to the present collection will trace major factors that can be made accountable for *seem* having shifted its dominant meaning from 'appearance vs. reality,' via its functionalization as a hedge, to finally being conceived as a marker of evidentiality–even if, in application of a distributional view on meaning (see Sinha & Kuteva 1995; Gries 2019), what is mostly described are effectively not lexical markers but whole *seem*-constructions. There is, however, no need to re-tell the whole research story on evidentiality, nor that on *seem*, since all this has been done in sufficient detail before (see Jacobsen 1986, Aikhenvald 2004; Volkmann 2005; Hennemann 2013; Boye 2016, and especially the articles by Boye (2018), Squartini (2018) and Wiemer

(2018a) on evidentiality and epistemic modality, and also Usonienė & Šinkūnienė 2013 on *seem*). While these surveys describe what has been achieved in terms of positive 'results'-, what they do not do, in my view, is to give answers to the all-important how- and why-questions.

In addressing these questions, the major contention of this chapter is that the 'evidential' meaning(s) *seem* is supposed to associate do not derive from a new perspective on the data at hand, but from a-priori decisions based on specific theories and ideologies about categorizations and, even more generally, about language. Moreover, these decisions, I claim, have much to do with the formation of *theory-communities* ('Konzeptualisierungsgemeinschaften'; cf. Fiehler 1990), which are kept together by the (often tacit) leanings of linguists where they want to belong (or not); cf. Dance (2018: 115).

Of course, then, I am not exempt from having my own views on the meaning of *seem*. This article, therefore, does take sides: I doubt whether *seem* has ever been used to 'express,' 'indicate,' 'show,' 'signal,' or 'code' evidential meanings (to mention some predicates used in the literature to characterize the relation between the verb and its meaning; see Lampert & Lampert 2010: 310). I take the assumption that *seem* is an evidential marker to be axiomatic rather than being empirically grounded on a seemingly objective description and evaluation of the data.

When I argue here that (not only linguistic) concepts are often organized, maybe even determined, by underlying dogma, this is certainly not a dramatically new insight, but it is one that, in current linguistics, often seems to be forgotten or even intentionally disregarded in favor of allegedly framework-free or -neutral approaches (see Haspelmath 2015) purporting to just describe 'facts.' I contend that conceptualizers very often continue believing, or behave as though they believed, that scientific concepts do have essences, "presumably because the assumptions that things have essences is an effective way of viewing the world and making predictions about it" (Medin & Ortony 1989: 183). Yet, this is a legitimate strategy only, I maintain, as long as the as-if-status granted to essences is not discarded in favor of a metaphysical essentialism which ascribes to categorizations an objective and absolute factuality that presupposes direct attribute matching between the objects of the world and the categories constructed by the human mind. In reality, however, categorization ultimately is, as any cognitive enterprise, theory-based, purpose-driven, and goal-oriented–there *is* then no category of evidentiality in that sense. It seems that present-day linguists, after a brief spell of conceptual relativism in the 1990s (see, e.g., Lakoff & Johnson 1999), still reflect a world view which takes categories to be "independent of the organisms that conceive of them" (Medin & Ross 1996: 396). In the wake of the recent massive quantitative turn in linguistics, grounding on theory fragments of a radical scientism and empiricism (see, for categorical statements to this effect, e.g., Divjak, Levshina & Klavan 2016),

this seemingly new perspective on categorization appears to be informed by an (often tacit) re-emergence of the ideologies of a scientific objectivism, which, for a while at least, appeared to have been discarded forever (see, e.g, Johnson 1987).

My article may also be read as a meta-comment on what is perhaps the weakest point, not only in studies on *seem*, but in the research on evidential markers in general; it relates to the issue on how we can diagnose and identify a potential marker as an evidential. The point of concern is addressed in the following (rather blunt) remarks made by Björn Wiemer, who has long been on the forefront of research into evidentiality (see especially now Wiemer 2018b):

> […] the crucial thing then is how to obtain more objective (i.e., objectifiable) means of saying whether a given unit (or construction) has evidential meaning or not–and to which extent this meaning is inferred or coded. Even given a good workable definition of evidentiality (and I think we have some), it is still the question how we can diagnostize [sic!] what belongs there and what is only marginally related.

Wiemer (p.c.) pessimistically concludes: "I have no solution." And, I must add, nor have I.

Given these problems, it might be legitimate indeed to try and answer the question how it could happen, despite the apparent methodological deadlock, that all the *seem*-specialists so unanimously declare the verb an evidential marker (cf., most prominently, Usonienė 2000; Gisborne & Holmes 2007; de Haan 2007; Johansson 2007; Aijmer 2009; Usonienė & Šinkūnienė 2013; Whitt 2015, 2018).

The subsequent second section of my contribution then presents, in rough chronological order, a panoramic survey of the three research strands mentioned before: As the first of these, which I call the 'appearance vs. reality' view, in a way represents my own view on the semantics of *seem,* 2.1 will (via a close reading of some excerpts from Shakespeare's *Hamlet*) try to show that a conceptualization which presumes an invariable functionally defined (but non-evidential) meaning for *seem* can indeed be motivated, locating it in the semantic space between factuality and fictivity (or make-belief). Unlike most recent studies on *seem*, my view takes the concept of lexical meaning still seriously and considers all other potential meaning components to be context effects that emerge in processes of sense individuation on the utterance level (see Lampert & Lampert 2010: 319).

One reason why I have chosen *Hamlet* derives from the idea that I wanted to at least briefly illustrate how the meaning of *seem* is instantiated in discourse; another, perhaps more important one, has been based on the conviction that by Shakespeare's time *seem* had already obtained the meaning(s) and constructional variants that we find today. Since that section is also meant to be a statement about the meaning of contemporary *seem,* I have added two further analyses of coherent text fragments from contemporary English.

Section 2.2 will then proceed to reconstruct the decisive factors that led to a conceptualization of *seem* as a hedge, highlighting its potential pragmatic and strategic functions and giving some informed reasons why the hedge concept emerged where and when it did.

In Section 2.3, I will, finally, offer a meta-conceptual narrative of when, how, and why, in the expert literature, *seem* has come to be associated with evidentiality in the first place, resulting in a gradual constraining the concept of evidentiality in terms of grammaticalization processes, scope restrictions, and a constructionalization of *seem*'s meaning. A brief conclusion summing up the main points will round off my contribution–which is, I need to state, only a much condensed version of aspects that will find a more detailed treatment in a forthcoming book on the history and present state of *seem-* and *appear*-constructions in English (see G. Lampert, forthcoming).

2.   Three research strands of conceptualizing *seem*

2.1   An invariable core meaning: *Seem* between appearance and reality

When, in the past, attention was paid to the meaning of *seem* at all, it was exclusively in the context of compiling dictionaries. So, to learn something about what meaning *seem* might have had in earlier times, we would almost exclusively have to rely on the (meta-)information contained in dictionary entries. Dictionaries of the past *can* be seen as sources of inspiration because they not only strove to find the ultimate origin of a word (its etymology) or attempted to describe their lemmas' meanings, they at the same time very often reveal important contemporary meta-information, especially when the entries are understood against the background of the times in which they were written (see, e.g., Lancashire 2018).

The first preliminary end-point of *seem*'s lexicographical history was reached in the eighteenth century. In the other large dictionary, compiled by Scott and Bailey (see Scott 1755), *seem* for the first time received a description of its semantics in terms of assuming various senses. There, and in Johnson's dictionary as well, it is first and foremost associated with 'appearance,' that is, with 'illusion of truth' ('truth without reality'); like in the other dictionaries of the time, we find no traces of any evidential sense that would relate *seem* to information source. Instead, most dictionaries, if they are interested in the meaning of *seem* at all, paraphrase the verb with 'appear'; this strategy can still be observed, e.g., in Walter Skeat's famous *Etymological Dictionary* (1882), which provided an important source for the *seem*-entry in the *Oxford English Dictionary* (which, in turn, serves as the information source for *seem*'s history in practically all diachronic linguistic studies; see G. Lampert, forthcoming). If the succinct Scott-Bailey paraphrases

are interpreted imaginatively, one could say that in using *seem* a speaker/writer considers correspondences between an (external) stimulus and an (internal) cognitive state–the external stimulus produces an 'impression' in a speaker-conceptualizer that will eventually lead them to ascribe the stimulus certain qualities. The correspondences between stimulus and impression may be fitting, brought into harmony, that is, into 'one' (with the result that they are then conceived as identical). Or, the correspondences between reality and impression may be only similar, that is, they *cannot* be brought into conformity, resulting in their discrepancy being expressed by *seem*. In either case, what *seem* requires is an inference on the part of the conceptualizer that will lead them to either a more 'factive' or to a more 'fictive' view of the quality or the situation to be assessed. Both alternatives can be expressed by *seem*, and it is this double-faced feature that might have motivated the existence of a word with that meaning (a similar modern view on *seem* can be found in Halliday & Webster 2014: 78–79).

In fact, this semantics can already be detected in *seem*'s ultimate source; for, if one goes really far enough back in time, the form of the English verb is found to be a reflex of an Indo-European root **sem-*, or **sm̥-*; and this observation gives us at least a partial explanation of the evolution of the group of *seem*-verbs' similar meanings in different European languages. The root that is listed in standard reference works of Indo-European is assigned the meaning 'one, together' <https://lrc.la.utexas.edu/lex/master/1686> and is said to be the source of many lemmas in Indo-European languages; I here give only a selection:

– Old English: *same*
– Middle English: *beseem, same, semely, semen*
– Old Norse: *samr* 'same,' *soemr* 'seemly', *sóma* 'to beseem, become,'
– Latin: *sim-* 'one,' *similar* 'copy'
– Old French: *resemble, sembler* (see also Pokorny 1959: 902–905; and <http://www.koeblergerhard.de/idgwbhin.html>.

English dictionaries from the 16th to the 19th centuries considered such etymological speculations more exciting than providing further information on *seem*'s meaning; they thus were often content to paraphrase the verb either by using its competitor *appear* or even by *seem* itself: *seem* was then defined as meaning 'seem'.

The very first attestation of *seem* in English dictionaries is contained in the 1475 *Catholicon Anglicum*, an English-Latin dictionary compiled anonymously at some point during the fifteenth century (see Stein 2004). From the respective paraphrase "to *Seme*; *Apparere, decere*" (see Herrtage 1882: 329), we can deduce that the modern 'appear'-meaning of *seem* was available for speakers/writers to draw on at that time already.

One of the best-known instantiations of *seem* in the universe of English texts is found more than a century later in Shakespeare's *Hamlet,* written between 1599 and 1602. There *seem* is placed in a semantic space located between reality and appearance. Shakespeare scholars have been aware of this theme for quite a while; so, for instance, in Theodore Spencer's seminal 1938 article on "Hamlet and the Nature of Reality," the topic of appearance and reality was dignified as no less than "*the* philosophical problem"–a "problem which involves the emotions, the whole human being," characterizing "one of the essential stages in the growth of consciousness" (Spencer 1938: 253). And in Wolfgang Clemen's famous *Festrede* of 1959, *Schein und Sein bei Shakespeare* (see Clemen 1959), the said opposition was presented as one of the central concerns of Shakespearean drama in general. *Seem* (together with its competitor *appear*, which, for obvious reasons of space, I will have to virtually ignore in the present article), has become the linguistic epitome of this conceptual clash.

To at least briefly substantiate such general assessments, I refer to the famous first occurrence of *seem* in Hamlet I.2 (lines 66–86). The passage to follow relates to Hamlet's actual first words in the play when the new King Claudius asks him "How is it that the clouds still hang on you?", and Hamlet replies "Not so, my lord, I am too much in the sun." Then, Queen Gertrude, Hamlet's mother, intervenes:

(1)   *Queen:* Good Hamlet, cast thy nighted colour off
        And let thine eye look like a friend on Denmark.
        Do not for ever with thy vailed [veyled, F] lids
        Seek for thy noble father in the dust.
        Thou knowst 'tis common all that live[s, F] must die,
        Passing through nature to eternity.

        Hamlet: Ay, madam, it is common.

        Queen: If it be
        Why *seems* it so particular with thee?

        Hamlet: '*Seems*', madam – nay *it is, I know not 'seems'.*
        'Tis not alone my inky cloak, cold [good-, F, Oxford] mother,
        Nor customary suits of solemn black,
        Nor windy suspiration of forced breath,
        No, nor the fruitful river in the eye,
        Nor the dejected haviour of the visage,
        Together with all forms, moods, shapes [shewes, F] of grief,
        That can denote me truly. *These indeed 'seem*',
        For they are actions that a man might play,
        But I have that within which passes [-th, F] show,
        these but the trappings and the suits of woe.
        (In the quote I have included the available textual alternatives from the
        Quartos and the Folio edition; the text itself follows the Third Arden edition;
        cf. Shakespeare 2006)

This is, as Terry Eagleton (1986: 71) has convincingly argued, above all a metalinguistic, or rather a meta-conceptual speech on 'seeming' vs. 'being'.

The evidence of outward 'show' (or *shapes*, for that matter, as the textual variant has it) that is presented in these lines will utterly mislead people's judgments in the play, but it is precisely the conceptual space in which *seem* is to be situated, with its unexpressed counterpart, namely factive *is*, being always present in a backgrounded way to act as foil for comparison, as it were. Oscillation or vacillation between the imagined as-if world of fictivity, illusion, pretense, and show on the one hand, and factivity, truth, and reality on the other, is, I claim, invariably evoked by any *seem*-occurrence–and this, I contend, is so still today. In more general terms, then, *seem* associates two alternative conceptualizations held at the same time, where one of the alternatives–say, the factual–is attentionally foregrounded in one context and backgrounded in another (see also G. Lampert 2011, 2015, and M. Lampert & G. Lampert 2013).

Beyond language matters, that is, if we refer to the cognitive systems of sensation and perception, the core meaning of *seem* can thus be linked up with another well-known fundamental opposition–that of figure and ground. Figure-ground organization was made popular by the Danish psychologist Edgar Rubin (see Rubin 1921/1915; Palmer 1999: 250ff), covering an aspect of region segmentation in visual displays where one partitioned-out segment is subjectively perceived as thing-like, closer to the observer, bounded by contours (in stationary displays), and as moving (in moving displays), while the other is perceived as not thing-like, farther from the observer, extending beyond the contour, and stationary. The first type of segment is called the *figure*, the backgrounded one the *ground*. Sometimes, however, such visual displays tend to become highly ambiguous (the most famous example would be the Rubin vase); so other (stimulus-driven and concept-driven) factors will be needed to determine what becomes figure and what becomes ground. Applying this vision-related constellation to the meaning of *seem* (assuming a plausible mapping across cognitive domains), one may observe that the segmentation of the semantic space into a 'fictive' and a 'factive' segment often tends to be likewise ambiguous or vague. The principles that may eventually determine figure detection in vision are, according to Palmer (1999: 282), *ceteris paribus* rules–"rules in which a given factor has a stated effect if all other factors are eliminated or neutralized." Yet the problem immediately emerges that the factors Palmer mentions (surroundedness, size, orientation, contrast, symmetry, convexity, parallelism) usually do not occur in isolation; hence, it seems impossible to predict the perceptual outcome if several conflicting factors are at work in a display. And the same difficulty to predict in advance what should be their actual meaning is characteristic of *seem*-verbs (including *seem, appear*, or *look*).

Pushing the analogy of figure-ground organization in vision and in language further, one would then have to ask what could correspond to Palmer's vision-related factors in language; that is, which factors might be responsible for addressees favoring one reading in the systemically ambiguous factive/fictive configuration (the *seem*-semantics). If in vision such factors relate to the ecology of the configuration in question (or maybe to deliberate decisions of the observer), in language they may, accordingly, be found in the linguistic or non-linguistic environment of the item in question (see also Wiemer & Kampf 2011 on possible 'tip effects' in Slavic epistemic-evidential constructions).

Returning to *Hamlet,* I need not go on quoting more examples at this point, but one last observation *is* indeed worth mentioning, as it actually lends some support to my reading: It has been noted that Act V of *Hamlet* is different from the first four acts (see e.g. von Koppenfels 2000: 536–537 or Müller 2006: 46)–mainly because Hamlet is presumed different in that act: There is no more playing on words, no more 'evading of signifiers'–and thus, no further occurrences of *seem* are to be expected. Indeed, Hamlet's world has now finally become a world of *is,* as he had pretended it to be already at the beginning of the play; and his claim of Act I ("I know not seems") has now come true at last. Importantly, we find no reference at all to any 'source of information' that *seem* may be supposed to 'indicate,' 'mark,' or 'code.'

As I strongly hold that my reconstructed meaning of *seem* is not just of historical importance but is valid for contemporary English as well, I give two further illustrations from present-day English, which will, hopefully, show that the tension between a context-dependent 'factive' and a 'fictive' reading of *seem* is still applicable today. Take this one:

(2)   Archaeology perhaps *seems* "old" because we associate it with early
       civilizations (which we need not do), but in fact rigorous archaeology *is*
       very modern indeed.   (www)

In this example, the *because*-clause provides the necessary contextual evidence for a potential claim 'archaeology is old.' This categorical assertion is, however, immediately mitigated by the speaker's comment that is inserted within the parentheses. Though that comment is, according to the still dominant but (often erroneous) view of parenthetical constructions (see M. Lampert 2011), informationally less salient than the information contained in the host construction, the parenthetical comment nevertheless is responsible for activating the fictive reading of *seem*. This reading of *seem* is, in a next step, additionally motivated by the inclusion of *perhaps* (assigning a low degree of epistemic certainty to the associated claim). And, finally, the added *but*-clause contains yet more support for the intended fictivity

reading, namely by virtue of the selected syntactic form, this time a categorical assertion, and the booster *in fact*. Thus, all in all, we find four 'triggers' that are used here to disclose the assertion 'archaeology is old' as a dubious assumption, and the potential reason for this assumption is revealed in the *because*-clause as a pseudo-argument. Yet even then, the author still did not wish to make a negated statement of the form *Archaeology is not old.* Instead, she or he preferred to choose a *seem*-construction–maybe because, I would suggest, using *seem* always provides interlocutors with the (strategic) option to cancel the salient reading by later adding a statement of the sort *I only said <u>seemed</u>, and didn't mean 'is.'*

If in the first example we could observe various sense activation triggers that make the fictivity reading of *seem* more salient (i.e., figural), in the example below it is the alternative factivity reading that is moved into the foreground of readers' attention.

(3)   And with this story of a psycho-cop who tries to run off his new next-door neighbors, you wish he'd have just given into the B-movie instincts of the material, and not tried to make "Lakeview Terrace" about Something Important. As an overzealous Los Angeles police officer, Samuel L. Jackson clearly *seems* ready to head down such a cliched, schlocky road. He is, after all, the one who triumphed over all those (expletive) snakes on that (expletive) plane.   (www)

In this case, we find the 'evidence' for the stated proposition in the immediate linguistic environment. The intended factive reading of *seem* is activated by *clearly*, which adds some extra epistemic support to the veridicality of the proposition qualified by *seems*. But here, too, the writer refrains from uttering an unmodified *clearly is ready*.

So it has turned out that, like in vision, "attention cannot be completely determined by figure/ground organization" (Palmer 1999: 284). If it were so, the ground could not be attended to–but we know that it can. If this insight is transferred to what may happen in language use, top-down decisions of the hearer/reader may always override the triggered reading; and so the following quote from Palmer (1999: 284) can be read as an apt summary of the corresponding situation in language: "It thus seems clear that attention can be flexibly allocated to either figure or ground, depending on the goals and intentions of the observer, but that there is a strong bias to attend to figures."

As to *seem,* and to what I take to be its core semantics, it is systemically and invariably seen to be ambiguous between a speaker's/writer's assessment of the situation as 'factive' or 'fictive' (or 'real' and 'apparent', to use Halliday's terms); the ambiguity might be dissolved by using (optional) sense activation triggers (such as *only, really*, etc.; cf. G. Lampert 2015), but the specific reading of *seem* in context

ultimately depends on hearers'/readers' attentional top-down assignments. So it is not 'objective' reality that is assessed, but reality as it presents itself to an observer's cognition determines the ultimate reading of *seem* in context.

2.2   *Seem* and the hedging paradigm

From among the sub-senses that Johnson and Scott-Bailey listed in their dictionaries (and which, in 1911, found their way almost unaltered into the description of *seem*'s semantics in the *Oxford English Dictionary*, and have remained there ever since), it is the sense that considers *seem* as an expression used to mitigate the force of the assertion which was adopted, much later, in linguistic studies on *seem*. This specific function of the verb was in fact known and made use of in the eighteenth century already. Robert Boyle, for instance, one of the founders of modern chemistry and the experimental scientific method, comments on his own use of language as follows: "[…] in almost every one of the following essays […] I speak so doubtingly and use so often *perhaps, it seems, it is not improbable,* and such other expressions, as argue a diffidence of the truth of the opinions I incline to […]. I dare speak confidently and positively of very few things, except of matters of fact." (Boyle 1777: 307; quoted in Varttala 2001: 56)

   It was, however, only after the concept of a *hedge* had been introduced by George Lakoff in 1972 (grounded on fuzzy set theory and Eleanor Rosch's studies on prototypes) that the association of *seem* with mitigating the force of an assertion gradually became fashionable. For the first time, we can observe that theory turns out to be a (perhaps *the*) decisive factor for the association of *seem* with a particular function: Applying fuzzy set theory and prototype views on categorization were, on Lakoff's side, a strong reaction against what he considered the dominant theory of categorization in terms of necessary and sufficient conditions for membership (a view he correlated with both formalist semantics and generative grammar; cf. the detailed discussion first in Lakoff 1987, and then in Lakoff & Johnson 1999). In terms of a rigid implementation of an 'us' vs. 'them' division of linguistic theory, Lakoff saw the hedge concept as one that 'they' of course did (and could not) not have. And such stance made it subsequently easy for other non-generativists to adopt and adapt the hedge concept to other linguistic items.

   But: Lakoff's definition (1972: 195) of the hedge concept (a word or phrase "whose job it is to make things fuzzier") could only be applied to *seem* with difficulties. In an attempt to lend more precision to the concept, Prince, Frader, and Bosk (1982/1980: 4–5) factored out those hedges that were exclusively studied by Lakoff (such as *sort of, kind of, strictly speaking,* etc.) as so-called *approximators*. While their function was analyzed as having an effect on the propositional content of an utterance by making it 'fuzzier,' a second class of hedges, called *shields*,

was described as correlating "with fuzziness in the relationship with the propositional content and the speaker, that is, in the speaker's commitment to the truth of the proposition conveyed." In a next step, the authors then distinguished between *plausibility shields* (related to 'doubt'), and *attribution shields*, "which primarily simply attribute [...] the belief in question to someone other" (Prince et al. 1982/1980: 11). Accordingly, *seem* was categorized as a member of the plausibility shield class, whereas *according to*, for instance, was considered an attribution shield. I may note that the subdivision of the two hedging types of plausibility and attribution shields corresponds with the common distinction made in later research on evidentiality between inferential evidentials on the one hand and reportatives/hearsay markers on the other–a division which recently has led Nuyts (2017: 68ff.) to eventually deny evidentiality any kind of conceptual coherence. Prince et al.'s terminological distinctions have only sparingly been applied in subsequent practical research, though–nor indeed have any further subdivisions of the hedge category suggested in the literature, e.g, in Caffi (1999, 2007), Hübler (1983), Hyland (1998), and Diewald (2006), to name just a few. Instead, it is still the global concept of a hedge that is generally applied quite indiscriminately to all sorts of phenomena (for reviews of research see Clemen 1997; Varttala 2001; Diewald 2006; Caffi 2007; Kaltenböck et al. 2010; Fraser 2010; Schneider 2010; Schröter 2018). And the distinction between the semantic approach to *hedge expressions* favored in Lakoff's original article and the subsequent pragmatic view on *hedging activities* as they were first introduced in Brown and Levinson's politeness study of 1978 has, in the course of time, as much been blurred as have differences between the hedge concept and epistemic modality. To illustrate, I refer to just a few examples:

– As mentioned before, Prince et al. (1982/1980: 11) takes *it seems that* as a shield whose effect it is that "the speaker has implicated that s/he is not fully and personally committed [...] to the belief that the relevant state of affairs actually obtains."

– Caffi (1999: 893), on the other hand, anchoring *seem* in her mitigation framework and implementing a tripartite division of bushes, hedges, and shields, considers *seem* as a hedge, whose function it is to weaken "the speaker's degree of certainty about the proposition." Such definitions of course evoke classical definitions of epistemic modality; just consider Lyons (1977: 797): "Any utterance in which the speaker explicitly qualifies his commitment to the truth of the proposition, expressed by the sentence he utters, [...] is an epistemically modal or modalized utterance."

– And while Hübler (1983: 118) conceptualizes *seem* in very general terms as a type of a hedge that connects a clause in which it occurs with the validity of the proposition a speaker thereby makes, his specific meaning description

simply sees it as a "weak assertive verb," emphasizing its cognitive character by suggesting that it expresses "mental states."

– In their attempt to relate hedges to the Gricean maxims, Brown and Levinson (1987/1978: 164) categorize *seem* as a so-called "quality hedge" (with *quality* referring to Grice's maxim of quality) whose function they see in that "the speaker is not taking full responsibility for the truth of his utterance," thus making the face threat more acceptable to the hearer.

– Hyland (1998: 124f.), in his monograph on hedging in scientific research articles, draws on all three of the related categories of hedge, modality, and evidentiality when he has *seem* represent a hedge class that consists of "epistemic evidential verb[s], which refer[s] to "evidentiary justification" based on the writer's sensory (preferably visual) evidence.

– Diewald (2006: 308ff.), promising a new view on the hedge concept, considers hedges as perspectivizers, by which speakers/writers can mark an 'undercutting' ("Unterschreitung") of constituents, propositions, and speech acts below an assumed default or standard value (which obviously has to be defined for each case anew). In the case of *seem* (here categorized as a propositional hedge), this default appears to be the categorical assertion (though this is never stated explicitly). Hedges (or, rather, *hedging*) is, for Diewald (2006), a discourse-pragmatic strategy or a device which has a 'blotting' or restricting function, in that any instantiation of hedging signals that the 'normal' interpretation associated with an utterance is not to hold. The consequence of such a view would be that it is principally impossible to state in advance which expressions can serve a hedging function. Notwithstanding this general premise, Diewald proceeds to mention some typical hedging expressions, and among those she focuses on, the verb *seem* is, not unexpectedly, (re-)categorized as an evidential marker, whose function it is to 'objectify' the claim made in an utterance, because evidentials are said to name the conditions which make the proposition conveyed in an utterance valid (on this problematic issue see 3.3 below). This is obviously different from Meyer (1997: 21), who sees the major function of hedging (in written communication) as *strengthening* an argument by weakening the claim (making the speaker less vulnerable by objections).

– Fraser (2010: 24), finally, in his long review of the conceptual history of hedging, simply lists *seem* among members of a heterogeneous class of epistemic verbs (together with *appear, believe, assume, suggest*), without providing any detailed comments, though.

Generalizing, we observe a frequent matching of the hedge concept with the concept of epistemic modality–but the matching is not complete; for hedges always appear to make the strength of the assertion *less* forceful (recall Diewald's notion

of 'undercutting'), corresponding with the effect that the associated proposition is *less* certain, while instantiations of epistemic necessity can give an extra boost to the validity of the proposition they are applied to (for instance, in using epistemic *must*).

I have found that despite the obvious associations of the hedging strategy with epistemic modality, they were hardly ever thematized in detail–perhaps because modality was, during the heyday of hedging research, still considered a concept that was housed in logic rather than in linguistic pragmatics (a supposition that still finds support when one consults leading textbooks, e.g., Palmer 2001 and Portner 2009).

And, on top of that, all the studies on the relation between *seem* and hedging (except Diewald 2006) suffer from an inadequate treatment of evidentiality; one just needs to read Schneider (2010: 257, 263), an otherwise very reliable state-of-the art report. So, while the association of *seem* with the hedge concept still lingers on (in quite unsystematic ways, though; see Aijmer 2009: 78; Usonienė & Šinkūnienė 2013: 407), this view gradually gave way to linking the verb explicitly up with the category of evidentiality.

2.3   How and why *seem* turned evidential

The now hegemonic view of *seem* as an evidential marker saw the light of day unexpectedly and quite abruptly in the studies by Wallace Chafe (1986) and Marianne Mithun (1986), both appearing in the proceedings of a conference staged at the University of California, Berkeley, in 1981. I would be hard pressed indeed to find a serious study on *seem* that does not mention this collection. What is less known, however, is that the first explicit reference to *seem* as an evidential marker does nor occur in that famous work but in a short article written in 1972 by Dwight Bolinger (in turn based on a talk he gave in 1967 on the syntax of Spanish *parecer* in comparison to English *seem*). In that article, Bolinger describes the two verbs' common meaning as "that which is evident to the senses" (Bolinger 1972: 65), thus categorizing *parecer* and *seem* as representatives of what today would be seen as direct (perceptual) evidentiality.

If one has a look at the researchers who early on associated *seem* with evidentiality, one cannot but suspect that one reason why evidentiality caught on as a new category has nothing to do with discovering new data or with more descriptive adequacy, but with a phase in the history of western linguistics that has been dubbed elsewhere as the 'Linguistic Wars' (cf. Harris 1993). In fact, both the hedge concept and evidentiality became popular first among American West Coast linguists: Chafe and Lakoff were both at Berkeley at the time, and they were definitely opposed to the then dominant Generative Linguistics framework. Talmy Givón

(1982) and Joan Bybee (1985), who wrote seminal studies addressing the new concept of evidentiality, were at UCLA, and Thomas Willett, who became well-known through his 1988 classification of evidentials, was a field worker for the Summer Institute of Linguistics located in New Mexico. Mary R. Haas, finally, who has been credited in Anderson (1986) as making the evidentiality concept popular by her teaching, was also a long-time faculty member at Berkeley (so was Leonard Talmy, who mentioned the concept in his "Lexicalization Patterns" study (Talmy 1985: 136f.)). In fact, evidentiality did not become a stock concept among formalists and Generative linguists before the end of the twentieth century (for early specimen cf. Izvorski 1997 and Cinque 1999; Rooryck 2001a, 2001b for a brief state-of-the art report). Even if we have to reckon with large-scale differences among the linguists involved in establishing the evidentiality concept, in their anti-generative stance they clearly formed a theory group in the sense of Fiehler (1990).

The professedly anti-generative perspective holds for those linguists as well who later propagated the concept in Europe; none of them, to my knowledge, has ever been affiliated with the formalist or the generative camp. So, it was indeed the theoretical leanings of the linguists which proved to be pivotal in the emergence of the concept of evidentiality.

Take Chafe as a first and highly characteristic example. The first sentence of his 1986 article (which had a prequel in a 1985 publication on speaking and writing) was sufficiently straightforward: "English has a rich repertoire of evidential devices." It was this categorical assertion, formulated like an axiom and thus never in need of any evidentiary support, that in hindsight has opened the gates for studying lexical markers of evidentiality, for English does not have any morphological ones. And *seem* was, right from the beginning, understood as a paragon case of those 'lexical devices.' True, there had been many studies on evidentiality before Chafe and his co-contributors (especially on indigenous languages of the Americas), and the relevance of the concept had been noted much earlier–definitely by Spanish grammarians of the fifteenth and sixteenth centuries when they began to study the languages of the conquered peoples (see, for details, Dedenbach-Salazar Sáenz 1997: 294). The existence of evidentials has even been claimed for fourth century BCE Sanskrit texts and eleventh century Turkic ones (cf. Friedman 2018). But all those languages had what today would be called *grammatical systems* of coding information source (realized by clitics or specialized morphemes). Given this prominence of evidentiality as a grammatical category, it has become a kind of ritual in studies on supposedly evidential expressions in Germanic, Romance, and Slavic languages to emphasize that the category of evidentiality can (*pace* Aikhenvald 2003, etc.) in principle also be expressed lexically. Reading these accounts, one may get the impression that the incorporation of the category of evidentiality in European languages reveals a kind of typological inferiority complex–in the

sense of 'we want to have it also,' even leading to the assumption of a category such as *TAME* 'Tense, Aspect, Mood, Modality, Evidentiality'; see Nuyts 2017 for a succinct criticism of that concept. This might explain why Diewald and Smirnova (2010), for instance, have gone so far as to postulate the existence of a *grammatical* category evidentiality even for German (realized by the verbs *scheinen, drohen, versprechen*, and *werden*); in line with this trend, Gisborne & Holmes (2007), Aijmer (2009), Usonienė & Šinkūnienė (2013), or Whitt (2015), to mention the most detailed studies on *seem*, likewise insist that the verb has been grammaticalizing in English. In fact, however, assuming an extended construction-based grammaticalization path for *seem* runs into almost insurmountable difficulties, since all *seem*-constructions were recorded in English in a very short time interval in Early Middle English (see Lampert, forthcoming, and the appropriate dates given in the *Middle English Dictionary*).

Returning to Chafe, we note that, in terms of his general commitments, he himself was perhaps more a genuine functionalist than his successors in Europe (even if they explicitly consider themselves functionalists), for he conceived a very broad conception of evidentiality (in turn much criticized later on), linking it up with general attitudes toward knowledge (cf. Chafe 1986: 262) and comprising modes of knowing, including evidentiality "per se" (vii). First of all, he placed *seem* in the (evidential) category of induction or inference (cf. 1986: 266), paying attention to the crucial fact that "English often signals only that induction has taken place, without any indication of what the nature of the evidence was […]." Chafe was not the first to observe this important point, but John L. Austin's contribution, which expressed a comparable view (see below), is still hardly known in the literature. Instead, this basic insight is now usually cited in Aikhenvald's (2003: 1; emphasis G.L.) wording: "Evidentiality proper is understood as stating the existence of a source of evidence for some information; that includes *stating that there is some evidence*, and also specifying *what type of evidence* there is."

On another issue, Chafe (1986: 266)'s view has become more popular: With *seem* being said to "indicate […] less certainty about the conclusion," Chafe assigns the verb both evidential *and* epistemic functions. And, finally, *seem* is envisaged to undergo contextually-based shifts in meaning: For instance, it can, Chafe (1986: 268) claims, occur as a hearsay marker. It is quite telling, however, that the example he cites (*Well Shaeffer it seems had just found the latest article from the Smithsonian*) by no means unavoidably relates to hearsay evidence; without more specific contextual information, the assertion could in fact be based on any other kind of information source.

Multifunctionality of meaning is also postulated for *seem* in the article by Marianne Mithun from the same volume (see Mithun 1986; likewise, but much later, in Aijmer 2009). Her study is relevant in so far as it touches upon many of

the problems that have since then troubled *seem*-research. First of all, she introduces the term *evidential marker*, and provides a very broad definition: "Evidential markers qualify the reliability of information communicated in four primary ways. They specify the source of evidence on which statements are based, their degree of precision, their probability, and expectations concerning their probability." (1986: 89) So, for Mithun, evidential markers have four functions: The first of these correlates with evidentiality as indicating 'information source,' the second with the hedge concept, used here in Lakoff's (1972) terms, the third with epistemic modality, and the fourth with what today would be analyzed as the category of mirativity. Mithun (1986: 90) states that in English single markers can serve several of these functions, citing *seem* as an example: "It [*seem*, G.L.] can indicate that a statement is based on appearance. ('Sam seems tired.') This specification of source [stated where? G.L.] can hedge probability. […] With a slightly different construction, 'seem' can indicate hearsay. ('It seems that Sam's in the hospital.')." She sums up by stressing the "fluidity" of a broadly conceived evidential system: "A given marker will very often serve several of the four functions listed above, simultaneously, varying with context, or with a change in the grammatical structure of which it is a part." (Mithun 1986: 90) This latter remark clearly reads like a foreshadowing of the constructional view on *seem* that was to emerge later. (By the way, a forerunner of a constructional view on *seem*'s meaning(s) is actually found in the descriptive part of the *OED* entry on *seem* already, and, even much more fine-grained, in the *Middle English Dictionary*; cf. Silva 2000; Lewis 2002 on principles of sense separation in the *OED* and the *MED*, respectively.)

In the 1980's and 1990's, the verb's association with a specific syntactic phenomenon became more prominent than any supposed conceptual links to evidentiality: *Seem* was considered *the* prototypical specimen of the syntactic process usually referred to as (subject-to-subject) raising (see Olsen 1981 and Seppänen 1987 for early pieces of research). The process of raising itself was also discussed among Cognitive Linguists (see Newman's (1981) unpublished dissertation and Langacker 1995; de Haan 2007; Boye 2010b). Practically unnoticed by the linguistic community, the raising perspective on *seem* and its conceptual links to evidentiality and epistemic modality were combined in a contribution by an outsider; Julia Barron, based on a talk given during a Lexical Functional Grammar conference in San Diego, has claimed that raising verbs such as *seem* are markers of epistemic modality (Barron 1997: 4), but, at the same time, they "in some way express the source of or grounds for the speaker's belief. They are evidentials." The raising construction variant of *seem* (as in *she seems to be tired*) has meanwhile come to be associated as either a very typical or even as the *only seem*-construction with an evidential function (see de Haan 2007; Diewald & Stathi 2019)–an implicit

instantiation of a 'syntax-first' principle, now often reformulated in its 'construction-first' variant.

Another important strand of research has linked lexical evidential markers such as *seem* with the pragmatic concept of deixis–an assumption which is often said to derive from Roman Jakobson's idea of conceptualizing evidentials as so-called *shifters* (the term itself, adopted from Jespersen, has never really caught on; cf. Jakobson 1971/1957). But the reference to Jakobson needs some scrutiny. Shifters, in Jakobson's view, are not simple indexicals which point to an object, but they are conceived as so-called *indexical symbols*. This means that the shifters have a meaning beyond their pointing function (in the case of *I*, for instance, this symbolic meaning would be 'addresser').

The complexity of the matter shows up in definitions of evidentiality that use the verb *indicate* to describe the relation which a potential evidential marker establishes with respect to the information source claimed. In English, *indicate* is found as having two basic senses, which associate both the symbolic and the indexical function of shifters. The first is 'to point to, refer to' (that is, serving as a trigger reaching beyond the expression at issue to some context element), the second is 'state, express,' which serves to encode a meaning encapsulated within the expression. Thus, using *indicate* in definitions of evidentiality will produce an (unwanted) ambivalence or vagueness: If *seem* is said 'to indicate' some source of information, this may 'refer' or 'point to' that source; in the alternative reading of *indicate*, it may be 'expressing' or 'encoding' the evidence (in the same way, e.g., as a tense marker codes a specific time relation). Unfortunately, in most accounts, the specific reading of *indicate* is not made explicit, nor are the relevant readings of the other verbs used in the definitions of evidentiality (see on this point G. Lampert & M. Lampert 2010; since that article appeared, the situation has not changed). *Seem,* if it were conceptualized in Jakobson's terms as a symbolic indexical, would then primarily be used as a kind of *trigger* or *cue* (for a detailed explication of these concepts cf. G. Lampert 2015) that directs hearers'/readers' attention beyond the trigger itself–perhaps resulting in a very complex concept of a construction that would have to reach out to and include non-linguistic contexts. At the same time, however, *seem* might in turn be assigned a generalized meaning, perhaps in terms of assessing a situation as being located between 'is' and 'is not.'

Conceptualizing *seem* along these lines will evoke yet another problem. Specialists in pragmatics will certainly remember that, in the second of his maxims of quality, Grice (1989: 27) categorically states: "Do not say that for which you lack adequate evidence." Interpreted in a strict sense, this would mean that any utterance obeying the cooperative principle and abiding by the maxims requires some evidentiary justification. In this vein, therefore, there would be no difference between categorical assertions containing a form of *to be* and a proposition

qualified by *seem*. In either case there would be no obligation to make the specific evidence overt; recall, e.g., that we have learned above that English evidentials may only state *that* there is some (unspecified) evidence. So, in this respect, there would indeed be no evidentiary difference between *She is sad* and *She seems sad*; the two versions would even instantiate the same syntactic construction (cf. White 2000 on that very issue). Nevertheless, it is still being maintained that there *is* a categorical difference; cf. for instance, Diewald et al. (2009: 194), where the authors state that an evidential construction stands in contrast to a categorical assertion, which is conceived as a "factual claim that is neutral to its communicative context: it does not make any reference to some other linguistic or non-linguistic entity."

The usual counter-argument brought forward against the equation of a copular construction with *is* and one containing *seem* is based on the assumption that in using *seem* an extra secondary predication is established which is applied to a proposition serving as the primary predication (see already Anderson 1986; now especially Boye & Harder 2012, but also, in a different framework, Kaltenböck, Heine & Kuteva 2011: 872). If that argument were valid, however, an utterance such as the copular construction *she seems* + adjective (e.g., *She seems sad*) would, in contrast to *She seems to be sad*, not associate an evidential meaning–a consequence that would, in turn, completely disrupt a coherent description of all *seem*-instantiations (as can be witnessed, for instance, in Diewald & Smirnova 2010 for German *scheinen*). If that is *not* desired (cf. Whitt 2018), one would have to be forced to find some sophisticated way out of the dilemma: One solution might be the idea of a secondary predication containing *seem* having propositional scope; then, *She seems sad* would have to be considered an elliptical version of *She seems to be sad,* (cf. also the concept of propositional coercion as formulated in Boye 2010a, 2012).

I should note in passing that, for Jakobson, the prototypical evidentials were all quotatives, which, amazingly, were later often excluded from the class of evidentials (for a discussion, see, e.g., Lampert & Lampert 2010 vs. Boye 2010a, 2012). Again, it was not a functional nor a semantic argument that turned out to be decisive, for it is generally known that quotations may serve as an important source of evidence (for instance in court trials; cf. Matoesian & Gilbert 2015); instead, it was a *formal* criterion that generated the decision that quotatives cannot serve as evidential markers because the quotations they are applied to associate speech acts (and not propositions) of their own. Thus, the hegemonic conception of evidentials rules: without propositional scope there is no evidential marker (a view which, following Boye 2010a, 2012, appears to have become even more important as a definitional criterion for evidentiality than the purported 'indication' of an information source; see Whitt 2018 for discussion). An equally axiomatic decision appears to have led occasionally to the exclusion of all those items that 'trivially'

refer to some evidence, including all sensation verbs such as *sound, smell, taste*, etc. (cf. Wiemer 2008; 2010).

The Janus-faced meaning of *seem* as a symbolic indexical associating both evidential and epistemic meaning components (not itself thematized in Jakobson 1957, however) has even prompted the coinage of the term *epistential*. The conceptual underpinnings of this view were, to my knowledge, first provided in a little-known contribution by John Austin included in a booklet called *Sense and Sensibilia* (1962), whose contents have been reconstructed from the manuscripts of lectures Austin gave in Oxford in 1947. The study has so far only briefly been mentioned in Usonienė & Šinkūnienė (2013) and in Newman (1981: 136–37), but it has never been adequately assessed. Since I do think Austin's work deserves attention, I will sum up its major points to round off the section on how *seem* turned evidential (another early *seem*-study that would merit a close treatment is Aijmer 1980; without using the term *evidentiality*, it succinctly describes the tension of *seem*'s functions between evidential marker and epistemic qualifier).

In a chapter that is otherwise devoted to arguing with the philosopher Alfred Ayer on the (im)possibility of direct perception of material things (which, incidentally, might be a motivating factor for the existence of *seem*-verbs in the first place), Austin muses in his usual ad-hoc manner, mainly by way of discussing examples, about the meaning or use of such English verbs as *seem, appear*, and *look*. Because I consider the precise wording very important, I will quote here more extensively. The main difference that Austin (1962: 36) sees between *look* on the one side and *appear/seem* on the other is that *look* "is restricted to the general sphere of vision, whereas the use of 'appears' or 'seems' does not require, or imply, the employment of any one of the senses in particular." This is, to my knowledge, the first formulation of the observation that *seem* and *appear* do not draw on any specific type or mode of evidence–an insight that has not generally been accepted.

Next, in commenting on the example *He seems guilty*, Austin (1962: 37) contends that it "makes an implicit reference to certain evidence–evidence bearing, of course, on the question whether he is guilty, though not as to settle that question conclusively–'On the evidence we've heard so far, he certainly seems guilty.'" This is also the first time in the history of research on *seem* that the verb is explicitly related to some evidence *and* to the certainty of the associated proposition: As I understand Austin, *seem* is here seen to function as a kind of trigger activating some (i.e. a certain) evidence (which might or might not be made overt somewhere in the linguistic or non-linguistic context). And, importantly, Austin (1962: 38–39) assumes that *seem* is indeed compatible both with *may be* and with *may not be*: "'Seems' may also occur in conjunction with 'is' or 'is not'; but this will usually be found to involve a shift in the evidence implicitly referred to. If I were to say, 'He certainly seems to be guilty, but he isn't', I would not usually mean that

the very same evidence on which he seems to be guilty establishes that he is not, but while, say, on the evidence presented so far (or publicly available) he seems to be guilty, there is (or I have) further evidence which shows that he is not." A comparable view is held in an early squib on *seem*; in Wilkinson (1971: 558–559), the author distinguishes between *seem* as an entailment- or non-entailment predicate; cf. his example *It seems that he's inside brewing something, but he really isn't*. In Austin's perspective, *seem* appears as a verb that occupies the semantic space between 'is' and 'is not', but at the same time it serves as a kind of trigger targeting some evidence or source, which need not be (and generally is not) specified in the immediate context of *seem*.

In the end, however–quite unexpectedly given his line of argumentation up to that point–Austin revokes this both-and view on *seem* as evidential and epistemic marker and instead prefers to construct it as a verb to express a judgment, not as an evidential marker. This view becomes clearly apparent in the final paragraph of Chapter IV:

> Lastly, a point about 'seems'. It is significant that we can preface a judgement or expression of opinion by the phrases 'To judge from its looks …' or 'Going by appearances …'; but we can't say, 'To judge by the seemings …'–no such substantive exists. Why not? Is it not that, whereas looks and appearances provide us with facts [= evidence? G.L.] on which a judgement may be based, to speak of how things seem is already to express a judgement?   (Austin 1962: 43)

While Austin's comprehensive view on *seem* was mainly guided by functional principles and in principle led him to conceive *seem* as an *epistential,* we currently observe more restrictive views on the supposed meaning of *seem,* which, one more time, have been dictated by the dominant theoretical framework(s). These tendencies have found a succinct manifestation in Diewald & Stathi (2019), which, in a kind of serendipitous constellation, was published just before this article neared completion.

First of all, evidentiality is now equated with exhibiting a "grammatical function." (Diewald & Stathi 2019: 178) And this grammatical function sees its only realization in the *seem*-construction with the infinitive, with the type of evidence being constrained to that of *seem* being an "indirect inferential." (178) Thus, the *seem*+infinitive *construction* comes to be defined as representing a grammaticalized evidential marker; cf. also Gisborne & Holmes (2007); Aijmer (2009); Whitt (2015, 2018).

Siding with Anderson (1986), Diewald and Stathi maintain that such evidential markers must be conceived as secondary predications, that is, as "a factual claim about something else" (Anderson 1986: 274). Every utterance that contains an evidential marker can therefore be split up into two parts, the proposition associated

with the factual claim, and the evidential status of that proposition. Utterances to be characterized as evidential require a "syntagmatic" context (Diewald & Stathi 2019: 183) of at least two verbal elements: a finite verb having evidential meaning components, which will be "reanalyzed" as an auxiliary, while the non-finite verb is semantically the main verb. This view on evidential *seem* requiring propositional scope has, probably since Boye (2010a, 2012), become hegemonic. To me, it is astonishing, though, that the very concept of the proposition has gained such popularity in allegedly functional accounts (cf. Johnson 1987 for some problematization of the proposition concept as such), although the concept itself has long been part and parcel of formalist semantics.

In the following, Diewald and Stathi (2019: 188) appear to mitigate this strictly grammatical view on *seem* somewhat when they state in rather vague terms that "evidential meaning *per se* is not restricted to grammaticalized items (…) but also appears in lexical expressions and constructions." (Note that *per se* is left unexplained as it was in Chafe 1986.) A side effect of the assumption that the only true evidential marker is the *seem*+infinitive construction is that *markers* are apparently no longer considered separable linguistic items (say, morphemes) but whole constructions. This construction-based view is now shared by all the recent studies on *seem*; cf., e.g., Gisborne & Holmes (2007: 9); Aijmer (2009: 64); Usonienė & Šinkūnienė (2013: 301, 312), with the implication that, as has been most aptly formulated by Zellig Harris (1970: 786): "difference of meaning correlates with difference of distribution."

For the time being, the clearest formulation of what the consequences of such views are can be found in Diewald et al. (2009: 194–195); even if that study is about the German verbs *scheinen, drohen, versprechen, werden*, the results can be applied to *seem* as well:

–   "[the verbs] serve as inferential evidential periphrases"
–   "they mark the proposition as inferred by the speaker from some other facts"
–   "[they] contain […] additional information that the speaker has some evidence for making this factual claim"
–   "The evidential auxiliaries [!] are indexical insofar as they relate the proposition to the information available to the speaker"
–   "an evidential construction links the proposition in which it occurs to a non-linguistic point of reference, which is the information source of the speaker"
–   "it is the information presented as available to (and by) the speaker which is the defining property of evidentiality"
–   "the (speaker's) information source serves as the point of reference to which the proposition is linked. The specific value of inferential evidentials consists in specifying the relation between the proposition and the information source

as inference, i.e. the proposition is the result of the speaker's inference based on some evidence"

Of course, it must be conceded that the exact specification what is to count as a genuine evidential *seem*-construction is still a matter of dispute in the literature; the emerging state of the art is indeed far from coherent, so that the questions which need to asked about the most recent study by Diewald and Stathi (2019) could also be formulated with respect to the other studies mentioned above:

– What, for instance, is the function of the *seem*+copula construction (*seem* as a perception verb?)
– How should we cope with the *it seems that*-construction–it clearly has propositional scope?
– Still unclear is the parenthetical construction–should it be considered a discourse marker or a comment clause, or what else?
– Nothing has been said so far about the *can't seem-,* the *would seem-*, and the *seems so*-constructions, which might be considered 'true' constructions, where the composition principle no longer seems to hold.
– What about the much cited characteristic of *seem*-constructions that they can combine with all of modes and types of information source? The focus in Diewald & Stathi (2019) (and in other recent studies) appears to have shifted to the inferential type only (which is, accordingly, taken in Nuyts 2017 as the 'best' example of evidentiality).
– And, most amazingly perhaps, in Diewald & Stathi (2019), the prototypical inferential evidential marker seems to have no longer a concomitant epistemic meaning component–a claim that was emphasized in all of Diewald's studies (see titles in bibliography).

Thus, the question that I asked in the title of my 2011 article '*Seem*–evidential, epistemic, or what else' has remained unanswered–so it seems.

3. Conclusion

My contribution has set out to give at least some (preliminary) answers to the more general question why *seem* is, in the recent literature, almost invariably taken to be an evidential (marker). Some generalizations have emerged in the course of my endeavor. First of all, we can note a persisting opposition between expert knowledge and common public knowledge. *Seem* was and still is conceptualized in dictionaries, old and new alike, either as a verb of mental attitude or an 'impression' verb by which speakers/writers can qualify the reality status of a stimulus, situating it, according to

context, closer to factivity or fictivity of the phenomenon in question; concomitantly, by using *seem*, speakers or writers may (strategically) 'hedge' their claims, making them less forceful, less contestable, and allowing them to eventually be cancelable.

By contrast, present-day accounts that conceptualize *seem* either in terms of an evidential or an epistemical marker do not actually describe the lexical meaning of the verb, but rather the meaning of *seem*-constructions, even if they do claim that what they come up with is the meaning of *seem*. In this way, more semantic information than can be justified is assigned to *seem*.

Obviously, in the constructional framework, the lexical item *seem* is preferably considered as a kind of trigger or a cue that directs hearers'/readers' attention beyond the trigger itself to some contextual elements serving as information source, yielding a very complex concept of a construction. And, as is common practice among constructionalists, the purported construction meanings are then retrojected into the meaning of the lexical item that metonymically stands for the whole construction (see Lampert 2016 on what has happened in descriptions of the famous English *way*-construction).

In any construction-oriented strand of research, the problem of how much of a salient form's context is to be equated with that form's meaning is still a contested issue (see Geeraerts 2015 for a survey; but also Evans 2009 and Murphy's 2011 critique). The debates have always been conducted between supporters of holistic and minimalistic approaches to lexical semantics and of adherents of a distributional, contextualist view on meaning (in a way, this is another version of the time-honored opposition between lumpers vs. splitters; cf. Ruhl 1989; Janssen 2003; Gries 2015; Col & Poibeau 2014; and Silva 2000; 2005 on the troubles that already the *OED* editors had with this very problem).

And most importantly, my survey of *seem*-conceptualizations has testified to the non-receding power of classical objectivist views of knowledge. In this perspective, the hegemonic idea of science still presupposes that it "produces successive theories that progress ever and ever closer to the correct description of reality. And […] it is believed that genuine empirical knowledge involves universal logical structural inferences whose results can be tested against theory-neutral 'objective' data" (Johnson 1987: xiii). Although we actually should have learned by now that what is considered knowledge can never be 'theory-neutral,' and that what linguists do is inalienably dependent on purposes, interests, and ideologies, the objectivist paradigm seems to have prevailed. It may appear under different guises, but the now dominant one paradoxically incorporates scientistic and positivist ideas of science that were found already in the nineteenth century (see Momma 2013). It is certainly far away from the post-modern relativism that for a short while made its way into linguistic categorizations. *Is* has come to reign again.

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Moving to modal co-text

Beyond phrase and clause units

CHAPTER 6

Conditionals, modality, and Schrödinger's cat

Conditionals as a family of linguistic qubits

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An intriguing characteristic of conditionals is that they are modally dense constructions, without being modal markers themselves. This chapter will examine the modal nature of conditionals through the lens of construction grammar. It will be argued that the main utility of conditionals does not lie in pairing conditions with consequents, nor in establishing the factuality or actualisation of conditions and consequents, but in leaving issues of factuality or actualisation unresolved. The chapter proposes that conditional constructions are better regarded as environments of indeterminacy, in that they modalise what is communicated through them. More precisely it will be argued that conditionals can be usefully treated as the linguistic equivalent of *quantum bits* (*qubits*). The chapter will also discuss the characteristics that define the family of conditional constructions, and those differentiating between family members.

Keywords: conditionals, modality, corpus linguistics, construction grammar, qubits

1. Motivation and aims

According to Fillmore (1986: 163), conditionals have "a topmost bipartite structure" while "defining a single situation" (ibid.: 171). They consist of the *protasis* (P), in which a condition is expressed, and the *apodosis* (A), in which a comment related to the condition in the protasis is provided (Fillmore 1986; Sweetser 1990: 125; Dancygier 1998; Dancygier & Sweetser 2005). A large number of studies have proposed that there is a close connection between conditionality and modality. Comrie (1986: 89) claims that a conditional "never expresses the factuality of either of its constituent propositions". Palmer (1986: 189) comments that "modality seems […] to be doubly marked in conditionals". More precisely, Dancygier (1998: 72) states that "the presence of *if* in the construction marks the assumption in its scope as unassertable. As a result, the assumption in the apodosis, which belongs to the same

mental space as the protasis, is not treated as asserted either" (see also Bybee et al. 1994: 208). Nuyts (2001: 352) reports that "conditionals have an intimate link with the domain of epistemic qualification". Huddleston and Pullum (2002: 741) state that "*If P (then) Q* is a weaker statement that *Q* on its own", adding that "the conditional construction is conducive to the expression of modality" (ibid.: 744, see also Kratzer 2002: 290). Similarly, Turner (2003: 135) presents the view that "conditionals are not part of fact-stating discourse: conditionals, instead, express uncertainties".

More recently, corpus-based studies have provided empirical evidence for the connection between conditionals and modality, showing that conditionals in general, and *if*-conditionals in particular, have a higher *modal load* (i.e. contain modal marking much more frequently) than average, and even higher than non-conditional structures (Gabrielatos 2007, 2010, 2011a, 2011b, 2013, 2019). The high modal load (henceforth, ML) of conditionals is made all the more intriguing when we consider that their protases are already within the modalising scope of their subordinators (e.g. *assuming, if, unless*), or the modal markers introducing conditionals without overt subordinators (e.g. *Should* you require assistance, …) – the modal marking of which was not included in the calculation of the ML. Examined through the lens of Lexical Grammar (Sinclair 1996, 2004), conditionals have been described as "modal colligations", that is, grammatical structures with a strong mutual attraction to the semantic category of modality (Gabrielatos 2007).

Constructions are "conventionalised pairings of form and function" (Goldberg 2006: 1). The form component of a construction specifies its morphological, phonological, lexical, and syntactic properties, whereas the component of function specifies semantic, pragmatic, and discourse attributes (Croft & Cruse 2004: 258; Fillmore et al. 1988: 501; Fried & Östman 2004: 18–30). Constructions can be placed on two interacting continua: a) from simple to complex constructions and b) from concrete to abstract (e.g. Bergs 2008: 129–130; Boas 2013: 2–6; Capelle 2015: 4; Goldberg 2013: 3–4). For example, word-forms are concrete and simple, multi-word-units (e.g. fixed idioms) are concrete and complex, word classes are abstract and simple, and conditionals are abstract and complex. What is pertinent to this study is that complex constructions are composed of simpler ones, and that abstract constructions have open slots that can be filled in with concrete ones (e.g. Goldberg 2013: 12).

Construction Grammar posits that the meaning of the construction itself influences the meaning of its constituent parts (Fillmore 1986: 164; Goldberg 1995: 10–11, 16; Goldberg & Jackendoff 2004: 534; Tomasello 2003: 161). More pertinently, Fillmore (1986: 170) observed that "tense forms and the perfect and modal auxiliaries have roles in conditional sentences which differ in important ways from what can be said about them when they occur in self-standing sentences" (see also Kratzer 2002: 290). Evidence for this has been provided in Gabrielatos (2003, 2006): the manual analysis of two random samples of *if*-conditionals in the written BNC revealed

that past tense marking in protases denotes remoteness in likelihood (i.e. modality) rather than remoteness in time in about two-thirds of the instances. In contrast, in the random sample of 857 non-conditional constructions from the written BNC examined in Gabrielatos (2010) no such uses were found – all past tense markings referred to past time. Of course, this does not necessarily entail that modally remote uses of the past tense never occur outside conditionals, but rather that they are rare, or, more precisely, significantly less frequent than within conditional constructions.

However, the above findings do not, in themselves, explain the nature of the connection of conditionals to modality. Therefore, this chapter will address the following interrelated questions: Can conditionals be seen as being modalising structures themselves? Can they simply be seen as being internally modalised? Or is their nature more complex and intriguing? This chapter is also motivated by the corpus-based findings of Gabrielatos (2010, 2011a, 2011b, 2013, 2019), which indicated that conditionals can be more usefully treated as constructions (Fillmore 1986: 196, 1998: 36). Therefore, the above questions will be addressed through the lens of Construction Grammar, while the discussion will also draw on the notion of *mental spaces* (Fauconnier 1994), as adapted for the examination of conditionals in Dancygier & Sweetser (2005).

2.   The modal nature of conditionals: Considerations

It would be helpful to start by examining the distinction between *modalised* constructions and *modal* constructions. A modalised construction is modified by one or more modal markers (e.g. Huddleston & Pullum 2002: 173), in that the modal marking indicates how likely, potential, or desirable the user wants to present its content. On the other hand, a modal construction can modalise (i.e. modally mark) other constructions (e.g. Quirk et al. 1985: 120–121). In this light, we can examine whether conditional constructions are simply modalised, or are themselves modal markers.

The simplest observation is that conditionals can indeed be modalised by modal markers external to the construction, as (1) attests: the conditional is itself modalised by *perhaps*. The result of that external modalisation is that, even if the proposition in P is factual, it does not necessarily follow that the proposition in A holds. In (1), even when a patient is indeed 'a bad case', it is not presented as certain that they would need a special boot or iron braces.[1]

(1)   Perhaps if it's a bad case the patient has to wear a special boot or keep the leg held straight with iron braces.   [CHG 80]

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1.   Examples are from the random samples from the written BNC examined in Gabrielatos (2010, 2019, forthcoming) unless otherwise indicated.

However, the external modalisation of conditionals is not the focus of the present study, nor has it been included in the calculation of ML in Gabrielatos (2010, 2019). More importantly, the observation that constructions can be modalised by other constructions is in itself neither novel nor intrinsically interesting. If we distinguish between construction-internal and construction-external modalisation, then conditionals can be better described as being *internally modalised*. Still, the question remains whether the heavy ML of conditionals, that is, the high level of modalisation *within* the construction, justifies considering conditionals to be modalised or modal constructions.

Let us examine the nature of the modal characteristics of the component parts of conditionals in more detail, looking at the modal nature of P and A, as well as their connection in terms of meaning. Zheng and Fontaine (2020: 7–8) argue that, irrespective of their syntactic relation (hypotaxis or parataxis) P and A are linked with "semantic subordination". Clearly, A is always modalised, as it is within the semantic scope of P, which has been seen as "the introduction to a hypothetical world" (Sweetser 1990: 127). Regarding *if*-conditionals, Dancygier (1998: 72) states that "the presence of *if* in the construction marks the assumption in its scope as unassertable. As a result, the assumption in the apodosis, which belongs to the same mental space as the protasis, is not readable as asserted either". However, A is not modal itself, as it does not modalise another construction. The fact that A may also be internally modalised (as in (2) below) is irrelevant at this point – although it is important for the discussion of conditionals as linguistic qubits (see Section 4).

(2)   If you view any of these files without the parent application running, the
       contents may not be legible.   [FT8 2840]

What is important for the present discussion is that the factuality/actualisation of P does not necessarily point towards the factuality/actualisation of A. For example, in (2) above, viewing the files without the parent application running does not ensure the illegibility of the contents.

Dancygier and Sweetser (2005: 53) argue that *if* expresses a stance which is "indeterminate between a range of stances including almost everything except complete positive stance towards P or ~P".[2] However, Quirk et al. (1985: 1010) argue that, particularly when the time reference is to the present or future, the meaning of P "may be merely one of negative expectation or assumption, the

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2.   See also Bybee et al. (1994: 208), Comrie (1986: 79–80), Dancygier (1998: 72, 110), Dancygier & Sweetser (2005: 32, 45–49), Fillmore (1990: 140), Halliday (2004: 89, 354–356), Hoye (1997), Huddleston & Pullum (2002: 117, 147–149, 172–175), Leech (2004: 14–16, 36–40, 116), Lyons (1977: 451–452, 769, 794, 805–806, 815, 820), Nuyts (2001: 29), Palmer (1986: 4–6, 97, 108–115, 126; 1987: 44–46), Perkins (1983: 106–108), Sweetser (1990: 127), Werth (1997: 250–252).

positive not being ruled out completely". In that respect, it may be more useful to say that, by opting to use a conditional, a speaker/writer communicates an uncertain stance towards the content of both P and A. That is, it is not that the possibility of a polar stance (i.e. either positive or negative) is rejected outright; rather, that the polar alternatives are merely seen as the two extremes in a range of, yet unresolved, probabilities (Gabrielatos 2010: 62–65).

The case of P requires further attention, as we need to consider whether, in terms of meaning, *if* (or any conditional subordinator) should be seen as semantically external or internal to P. Support for treating the subordinator as semantically external to the protasis seems to come from its conception as a "space builder", in that its "job is to prompt the set-up of a mental space" (Dancygier & Sweetser 2005: 29, 140, see also Dancygier 1998: 72). However, positing the subordinator as external to P does not aid generalising to all conditionals. This becomes evident when considering conditionals with protases in which conditionality is marked morphosyntactically rather than lexically (see Dancygier 1998: 188–192, Fillmore 1986: 169, 1990: 140–141, Fortuin & Boogaart 2009: 642). For example, in (3) and (4), the marker of conditionality is the past perfect plus inversion, and the imperative, respectively.[3]

(3)   Had their remit been wider, they might well have discovered that many of the teachers' anxieties about LMS arose from a lack of faith in school-level decision-making and a feeling of being somehow 'outside' the decision-making process: a 'victim' of change rather than an agent of it.   [B23 910]

(4)   If your camcorder is one of the new low-light models which can take pictures down to levels of 2 lux, you could simply switch on the normal top lighting in your lounge and start recording some perfectly adequate pictures. For our present purpose, though, they would look rather flat and not very magical: try it and you'll probably agree.   [CBP 691]

Further support for treating the subordinator as internal to P seems to come from the conception of P as setting up a possible world (Bybee et al. 1994: 208) or a mental space (Dancygier & Sweetser 2005: 11; Fauconnier 1994: 31–32), which is tantamount to recognising P as a modal construction in itself (see also Dancygier 1998: 72; Huddleston & Pullum 2002: 741). For example, in (4), the second P ('if other materials prove too expensive') modalises a conditional construction ('they could … rendering').

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3.   The discussion of some examples needs to take into account relevant co-text, as it can provide helpful clues to the relevant context (Brown & Yule 1983: 22–23, 47, 59). Also, some examples contain conditionals that are not the focus of the analysis (i.e. not embedded within the conditional in focus), and are therefore treated as co-text. In such instances, the co-text will be indicated with a smaller size font, so that it is clear which conditional is the focus of discussion.

(5)   Sizes range from {list of dimensions}. They could be used for perimeter walls and the like if finished with a decorative rendering, if other materials prove too expensive.   [CG5 1587]

The issue of whether the subordinator should be seen as semantically internal or external to the protasis will be revisited in Section 3.3. What is clear, however, is that, in either case, the subordinator is an integral part of the construction. In that respect, conditionals can be seen as being permanently modalised. Crucially, at least within the tenets of Construction Grammar, treating protases as non-assertive entails that the non-assertiveness can be expected to be formally marked (i.e. lexically and/or morphologically and/or syntactically) – this issue will be revisited in Section 4.

Finally, we need to consider the question of whether the modal nature of P renders conditionals modal constructions themselves. In order for the latter to be established, it must be shown that conditional constructions (rather than only their protases) can themselves modalise other constructions. However, this has not been mentioned in previous studies, nor was it observed in the corpus samples of conditionals examined in Gabrielatos (2003, 2006, 2007, 2010, 2019). It must also be noted that this is not the case even in conditionals embedded within other conditionals, as, in these cases, the embedded conditional construction is modalised only by the protasis of the other, not by the whole construction (Gabrielatos 2005, 2010). For example, in (6), the conditional in the parenthesis ('notice if registered land') is within the modal scope of the protasis of the other conditional ('If the former … husband'). More accurately, the apodosis of the parenthetical conditional ('notice') is an alternative apodosis for the first protasis ('If the former … husband'), which is itself also within the modal scope of the parenthetical protasis ('if registered land').

(6)   b.   Cancellation and registration at HM Land Registry: notices.
              If the former matrimonial home has been in the sole name of the
              husband, then on completion of the various transactions the Class F
              Land Charge (or notice if registered land) should be cancelled.
                                                                [JXH 731]

In light of Halliday's (2004: 365) view of modality as "the intermediate ground between positive and negative polarity", the above observations support the view of conditionals as constructions of a modal nature.

At this point we need to summarise the attributes of conditionals concerning modal marking:

–   They can be externally modalised – but this is not particularly interesting for our purposes.
–   They do not modalise other constructions.

- The protasis modally marks the apodosis.
- The protasis is internally modalised by the subordinator (e.g. *if, in case*) or other lexicogrammatical means.
- They have a modal load that is significantly higher than average.
- Past tense marking in conditionals (particularly in their protases) expresses modal meaning much more often than temporal meaning.

Combined, the above attributes strongly indicate that merely describing conditionals as internally modalised constructions, or modal colligations (Gabrielatos 2007), does not reveal their full nature. Simply put, the riddle posed by the nature of conditionals is that they are internally modalised but not modal markers. The modal nature of conditionals proposed in this chapter will be discussed in Sections 3 and 4, and the attributes listed above will be revisited in Section 5.

3. Conditionals as linguistic qubits

Given the indeterminacy that characterises conditionals, it will be argued here that our understanding of their nature can be enhanced if we draw parallels with quantum states, which are "constituted not only by a specification of the truth or falsity of some of the eventualities, but also by the specification of the probabilities of finding truth or falsity upon actualisation of all the other eventualities. Thus, a quantum state is a network of potentialities" (Shimony 1992: 374). This was famously exemplified by Erwin Schrödinger's thought experiment (Schrödinger 1935, English translation by Trimmer 1980), popularly referred to as 'Schrödinger's cat'. Although the thought experiment was put forward in order to demonstrate the absurdity of applying quantum principles to objects or systems above the atomic level, it will be shown that it can be usefully adapted to the conception of the nature of conditionals without contravening aspects of the original. Let us first look at the description of the thought experiment (Trimmer 1980: 327), before further explaining its relevance to the examination of the modal nature of conditionals.

> A cat is penned up in a steel chamber, along with the following device (which must be secured against direct interference by the cat): in a Geiger counter there is a tiny bit of radioactive substance, *so* small, that *perhaps* in the course of the hour one of the atoms decays, but also, with equal probability, perhaps none; if it happens, the counter tube discharges and through a relay releases a hammer which shatters a small flask of hydrocyanic acid. If one has left this entire system to itself for an hour, one would say that the cat still lives *if* meanwhile no atom has decayed. The psi-function of the entire system would express this by having in it the living and dead cat (pardon the expression) mixed or smeared out in equal parts. It is typical of these cases that an indeterminacy originally restricted to the

atomic domain becomes transformed into macroscopic indeterminacy, which can then be *resolved* by direct observation.

Simply put, Schrödinger's thought experiment sought to demonstrate the absurdity of accepting that, while no observation is taking place, the cat in the box is simultaneously alive and dead. However, in natural language use, the indeterminacy described above is not uncommon, as (7) demonstrates (emphasis added).

(7)   AUTHORSHIP can be called, if anything or anyone can, dual, equivocal. The works of authors **are replicas, and they are unique**. They **are and are not** autobiographical. An author **is and is not** his book.   [A05 1196–1199]

Therefore, it does not seem absurd that the factuality/actuality of P and A can be 'in limbo' pending comparison with the addressees' knowledge, interpretations, wishes, intentions etc. – or, in the terms of quantum mechanics, until an observation or measurement has been made (see Stapp 1993: 25–26).

Although Schrödinger's thought experiment posits a single box, it essentially involves two component elements: the mechanism enabling the probable release of the poison, and the cat. The former can be seen as the content of P, the latter as the content of A. However, in the adaptation proposed here, the probability of the 'release' covers the whole spectrum, rather than being 50% (as in the thought experiment); that is, it may have any value between 0% and 100% (see Halliday 2004: 365; Gabrielatos 2010: 62–65) – depending on the additional modalisation of P and/or A. For example, in (8), P is additionally modalised by *should* and its content is, therefore, presented as less likely than if it was only modalised by the subordinator *if*.

(8)   If you should decide to concentrate on one particular nursing specialty then you will probably want to undertake a clinical nursing studies course.

[CHT 248]

As the mechanism posited in Schrödinger's thought experiment "must be secured against direct interference by the cat" (Trimmer 1980: 327), it is compatible with both the spirit and letter of the experiment to posit that the two participants occupy two separate, but communicating, compartments within the box: that of the mechanism (protasis) and that of the cat (apodosis) – as shown in Figure 1.
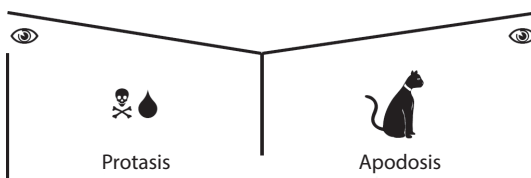

Figure 1. Adaptation of the box posited in Schrödinger's thought experiment

The present adaptation allows for an opening large enough for the poison to enter the cat's compartment (should it be released); however, the opening must be understood to be too small for the cat to have any access to the compartment housing the mechanism. A compatible corollary is that observers can examine not only both compartments simultaneously (as in the thought experiment), but also each compartment separately, by opening only the lid of the compartment representing the protasis or apodosis (henceforth, P-compartment and A-compartment, respectively). The examination of each compartment symbolises the existence of real-world knowledge on the part of the reader/listener, that is, it represents the contextual elements required for interpreting the user's intended message. It must be clarified that an observation of a compartment does not refer to the identification of linguistic elements and their surface or conventional meaning, but to contextual knowledge regarding the actuality or factuality of P and A, or the likelihood of their factuality or actualisation. More importantly, in natural language conditionals, there are instances when the observation of A is either impossible or irrelevant (see Section 4 for a detailed discussion).

The representation of a conditional in Figure 1 above resembles a *quantum bit* (or *qubit*) – a concept used in quantum computation. A classical bit (currently used in computing), can only have one of two values, or be in one of two states (0 or 1), and, when examined, it is determined whether its value is 0 or 1. A qubit, however, can be in any state between, and including, 0 and 1 (Nielsen & Chuang 2010: 13–16). Dancygier and Sweetser (2005: 35) argue that, in natural language, *if*-conditions are interpreted as *iff* (i.e. if and only if), and that this entails that "hearers are therefore prompted to construct not one single space involving P and Q, but also an alternative space involving ~P and ~Q", that is, their negation (see also Dancygier & Sweetser 2005: 36, 41, Fauconnier 1994: 109–127). However, Dancygier and Sweetser (2005: 110–111) concede that this is not always the case. Even if there is a tendency for readers/listeners to construct polar alternatives when interpreting conditionals, there are instances when positing a polar alternative seems tenuous, if not impossible – as in (9).

(9)   Phaistos Disc declared as fake by scholar
      […]
      Jerome Eisenberg, a specialist in faked ancient art, is claiming that the disc and its indecipherable text is not a relic dating from 1,700BC, but a forgery that has duped scholars since Luigi Pernier, an Italian archaeologist, "discovered" it in 1908 in the Minoan palace of Phaistos on Crete. Pernier was desperate to impress his colleagues with a find of his own, according to Dr Eisenberg, and needed to unearth something that could outdo the discoveries made by Sir Arthur Evans, the renowned English archaeologist, and Federico Halbherr, a fellow Italian. He believes that Pernier's solution was to create a "relic" with an untranslatable pictographic text.

> If it was a ruse, it worked.
> Evans was so excited that he published an analysis of Pernier's findings.
>
> [*Times Online*][4]

In (9), the content of A ('it worked') only makes sense if P holds – that is, if the Phaistos Disc is indeed a fake. However, if the Phaistos Disc is genuine, then there was no ruse in the first place. If there was no ruse, it is unwarranted to posit that 'it [i.e. the ruse] didn't work'. In other words, if we posit that in (9) P does not hold, we cannot posit that, as a result, A also does not hold; crucially, neither can we posit that A holds. Rather, if P does not hold, then the content of A becomes irrelevant. In this light, (9) can be seen to function as a modalised (i.e. indeterminate) version of 'It was a ruse that worked'.[5]

Equally importantly, when a qubit is examined (i.e. when an observation/measurement is performed), its state cannot be determined with the certainty that the state of a classical bit can – which must be either 0 or 1. Rather, the result of a measurement of the state of a qubit is the respective probabilities that its state is 0 or 1 (Nielsen & Chuang 2010: 13–16). The latter is perfectly compatible with natural language conditionals, as example (10) demonstrates (see also (2) and (8) above).

(10)   "Besides, if I blow this open, they just might notice," she finished dryly.

[FSR 2256]

In (10), the actualisation of P does not ensure the actualisation of A; it only indicates the degree of likelihood of its actualisation. In the context of Schrödinger's thought experiment, as adapted here, the release of the poison will not necessarily result in the observation of a dead cat, but in the probability that the cat is alive/dead. Of course, in natural language, this probability is not usually specified numerically, but in a rather vague manner through modal marking (e.g. *might, chances are, seems possible that*) (see Channell 1994: 53, 83–87; Jucker et al. 2003; Nuyts 2001: 22). In the context of the visual depiction in Figure 1, the above considerations entail that looking into one compartment may not furnish conclusive information about the content of the other, but, at best, only clues. More importantly, Gabrielatos (2010: 270) found that in more than one-third (35.3%) of *if*-conditionals A does not express an epistemic notion (e.g. a prediction or inference), that is, something that could be factually checked, but deontic or

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4.   'Phaistos Disc declared as fake by scholar', 12 July 2008, <http://entertainment.timesonline.co.uk/tol/arts_and_entertainment/visual_arts/article4318911.ece>

5.   It is not lost on the writer that the argument in this paragraph is realised as a chain of conditionals.

volitional notions (e.g. a suggestion or wish). In such cases, the observation in the A-compartment cannot provide information/clues regarding the factuality of actualisation of the content of A. The above will be discussed in detail in Section 4.

4. Conditionals as qubits: Their function in discourse

This section will examine instances of the types of conditionals recognised in Gabrielatos (2010), in order to demonstrate how approaching conditionals as linguistic qubits, visually represented by the box in Schrödinger's thought experiment (as adapted here), provides insights into the nature of conditionals.[6] What will become clear through the discussion of different examples is that

a. the interpretation of different types of conditionals hinges on observing the P and/or A compartment;
b. the observation of the P and/or A compartment, and the establishment of facts (e.g. whether P or A holds), is not always necessary or, more importantly, may not be possible, or intended by the speaker/writer.
c. observations may result in a binary resolution (e.g. P holds or does not hold), but they may also result in intermediate or indeterminate resolutions (e.g. P probably holds), or, more interestingly, positing a polar alternative may not be warranted.
d. assessments of likelihood may not be provided directly, by overt marking for epistemic modality, but indirectly, via conventional (i.e. context-independent) or conversational (i.e. context-dependent) implicatures invited through the use of modal marking.

4.1 Classification of conditionals

The classification of conditionals in Gabrielatos (2010: 230–265) reflects their bipartite constructional nature: each conditional is classified according to the nature of the link between P and A (henceforth, P-A link), and the modal function of the construction.[7] Regarding the P-A link, the typology adopts the core distinction between *direct* and *indirect* conditions proposed in Quirk et al. (1985: 1088–1097). In *direct conditionals* (DIR), the realisation of the content of A – that is, the action, situation, or notion expressed in A – depends on the realisation, actuality

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6. Please note that the sequence of the two components will not always be P-A (as in Figure 1), but may also be A-P, depending on the sequence in each example.

7. For a critical discussion of other classifications, see Gabrielatos (2010: 152–188).

or factuality of the content of P. For example, in (11), the encouragement in A is directly contingent on the falsifiability specified in P. That is, if the criterion of falsifiability is not met, then the encouragement does not stand. In *indirect conditionals* (IND), what is contingent on P is not the content of A, but the relevance of its uttering, or the wording or clarity of its content. For example, in (12), what is contingent on the need specified in P is the relevance of the question in A – if the need does not arise, the question is moot. The difference in the semantic link between DIR and IND is mirrored in the syntactic role of A: an adjunct in DIR, but a disjunct in IND (Quirk et al. 1985: 612–631, 1072).

(11)   Rash speculations are to be encouraged, provided they are falsifiable

[FBE 733].

(12)   If you need a replacement lock, will the locksmith fit the best quality equipment?   [CCY 1191]

The classification of conditionals according to the modal function of the construction is in line with corpus-based studies showing that conditional constructions are closely related to modality (Gabrielatos 2010, 2011a, 2013, 2019). In this dimension, four types of conditionals are recognised, as the apodosis of each expresses one of the four modality types recognised in Gabrielatos (2010: 134–147), which is a more fine-grained adaptation of the two modality types posited in Quirk et al. (1985: 219–239).

Attitude to Likelihood (LK). This type encompasses assessments of actuality, factuality, truth, likelihood, or probability. Seen from a different angle, it comprises the expression of knowledge, belief, inference, hypothesis, guess, prediction, or speculation. These notions are not treated as discrete but are seen as overlapping. For example, a prediction can be made on the basis of observation (or inferences based on observation), or belief, or be a mere guess. In turn, belief and knowledge refer to a person's attitude towards actuality, in that the fact that a person 'knows' something does not necessarily entail that this putative knowledge corresponds to reality. For example, (13) functions as a conditional prediction.

(13)   Supposing we had grown to know and love nuclear power (as the French seem to), would we now be seeing it expanding rapidly from what the International Atomic Energy Agency claims is its present provision of 16 per cent of the world's electricity to 25 per cent or more?   [AB6786]

Attitude to Propensity (PP). This type involves judgements about ability, capability, skills, aptitude, feasibility, potentiality, tendency, or propensity, as they relate to animate or inanimate entities, concepts, states, processes, or relations. This type is closely related to LK, in that assessments of likelihood may be based on inherent properties (Palmer 1990: 38, Quirk et al. 1985: 221–222). However, PP is

distinct from LK, in that the speaker/writer stops at expressing his/her attitude to the existence of the above properties – any inferences regarding the likelihood of actualisation are the prerogative of the listener/reader. For example, (14) expresses conditional potentiality.

(14)   Often wall mounted in or near the working area they can be a useful provision provided they are kept clean, emptied after use and operating temperatures are maintained.   [APV377]

Attitude to Desirability: Directed (DD) and Non-Directed (DN). The final two types are also related, as they both express the way that the speaker would like states of affairs to have been in the past, or be in the present or future. However, attitude to desirability may manifest itself in two ways. On the one hand, speakers may actively seek to have their desires implemented, by attempting to directly manipulate the action of others (or even their own) through the use of language. The notions communicated in this way are those of obligation, duty, requirement, promise, advice, suggestion, invitation, prohibition, or permission. This type of modality is termed *directed desirability* (*DD*). On the other hand, speakers may opt to use indirect ways in trying to have their desires implemented. They may, superficially, merely express what states of affairs they would like to see materialising, or how they would like an existing state of affairs to develop, without any explicit attempt to influence, through linguistic means, the thinking or behaviour of others (or themselves) to that direction. This involves the expression of such notions as volition, intention, willingness, wish, hope, desire or need. This type is termed *non-directed desirability* (*DN*). For example, (15) expresses a conditional strong suggestion (DD), and (16) expresses a conditional volition (DN).

(15)   Supposing, for simplicity, we are concerned only with two years, price this year should be determined by short-run marginal cost (a view not endorsed by the 1967 White Paper - see Section 4.4), but investment plans for next year should be evaluated (using net present value methods) based upon long-run marginal costs.   [EX21132]

(16)   She explained that she wanted someone outside her family to know about them in case anything should happen to her before she would be able to raise the issue with someone with influence in Northern Ireland.   [CCC546]

The above classification is informed by, and compatible with, all other major classifications of modality, in that the types it posits can be combined to form types recognised in them (Table 1, adapted from Gabrielatos 2010: 142). All four types share the core notion of uncertainty – expressed as distance from knowledge, actuality or actualisation (for a detailed discussion, see Gabrielatos 2010: 55–151, forthcoming).

Table 1. Equivalencies of types in the different classifications of modality

Types				Source
Likelihood	Propensity	Non-Directed Desirability	Directed Desirability	Gabrielatos (2010)
Extrinsic		Intrinsic		Quirk et al. (1985)
Epistemic	Non-Epistemic (Root)			Coates (1983)
Epistemic	Agent/Speaker-Oriented			Bybee et al. (1994)
Modalization	Modularity			Halliday (2004)
Logical	Personal			Biber et al. (1999)
Epistemic	Dynamic		Deontic	Palmer (1986, 1990)

4.2   DIR-LK inferential conditionals

In this type, A expresses an inference based on the clues/premises provided in P. Example (17) is a seemingly straightforward case of the speaker inviting the listener to draw inferences based on the content of P and A.

(17)

The facts speak for themselves; if Dana had any feelings for you	she'd have refused my offer. [H8J 2736]

More specifically, in (17), establishing the factuality of A (i.e. whether Dana refused the offer) leads to inferences regarding her feelings. In this case, the modal marking in A (*would* + perfect infinitive) provides strong linguistic clues for working out the conventional implicature that A is non-factual (Comrie 1986: 89; Quirk et al. 1985: 110), which, in turn, invites the inference that Dana does not have feelings for him. However, this inferencing process is the only straightforward aspect of (17). It would be misinterpreting (and underestimating) the function of (17) to say that it merely invites an inference. Rather, it is argued that its primary function is to express the statement 'Dana doesn't have feelings for you' in a tentative (i.e. modal) manner. In this light, the inferential function is a means to an end, as it provides the reasoning on which the tentative statement is based.

Example (18) is less straightforward and, hence, more interesting – as well as being indicative of the modal nature of conditionals.

(18)

But the shadows that were deepening over Europe were reaching out to "change everything" in lives across the world, and the Burrows family were to be no exception. The house they lived in belonged to a German lady, a Miss Wacker, who had been home in her own country when war broke out and was unable to return.

The night war was declared Mrs Burrows broke down in tears. Joyce tried to comfort her, assuring her that none of the boys would have to go. Of course they did. They even put their ages forward by a year, unknown to their parents, when they enlisted. Beverley became a major in an armoured tank division, Walter served with distinction and held officer rank in both the air force and the infantry, Robert Bramwell had a commission in the anti-tank corps. Both he and Walter saw service in New Guinea, suffered extreme malaria attacks and were wounded and hospitalised. The fourth and youngest boy, Bramwell Orams, was in the air force from the age of seventeen and flew on many sorties in the Pacific war zone.

If the sisters' husbands are included	there were seven men from the family in action, some in the thickest part of the New Guinea campaign. [H7E 383]

In (18), the actual number of "men from the family in action" remains undetermined, pending the decision to include/exclude the sisters' husbands from the calculation – with the decision hinging on whether they are deemed to be members of the family. In the context of the box (Figure 1 above), this would entail looking into the P compartment. Whatever the observation, the reader is invited to draw straightforward inferences (by performing simple calculations); that is, the number of "men from the family in action" is either seven or seven minus the number of the sisters' husbands. The latter is given in the sentence preceding the conditional. In that respect, (18) is an inferential conditional. However, there are two points to be made. The least important one is that the resolution of P may be useful in drawing this inference, as this is not necessary: even lacking the knowledge of the number of the sisters' husbands, the reader can draw the inference, 'There were up to seven men from the family in action'. The important point is that treating (18) as merely providing the clues for an inference would under-represent its function. The co-text clearly suggests that the inference is not invited. More precisely, the co-text points to the interpretation that the function of (18) is not to provide clues in P and A, which, combined, will result in the accurate or approximate calculation of the number of 'men from the family' that had gone to fight in the war (depending on the addressee's knowledge or point of view regarding inclusion in the family). Rather, it is to convey in a tentative manner (by employing the indeterminacy of a conditional construction) that their number is regarded as being large. More precisely, this is achieved by the unmodalised mention of the number seven in A, assigning the modalising effect to P – that is, leaving it up to the reader to decide whether to utilise the condition in P (i.e. whether to carry out an observation in the P compartment) in order to calculate that seven constitutes an upper limit, or to directly focus on the number in A.

4.3 DIR and IND rhetorical conditionals

Rhetorical conditionals can be seen as the inverse of inferential conditionals, in that the addresser does not express the inference, but invites the addressee to draw inferences on the basis of linguistic elements in P, and can be DIR or IND (Gabrielatos 2010: 258–259; Quirk et al. 1985: 1094–1095). Here we will examine two types of rhetorical conditionals: a straightforward case of a DIR with an affirmative A, and one of an IND with an interrogative A. In (19), the observation of the clear absurdity of A (as a desire cannot be 'nothing') invites the strong inference that, as far as the speaker is concerned, P does not hold – i.e. the desire is indeed self-deceiving.

(19)

As he spoke, Deems rose, clutching the MPRP weapon. 'I prefer my cynicism to your self-deceiving optimism.' 'Ibrox, my party wishes merely to see an end to conflict. We desire to finish with galactic war for ever. Is that self-deceiving?'		
It is nothing	if not self-deceiving	[HGJ 1428]

It must be noted that rhetorical conditionals have a lot in common with "epistemic conditionals" (Sweetser 1990: 116–117), as in both cases, inference is involved (Gabrielatos 2010: 176, see also Palmer 1990: 175). A subtler type of rhetorical conditional is IND with a rhetorical question in A, as in (20).

(20)

If the Manic Street Preachers are so Jonathan-Kinging radical	why don't they go round Channel 4 and kick Terry Christian's smug, ugly, homophobic face in and then cut Amanda De Torybimbo's Barbie-doll head off with a rusty cake slice? [CAD 3339]

One interpretation of the rhetorical mechanism in (20) is that the listener, by looking into A, that is, by utilising the knowledge that the situation in A has not happened or is unlikely to happen (knowledge which is assumed by the speaker to be available), reaches the conclusion that the Manic Street Preachers are not radical. However, it is not necessary to have this knowledge – that is, in the context of the thought experiment, it is not necessary to carry out an observation. Similarly to (19), it is the extremely low likelihood that the actions described in A have been, or would be, carried out that leads to the inference that the speaker wants to communicate that P does not hold. However, even if the action were deemed likely, the fact that it is expressed as a 'why not' question invites the inference that it was not carried out (see Quirk et al. 1985: 821).

4.4 DIR-LK polar conditionals

Polar conditionals combine characteristics of inferential and rhetorical conditionals, as A specifies one of two alternatives presented as polar extremes in the context, representing the minimum or maximum likely alternative (Gabrielatos 2010: 254–259). In (21), P and A each propose an alternative stance towards educational practices: "partial approach to reason" in A, or "sheer irrationality" in P.

(21)

The consequence is that reason in modern society has been reduced in scope to a means-end form: debate is too often a technical discussion among experts about the means. The ends are seldom on the agenda for serious debate, for society is unable to handle that kind of discussion. We see precisely this happening in higher education. Discourse about higher education focuses on structure, finance, numbers and performance indicators: it is about means, method and systems for planning and resource allocation. The values or ends for which higher education stands are seldom raised as a serious matter for discussion.	
What appears on the surface as a reasoned form of life is in reality a mask for a partial approach to reason,	if not sheer irrationality. [G0R 361]

This seems to entail that both compartments need to be observed, with the expectation being that one of the two alternatives will be chosen (according to the reader's views). However, this interpretation would misrepresent the function of (21), diminishing it to merely offering a binary choice. On the contrary, (21) is not simply an alternative linguistic realisation of 'This is either a partial approach to reason, or sheer irrationality'. Granted, A and P, respectively, only specify the weakest and strongest stance that the speaker proposes (the 0 and 1 values in a qubit). However, by virtue of being a conditional construction (a linguistic qubit), (21) also allows for the activation of intermediate alternatives. More importantly, these intermediate alternatives need not be specified by the reader, nor need they be specifiable. Simply put, the conditional, as a linguistic qubit, only delimits the range of indeterminate alternatives.

4.5 DIR-DN

As was mentioned in Section 3, more than one-third of *if*-conditionals have PP, DD, or DN functions (e.g. express conditional ability, obligation, or volition), and, therefore, the actualisation of the content of A cannot be empirically established (Gabrielatos 2010: 270). Example (22) further demonstrates the indeterminate nature of conditionals, while also supporting the premise that the truth or

factuality of P does not necessarily entail the factuality of A (see also Dancygier 1998: 14–19).

(22)

If you don't go away,	I will call the police. [BN3 471]

One interpretation of (22) would be that, as long as the issue of whether the addressee goes away is unresolved, it will also be unresolved whether the speaker calls the police. However, this approach is misleading, as A is marked for DN – that is, what is presented as contingent on the addressee failing to go away is not an action, but the intention of an action. In other words, even without the modalising influence of P, the content of A is not factual, but a future intention (i.e. indeterminate). Therefore, there is nothing in (22) that ensures a cause-effect relation between P and A. For example, there is nothing to prevent the speaker from calling the police even if the addressee does go away. More importantly, in real time, an observation of the P-compartment cannot resolve whether the listener went away (as it lies in the future). What *can* be resolved is whether the listener believes that the intention will be carried out. Seen form a different angle, even if we accept an observation that does resolve whether the listener went away, this putative resolution of P cannot be used to draw inferences regarding the actual action of the speaker – only regarding the speaker's intention. Therefore, although, superficially, the conditional in (22) expresses a cause-effect relation, it functions, due to its indeterminate nature, as a more forceful version of 'Go away' – or, more accurately, a version of 'Go away, or else', in which the threat is specified.

4.6 DIR-DD

In some conditionals, the marking of uncertainty in P does not reflect the speaker's assessment of the truth/actuality/factuality of its content, as is exemplified by (23).

(23)

Going Back to Work	
Now that you've thought long and hard about goals and objectives, let's get back to the nitty-gritty of finding and getting a job.	
If you are going to work for somebody else,	then you'll need to prepare a record of your abilities and experience. [CDK 789]

On the surface, as long as no observation in P takes place, that is, as long as the issue of the reader's intention/plan regarding working for somebody else remains unresolved, it also remains unresolved whether the reader will need to prepare a record of his/her abilities and experience. However, as the immediate co-text

indicates, and the wider co-text reveals, (23) is part of a text providing advice on finding employment (not on becoming self-employed or starting a business).[8] Therefore, both writer and reader know that P is factual (i.e. the observation has already been made), at least in the context of the text's focus. This gives rise to the question of why the writer opted to express the content of P as a condition under which A becomes relevant, or, more precisely, why A is presented as if it were unresolved, when, in fact, it is "contextually given" (Dancygier 1998: 111–116). The answer, it is argued, is that, by providing the advice within a conditional construction, the writer employs its indeterminate nature to communicate the advice in a more tentative (and, therefore, potentially polite) fashion.

4.7   IND pretext conditionals

In pretext IND conditionals (Gabrielatos 2010: 247–252), the content of A is only superficially dependent on the content of P; that is, P functions as a pretext for uttering A. In this type, P appears to provide the addressee with a choice (Dancygier 1998: 90), but this choice amounts only to the addressee having the option to disregard the content of A as irrelevant if they deem that P does not hold, as the information in A has already been communicated regardless of the factuality/actualisation of P. For example, in (24), the speaker's comment on his/her father's character is expressed regardless of whether the addressee is interested in the information.

(24)

It was never like this, and	
my father was an Old Bastard	if you must know. [EDJ 2007]

In light of the Schrödinger's Cat analogy in (24), the lid of the A-compartment is open from the start; the observation of the P-compartment provides the additional information that the content of A must be seen as being expressed tentatively. This is because, by being expressed within a pretext conditional, the speech act in A is presented as cancellable (see Levinson 1983: 118–120), in that the activation of the speech act is only superficially presented as depending on P holding. However, it must be stressed that, in pretext conditionals, P is anything but surplus to the interaction. It is exactly because of the existence of P that the strong negative opinion in A is not presented as being initiated by the speaker, but as a response to a hypothetical request by the listener, and therefore, as a mitigated (modalised) version of the content of A.

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8.   In the text, advice on writing a CV is followed by advice on acquiring references and developing interview techniques; no advice on becoming self-employed is given.

4.8   Conditionals without apodosis

When a conditional lacks an A, it is not possible to assign a semantic function to the construction, as it is incomplete (Gabrielatos 2010: 234–235). To express it in terms of the analogy with Schrödinger's thought experiment, the cat compartment is unobservable. However, this is not to say that A-less conditionals lack conventionalised pragmatic functions. Let us examine (25).

(25)

'Forgive me, Fu Jen, but have you a reserved ticket for that seat?'	
She turned, straightening up, then held out her ticket for inspection, looking the man up and down as she did so. He was a squat, broad-shouldered Han with one of those hard, anonymous faces some of them had. She knew what he was at once. One of those minor officials who gloried in their pettiness.	
He made a great pretence of studying her ticket, turning it over, then turning it back. His eyes flicked up to her face, then took in her clothes, her lack of jewellery, before returning to her face again – the disdain in them barely masked. He shook his head.	
'If you would follow me, Fu Jen … ' [GUG 975]	NO APODOSIS
He turned, making his way back down the aisle towards the cramped third and fourth-class seats at the tail of the rocket, but she stood where she was, her stomach tightening, anticipating the tussle to come.	
Realising that she wasn't following him, he came back, his whole manner suddenly, quite brutally antagonistic.	
'You must come, Fu Jen. These seats are reserved for others.'	

Superficially, (25) is incomplete, as there is no information regarding the event/state/action etc. that would be expected to be contingent on P holding (as a conditional construction has been utilised). In the context of the thought experiment, the A-compartment is unobservable. The listener must infer the intended content of A by utilising the content of P, as well as co-textual and (available or inferable) contextual clues. In the specific context, Fu Jen following the speaker can only result in her moving to a different seat. Therefore, the lack of an A leads to the contextual interpretation of (25) as a polite request. The politeness also hinges on two complementary modal markings:

a.   The speaker cages the request within P – i.e. a construction already marked for LK modality, which adds "modal remoteness" (Huddleston & Pullum 2002: 147–149, 173; Lyons 1977: 820; see also Perkins 1983: 107–108; Quirk et al. 1985: 1011). In turn, the modal remoteness "adds politeness to utterances" (Quirk et al. 1985: 1097).

b. P is also marked for DN modality – i.e. it superficially presents the action as contingent on the listener's volition.

This interpretation is supported by the repetition of the request in the last line of (25) (indicated by underline), but, this time, with politeness removed. This is shown by the use of DD modality, and the absence of any explicit politeness markers (e.g. *please*).

The discussion in this section has provided evidence supporting the conception of conditional constructions as linguistic qubits, in that their utility lies in their leaving the issue of actuality/actualisation unresolved. Even otherwise unmodalised conditionals present their content as being tentative/indeterminate – even if this is at a very small degree. Expressed from the perspective of modality, conditionals are constructions which modalise what is communicated through them.

5.   Defining the family of conditional constructions

The conception of conditionals as linguistic qubits, in conjunction with their ML patterns (as identified in Gabrielatos 2010, 2019), have implications for the notion of construction family (Goldberg & Jackendoff 2004: 535–536). Constructions are seen to belong to a family if they share similarities in their function and/or form (Bergs 2008: 181; Fujii 2004: 127; Hudson 2008: 259). The discussion so far has focused on three characteristics that signal constructional family resemblance and, therefore, sanction inclusion of a construction in the family of conditionals:

–   The construction is bipartite, consisting of a protasis and an apodosis.
–   In the protasis, a condition is expressed; in the apodosis, a comment related to the condition in the protasis is provided.
–   The construction is an environment of indeterminacy, functioning as the linguistic equivalent of a qubit.

Indications regarding the characteristics differentiating between members of the family of conditional constructions were provided in Gabrielatos (2010, 2019, forthcoming), where differences in both the ML and the frequency of different modality types were observed in conditionals with different subordinators, as well as the protases and apodoses of DIR and IND conditionals. At the same time, it was observed that the nature of the P-A link and the semantic function of the conditional interact to produce different types and sub-types, and that there are differences in the patterns of modal load and/or type of modal marking between sub-types of the same type. In light of the discussion so far, different members of the family of conditionals can be differentiated on the basis of the following characteristics and their permutations.

– The particular subordinator.
– The nature of the P-A link (DIR or IND) and the different subtypes of IND.
– The modal function of the conditional construction (LK, PP, DD, DN).

However, the above similarities and differences do not provide the full picture. The remainder of this section will, therefore, discuss further constructional characteristics that sanction inclusion in the family of conditionals, as well characteristics that differentiate between family members.

It was hypothesised in Section 2 that the indeterminate nature of protases is expected to be formally marked. Expressed more forcefully, the hypothesis is that protases are always modalised – that is, obligatory modalisation of P is a defining characteristic of the family of conditionals. It must, however, be clarified from the outset that the claim concerns conditionals in English, as studies have indicated that the permanent modalisation of P is not a universal characteristic. For example, this seems to be the case in Japanese (Fujii 2004), but not in German (Hilpert 2010). In the vast majority of English conditionals, P is modalised via a subordinator (Gabrielatos 2010: 45–49). However, for the hypothesis to hold, we need to establish that even conditionals without a subordinator have permanently modalised protases. To this end we will examine examples of bipartite constructions lacking a subordinator which have been (tentatively) presented as being conditional (Dancygier 1998: 188–194; Fillmore 1986: 169, 1990: 140–141). Fillmore (1990: 141) presents these constructions as "other ways of identifying alternative worlds".

The first category comprises conditionals in which P and A are linked by subordination, but this syntactic link is "marked by subject-verb inversion" (Dancygier 1998: 192–193, also Quirk et al., 1985: 1090, 1094), as in (26) and (27).

(26)   Should you change your mind, let us know.

(27)   Had the children been with us, they wouldn't have slept a wink.

Inversion in P can itself be seen as a modal marker, as it is syntactically related to questions, which are non-assertive (Dancygier 1998: 192; Gabrielatos 2010: 118–124; Hilpert 2010). However, it seems that, in such conditionals, P is modally marked irrespective of (or, rather, in addition to) the inversion: *should* in (26) and the past perfect in (27) – the latter marking modal remoteness twice: via the combination of the past tense and the perfect aspect (Huddleston & Pullum 2002: 150). That is, the inversion involves a modal marker. Of course, an empirical examination of corpus samples of instances of non-interrogative inversions is needed to verify if this always the case.

The second category comprises conditionals in which P and A are linked by coordination, and P is modally marked by the imperative (i.e. it is marked with DD modality), such as (28) and (29) below, in which the two clauses are "in a

conditional relationship" and the construction is "close to being a pure conditional" (Quirk et al., 1985: 844, 832, 1041; see also Haiman 1983).

(28) Open the window and/or I'll kill you.

(29) Criticize him the slightest bit and he starts crying.

What is interesting with such conditionals is that "it is not immediately obvious how the conditional use of the [imperative] form is related to its more typical directive use" (Fortuin & Boogaart 2009: 642). This incongruity has led to terming constructions like (28) and (29) as "imperative-like conditionals" (Dancygier 1998: 188) and "pseudo-commands" (Fillmore 1990: 141). The incongruity can be resolved in light of the discussion so far, in that the imperative, apart from the particular notions expressed by DD modality, expresses the core modal notion of uncertainty (Gabrielatos 2010: 135–136). This, in combination with the indeterminate nature of the conditional construction, leads to interpreting the imperative (a construction that normally expresses directives) as expressing conditionality, but with the added pragmatic force (Leech 1983: 17) of a challenge or threat issued by the speaker to the listener.

Similar to imperative-like conditionals are a) constructions in which the speaker offers to perform an action in return for the listener performing another action, as in (30), and b) *so much as* constructions, such as (31) (Dancygier & Sweetser 2005: 244).

(30) You clear the table and I'll do the dishes.

(31) You so much as take another step and I'll shoot.

In (30) and (31), *clear* and *take* cannot be interpreted as habitual (i.e. as being present simple forms). Therefore, both being morphologically unmarked, the alternatives are that they are either imperative or present subjunctive forms – both marking modality. More specifically, they are imperatives in which the word *you* is "contrastive in the sense of addressee-distinguishing" (Quirk, et al. 1985: 828, see also Zhang & Fontaine 2020). A related hypothesis is that conditionals in which P and A are linked by co-ordination cannot be IND, as in IND, P is a "disjunct", that is, it linked to A by subordination (Quirk et al. 1985: 615). Of course, an empirical study of conditionals such as (28)–(31) is needed to investigate this hypothesis.

However, there are also constructions which have been presented as candidates for being conditional, but in which the putative P does not seem to be modally marked – such as (32)–(35) below (Dancygier & Sweetser 2005: 237–268; Fillmore, 1986: 169, 1990: 141; Goldberg & Casenhiser 2006: 345; Huddleston & Pullum 2002: 970–971).

(32)   A little bit closer and we're dead.

(33)   With his hat on he would look older.

(34)   Anyone who does that gets what he deserves.

(35)   The more chips you eat, the more you want.

It could be argued that, in (32), the lack of modal marking in P is due to the verb phrase being elided – with the modal marking being either co-textually recoverable or contextually inferable (Gabrielatos 2005; Quirk et al. 1985: 858–888; Thumm 2000: 18–19; Zhang & Fontaine 2020: 10–14). In such cases, the first clause could be understood as the protasis of a conditional construction (e.g. 'If we move a bit closer') (see also Quirk et al., 1985: 934). Constructions such as (32) are seen to "express a conditional relationship" (Quirk et al., 1985: 851), with the co-ordinating conjunction seen as having a "conditional use" (ibid.: 931). However, (33) can be better seen as comprising only one clause, in which the prepositional phrase 'with his hat on' functions as an adjunct (i.e. there is no verb ellipsis), and, therefore, cannot be a conditional, as it is not bipartite. In (34) and (35), an elided modalisation in P cannot be posited, as in both cases, the lexical verb is in the present tense, and, therefore, clearly unmodalised. It seems uncontroversial to posit that (34) and (35) can be more accurately paraphrased by a *when(ever)*-construction, rather than a conditional. Therefore, it is claimed that for a bipartite construction to be deemed a conditional it needs, among other characteristics, to have an obligatorily modalised protasis (see also Keshet, 2013: 220–225). The claim is tentative, as it would need to be also examined using experimental and/or elicited introspective data (e.g. Hollmann & Siewierska 2006) to establish whether, in cases such as (32)–(35) above, language users perceive a conditional or non-conditional (e.g. temporal or causal) link between the two clauses – and the extent to which there is agreement. However, this is beyond the scope of this study.

In light of the discussion in this chapter, we can posit five characteristics distinguishing the family of conditional constructions from other construction families, with the fifth characteristic being tentative, pending further research.

a.   The construction is bipartite, consisting of the protasis and apodosis.
b.   The protasis modalises the apodosis.
c.   The apodosis depends on the protasis for its factuality, actuality, realisation, activation, or relevance.
d.   Conditional constructions are environments of indeterminacy, functioning as the linguistic equivalent of a qubit.
e.   The protasis is obligatorily modalised (lexically and/or grammatically).

When examining the differences between members of the family of conditionals, we need to take into account that P and A may be linked by subordination (e.g. *if, unless*) or co-ordination (e.g. *and, or*). In the case of subordination, P is modally marked lexically by the subordinator (e.g. *assuming*), or grammatically, through past tense marking plus inversion, or through the use of a modal verb (e.g. *should*) plus inversion. In the case of co-ordination, P is modally marked grammatically, through the imperative. Therefore, the characteristics differentiating between members of the family of conditional constructions are as follows:

a. The syntactic nature of the P-A link: subordination or co-ordination.
b. The semantic nature of the P-A link (DIR or IND).
c. In the case of subordination, the respective syntactic role of A in DIR (adjunct) and IND (disjunct).
d. The semantic function of the conditional (determined by the modal marking of A).
e. The subtype of DIR or IND.
f. The particular modal marker of the protasis (subordinator, imperative, modal plus inversion, or past tense (with perfect aspect) plus inversion).

All six characteristics will be specified in the attributes of the respective construction. The syntactic component will specify whether (a) P and A are linked through subordination or co-ordination, (b) the syntactic role of A, and (c) whether the sequence of P and A is flexible or rigid. In subordinate linkage, the modal marker of P will be specified in the lexical and/or morphological and/or syntactic components. In co-ordinate linkage, the modal marking will be specified in the morphological and/or syntactic components. The semantic component will specify the meaning connection between P and A, and the type(s) of modality marked in each. In fact, if the hypothesis of obligatory modalisation in P holds, then the semantic component of P will permanently specify LK modalisation, while allowing for the additional marking of other modality types. The pragmatic component will specify the (range of) implicatures that the construction can be expected to invite.

6. Conclusion

It was shown that conditional constructions are linguistic environments of indeterminacy, in that the factuality, actuality, or actualisation of the content of both protasis and apodosis is indeterminate. Expressed from the perspective of modality, conditionals are constructions which modalise what is communicated through them. Also, in the vast majority of conditionals, even if the protasis holds, the apodosis only specifies (vaguely) the likelihood of its actuality or actualisation, or

communicates other modal notions such ability, obligation, or volition – all sharing the core concept of uncertainty. In this light, conditionals can be usefully regarded as linguistic qubits. More importantly, it was shown that the utility of conditional constructions does not lie in their indeterminacy being resolved, but in the implicatures that their indeterminate nature invites, and the resulting wealth of communicative functions that conditionals can perform. The types of communicative functions are determined by the type of conditional that is utilised, in combination with the relevant co-text and the available or contextually inferable context. The chapter also discussed the characteristics defining conditionals as a constructional family (and differentiating them from other bipartite constructions), as well as the multiple dimensions differentiating between members of the family of conditionals. Finally, this chapter tentatively posited that one of the defining characteristics of conditional constructions is that their protases are obligatorily modalised. The investigation of this claim is expected to shed further light not only into the nature of conditionals, but also into the nature and marking of modality.

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CHAPTER 7

Modal marking in conditionals. Grammar, usage and discourse

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This paper investigates modal marking in conditionals with respect to two research questions: (1) How tightly integrated are conditional sentences, both relative to similar adverbial clause constructions, and with respect to different variants of conditional constructions. (2) What are the pragmatic biases and discursive patterns, if any, that motivate conditional constructions with modal marking. These issues are investigated with the help of a large corpus of Modern Japanese. The data suggest that (1) conditional sentences are relatively tightly integrated compared to causal, and probably also concessive constructions, but there are considerable differences between different types of conditional constructions, and (2) modally marked conditional sentences are overwhelmingly associated with deontic speech acts. A number of discursive patterns associated with spoken language can be identified, some of which are probably cross-linguistically replicable.

Keywords: conditional clauses, modality, Japanese, discourse patterns, speech acts

1. Introduction

Various types of subordinate clauses can be distinguished by the tightness of integration into the main clause. The best-known case is probably types of complement clauses and their degree of clause union. Some are highly independent and main-clause like while others even lack a subject of their own or tense. Givón (2001: 43), for example, arranges seven types of complement clauses on a "complementation scale". (1) is an illustration of the tightest clause union, labeled as "co-lexicalized complement clause" while (2) illustrates "indirect quote complement clauses", which are among those complement clauses with the lowest degree of clause integration.

(1)   She *let go* of the knife.

(2)   She *knew* that he *left*.

While the loosely integrated sentence (2) has different subjects and tenses in each clause, (1) has only one tense and one subject (and object).

In the framework of Role-and-Reference Grammar, Van Valin (2005) has arranged all kinds of subordinate clauses along a cline of tightness of integration as in Table 1.

Table 1. Interclausal relations hierarchy in Role-and-Reference Grammar (van Valin 2005: 209)

Syntactic link	Semantic cohesion
Strongest	*Closest*
Nuclear cosubordination	Causative [1]
	Phase
Nuclear subordination	Manner
	Motion
Nuclear coordination	Position
	Means
Core cosubordination	Psych-action
	Purposive
	Jussive
Core subordination	Causative [2]
	Direct Perception
Core coordination	Indirect Perception
	Propositional attitude
Core cosubordination	Cognition
	Indirect discourse
Clausal subordination	Direct discourse
	Circumstances
	Reason
Clausal coordination	**Conditional**
	Concessive
Sentential subordination	Sequential actions
Sentential coordination	Simultaneous actions
	Situation – situation: unspecified
Loosest	*Weakest*

According to the hypothesis represented in Table 1,[1] specific types of causative clauses have the strongest syntactic link and the closest semantic cohesion among all clauses in complex sentences, while unspecified situation–situation constructions have the weakest syntactic link and the loosest semantic cohesion. I have marked the position of conditional constructions, which is sandwiched between causal and concessive constructions close to the 'weak' end of the hierarchy, in bold letters. Note that this hierarchy is conceived of as a 'continuum'.

Van Valin's (2005) hypothesis has many ramifications and deserves to be tested on a variety of languages. As this paper will show, at least in Modern Japanese and partially, it does not hold up. In this language, conditional clauses are among the adverbial clauses with the tightest clause integration.

Tightness of clause integration is also reflected in the modal marking allowed in the subordinate clause. If conditional clauses are loosely integrated, we would expect them to have rich modal marking, but if they are tightly integrated, we would not expect them to have much of it. From the perspective of modality, modal categories with wide scope (cf. Narrog 2020) might not be able to occur in tightly integrated subordinate clauses, while narrow scope modal categories might be.

This paper shows on the basis of a large corpus what kind of modal markers and categories appear in the protases of conditional constructions in Modern Japanese, and further investigates these categories under the perspective of usage. The question are, (1) how tight is the integration of conditional clauses with respect to the criterion of modal marking, and (2) what are the actual functions in grammar and discourse that modal marking in conditional protases has? Section 2 introduces the form of conditional clauses and modal markers in Japanese. Section 3 broaches related findings in previous research, both cross-linguistically and with respect to Japanese, Section 4 offers a data analysis and Section 5 a conclusion. This paper will show that modality in conditional protases is fairly restricted and many of the actual occurrences can be attributed to specific discourse patterns, part of which seem to be cross-linguistically replicable.

2. Modality and conditional clauses

Conditionals are defined as "subordinate clause functioning as an adverbial modifier which indicates the condition on which the action in the main clause is contingent" (Bussmann 1996: 228). The subordinate clause is called "protasis" and the main

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1.   Van Valin (2005) is not explicit about the evidence for the hierarchy. It is apparently based on data from various languages, but it does not seem that a systematic data study on any one specific language has been undertaken.

clause "apodosis". In this study we tested conditional clauses in Modern Japanese. The language is well-known for having a number of different conditional constructions, of which four are highly grammaticalized through inflections and particles that mark the protasis of the conditional. The inflection *–(r)eba* marks a general conditional, the inflection *–Tara* a hypothetical and temporal-conditional, the *–(r)u=to* a generic and a contingent conditional, and *nara* often marks a hypothetical conditional (cf. Rick-meyer 1995: 146–147, 163–164; Masuoka 2000). All these conditional constructions also have other functions, and in most contexts, two or more of them can be used, but this labeling may characterize their most salient functions. Japanese is strictly head-final and the subordinate clause, in this case the protasis, always precedes the apodosis. There is no mood marking in conditionals, unless one considers the two conditional inflections *–(r)eba* and *–Tara* as such as 'moods'.

(3) is a textbook example of a Japanese conditional. A generic or 'automatic' relationship holds between the protasis and the apodosis, and both the general conditional *–(r)eba* and the generic *–(r)u=to* would be compatible with this context. The conditional marker is on the clause-final predicate of the protasis. The apodosis is unmarked.

(3)   *Kono   botan=o   **os.eba**   doa=ga   ak.u.*
      this   button-ACC   press-CON   door-NOM   open-NPS
      'If you push this button, the door will open.'   (cf. Iwasaki 2013: 266).

I tested both the conditionals and the modal markers and constructions on a large corpus of mainly written modern language.[2] First, Table 2 shows the raw frequency of occurrence of each marker in the corpus.

Table 2. Conditionals tested in the study and their raw frequency in the corpus

Conditional marker	Frequency
–(r)u-to	76448
–(r)eba	37218
–Tara	12814
nara	5006

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2.   206 MB plain text of Modern Japanese, including hundreds of novels and short stories ranging from 1889 to 2004, 145 essays, two half-yearly series of the Mainichi Shinbun news-paper, hundreds of spontaneous conversations, and the non-planned part of the Corpus of Spontaneous Japanese (CSJ). The majority of the material comes from the post-war period. However, about a third of the fiction (247 novels and short stories) amounting to 21 MB of text is from pre-war literary classics. The corpus contains about 65 million morphemes, corresponding to about 40 million words in English.

Modality is defined as "a linguistic category referring to the factual status of a proposition. A proposition is modalized if it is marked for being undetermined with respect to its factual status, i. e., is neither positively nor negatively factual" (Narrog 2012: 6). Major subcategories are boulomaic modality, referring to volition and intention, deontic modality referring to social, moral and rational constraints on action, dynamic modality, referring to participant-internal and situational possibility, epistemic modality, referring to the speaker's knowledge and beliefs about the likelihood of a situation, and lastly evidentiality, to the extent that it refers to indirect evidence (see Narrog this volume, for more details.)

We have included boulomaic, deontic, epistemic and evidential markers but not the dynamic ones, which differ from other modalities in having no performative uses. Also, the frequency of the expression of dynamic modality is more difficult to determine since the most frequent dynamic modal marker *–(r)are-* is highly polysemous with other grammatical categories. Table 3 gives the raw numbers of the modal markers and constructions included in the study.

Table 3. Modal markers tested in this study and their raw frequency in the corpus

Modality	Marker/construction	Meaning	Frequency
epistemic	*daroo*	speculative	33148
	ka-mo sir-e-na-	possibility	15059
	hazu	certainty/expectation	5036
	–ni tigai na-	certainty	1697
evidential	*–soo* (1)	apparent imminence	21209
	yoo	appearance	9632
	rasi-	inference/hearsay	6762
	soo (2)	hearsay	3862
boulomaic	*–ta-*	volition	36718
deontic	*–beki*	moral necessity	18428
	–(a)na.kereba nar-ana-	necessity	16504
	–Te-mo i-	permission	3398

3. Observations and findings in previous research

While research on the use of modality in the main clause (apodosis) following a conditional clause (the protasis) is relatively numerous (e. g. Johnson 2003; Zvolenszky 2006; Sztencel & Duffy 2019; Arita 2020), investigations of modality in the conditional clause proper (the protasis) are fairly rare.

First, in general linguistics, use or non-use of a modal expression in the protasis of a conditional clause has been cited as a criterion for the subjectivity of a modal expression (Lyons 1977: 799; Hengeveld 1988; Narrog 2012: 31–36): Only objective modal expressions can be used in the protasis, while subjective ones can't. Since epistemic modality is associated with subjectivity, epistemic modal expressions should not be able to occur in the protasis of conditionals. However, Lyons (1977: 806) argues that it is possible, if the expression is interpreted as being objective, as can be the case with *may* in (4).

(4)   *If it **may** be raining, you should take your umbrella.*   (Lyons 1977: 805)

Secondly, in English, there has been some discussion around the case of the habitual use of modal *should* in conditional clauses. *Should* in conditional clauses apparently does not function as the same kind of modal as in main clauses, but has taken on the specific function of a conditional mood marker (e.g. Breitbarth 2014; Dufaye 2018). Something similar holds for the German cognate *sollte*. In this language, the modal verb *wollte* also has mood-like function in conditionals (cf. Baumann 2017). Furthermore, some literature on German has discussed the puzzling use of modal particles, which are not modality proper in our definition of modality, in subordinate clauses (e.g. Coniglio 2009; Abraham 2015).

With respect to tightness of clause linkage, Narrog (2015) argued that conditional sentences are more tightly integrated than causal ones. One piece of evidence is that in Japanese causal but not conditional clauses can contain topic phrases, as illustrated in the contrast between the causal clause with embedded topic in (5) and the conditional clause in (6) that does not allow a topic.

(5)   ***Syoogatu=?ga/wa   kyuuka=ga   naga.i=kara/no=de***
      New year=NOM/TOP   holiday=NOM   long.NPS=CAU/CAU
      yo.ku   yasum-e.ru
      good.ADV   rest-POT-NPS
      'Since new year has a lot of holidays, it is possible to rest well.'

(6)   *Mosi **kurisumasu=ga/*wa** kyuuka=ga   **naga-kereba***
      if   Christmas=NOM   holiday=NOM   long- CON
      yo.ku   yasum-e.ru=kedo
      good.ADV   rest-pot.NPS=AVS
      'If Christmas had a lot of holidays, it would be possible to rest well.'

Narrog (2015: 154–155) cites also other pieces of evidence, for example that causal clauses in English and German can embed interrogative clauses but conditional clauses cannot.

Lastly, Brünner (1983) analyzed the usage of German modal verbs in various complex sentence constructions based on a corpus of spoken language that was

considerably smaller than the corpus used in our study. Nevertheless, she found 29 instances of modal verbs in conditional protases, with a very strong bias: 24 instance of *wollen* 'want to', 2 each of *möchten* 'like to' and *können* 'can', and one with deontic *müssen* 'must'. That is almost all instances of modal verbs were boulomaic (*wollen, möchten*), and none was epistemic. Furthermore, many of the clauses with boulomaic *wollen* in the protasis contained deontic modality in the apodosis. According to Brünner (1983: 184), in this pattern the protasis provides a goal or point of orientation, and a source of necessity for the demand in the apodosis.

When it comes to Japanese, the description of semantic and syntactic features of conditionals has been a popular research topic because of the different conditional constructions available in this language, and the desire to identify the differences between them. Minami (1974, 1993) offered an overall classification of subordinate clauses on the basis of which structural elements are able to occur in them. The sharedness of these elements reflects the degree of clause integration. Clauses of level D can contain most structural elements of a main clause, while clauses of level A can contain only a few independently and are thus the most tightly integrated with the main clause. Level B is in between at the lower end. Table 4 shows an excerpt from Minami's work, presenting the four conditional clause types and concessive (*no=ni*) and causal (*no=de, kara*) clauses, which are structurally and semantically similar to conditional ones.[3]

Table 4. Minami's (1993) clause types and structural elements they contain (excerpt)

Clause type (layer)	B						C
Elements of the clause	*-(r)u=to* 'if', 'when'	*-(r)eba* 'if'	*-Tara* 'if', 'when'	*nara* 'if'	*no=ni* 'although'	*no=de* 'as', 'because'	*kara* 'because'
case-marked nouns	+	+	+	+	+	+	+
case-marked "subjects"*	+	+	+	+	+	+	+
topical phrases**	-	-	-	-	-	(+)	+
V+negation (-*(a)nai*)	+	+	+	+	+	+	+
V+tense (-*Ta*)	-	-	-	+	+	+	+
V+inference (-*daroo/mai*)	-	-	-	-	-	-	+

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3. At an earlier stage of Japanese language history, the inflection *–(r)e* with the topical particle *ba* marked both conditionals and causals (cf. Ohori 1994).

As Table 4 shows, Minami classifies all four conditional markers as belonging to the B layer. He also attributes the same properties to all of them except *nara*, which can have independent tense. Concessive *no=ni* and causal *no=de* are classified as belonging to the same layer, while causal *kara* is located one layer higher.

Furthermore, there is some research that focuses on the type of speech act expressed by the apodosis of conditionals, which also relates to the tightness of the relationship between the two clauses. Morita (2002: 301), for example, provides a list of speech acts in the apodosis with which each conditional marker is compatible. Other authors have related the competing forms of Japanese conditionals to the three semantic 'domains' of conditionals hypothesized by Sweetser's (1990), namely, the 'content' domain, the 'epistemic' domain, and the 'speech-act' domain. The labeling refers to the fact whether the relationship between protasis and apodosis is on a content level, on an epistemic level, or on a speech-act level. The status of the apodosis is decisive for this relationship. With respect to tightness of clause integration, speech-act domain conditionals can be understood as being more loosely semantically integrated than content domain conditionals, with epistemic domain conditionals in between. Masuoka (1993) suggests that *–(r)eba* and *–Tara* basically operate in the content domain, the former at a lower level than the latter, and *nara* in the epistemic domain. Ezoe (2003) concludes that *nara* operates in the epistemic and speech act domain, *–Tara* and *–(r)eba* in the content and speech act domain, and *–(r)u=to* only in the content domain. Tsunoda (2004) subdivides both the epistemic and the speech act domain into two domains and thus posits five domains. According to her, *–(r)eba* (with some constraints) can be used in all domains, *–(r)u=to* only in the lowest two, and with some constraints in the third lowest domain, *–Tara* only in the lower three domains, and *nara* only in the highest two domains of epistemic and speech-act relationship (pp. 47–61). Thus, the authors seem to agree that *nara* operates in the highest, semantically less integrated, domains, *–(r)u=to* in the lowest, more tightly integrated, domain(s) and *–Tara* and *–(r)eba* are in between, but the details of their conclusions differ.

When it comes specifically to modality in the protases of conditional clauses, Yamaoka (1995) argues that conditional clauses (referring to clauses ending on *–to, –Tara, –(r)eba*, but not *nara*) do not allow any kind of independent modality at all. However, Yamaoka takes the point of view, which is common in Japanese modality studies, that only performative use of modality can be recognized as modal. He divides modality into (1) "contents-oriented modality" (corresponds to epistemic modality), (2) "action-oriented modality" (corresponds to volition), and (3) "hearer-oriented modality" (corresponds to imperative and hortative mood), and concludes that (1) and (3) do morphologically not fit into conditional clauses while (2) can be integrated morphologically, but loses its "force" as a modality

(Yamaoka 1995: 316–319). He assumes this to be the case with the boulomaic marker *–ta-* 'want to' in ex. (7).

(7) ***SitumoN~si-ta.kereba,*** *zibuN=de te=o   age-mas.u.*
   question~do-BOU.CON self=ESS   hand=ACC raise-POL.NPS
   'If I want to ask a question, I'll raise my hand myself'   (Yamaoka 1995: 317)

According to Yamaoka, *–ta-* here does not express an actual wish of the speaker here, and is therefore not modal.

   Tanaka (1994: 67–68), in contrast, based on occurrences in a small corpus of fictional writing and on his own intuition, lists a number of modal markers including deontics, volitionals, epistemics and evidentials, that allegedly can occur in conditional clauses. He notes, however, a gap between *–(r)u=to* and *–(r)eba* on the one hand, which allow relatively little modal marking, and *–Tara* and *nara*, which allow a wide range of modal markers inside. This finding differs from most previous research that contrasts "loose" or 'high-level' *nara* with low-level or highly-integrated *–(r)u=to*, with *–(r)eba* and *–Tara* in between, but it must be cautioned that Tanaka, in his short paper, does not present the evidence transparently. The discrepancy between Tanaka and Yamaoka seems to come mainly from different concepts of modality, specifically Yamaoka's categorical exclusion of non-performative modal markers from modality.

4.   Data analysis

4.1   Overall results

As seen in the previous section, there have been quite a few studies on the sentence-final modality of Japanese conditional constructions, but no study on the sentence-internal modality (that is, modality in the protasis) based on transparent data. This is something I want to accomplish in the corpus study presented in this paper. To go straight into the data, Table 5 lists those markers and constructions from Table 3 that actually occurred in conditional protases in the corpus, and their raw frequency of occurrence.

   The epistemics *daroo, ka-mo sir-e.na-* and the evidentials *rasi-i* and *soo*(2) did not occur at all in conditional clauses, and are therefore not listed in Table 5. By modal category, there is obviously a large gap between epistemic markers, which are hardly found in conditional protases on the one hand, and the boulomaic and two specific evidential markers on the other hand. A few deontic markers and constructions also proved to be compatible with conditional protases but were rather infrequent.

Table 5. Modal markers occurring in conditional protases – raw frequencies

Form	Subcategory	Function	Frequency
–ta-	boulomaic	volition	212
yoo/-mitai	evidential	appearance	45
–soo	evidential	apparent imminence	19
–(a)na.kereba nar-ana-	deontic	necessity	15
–te-mo i-	deontic	permission	4
beki	deontic	obligation	3
hazu	epistemic	certainty/expectation	1
		total	**299**

This result is not surprising in view of the research reviewed in Sections 1 through 3, and the findings presented in Narrog (this volume). It can readily explained by the different scope and different position of the sub-types of modality in clause structure. Epistemic markers, particularly *–daroo*, apparently are located higher in clause structure than the other categories, especially the boulomaic, and low-level deontic and evidential markers. Furthermore, the preponderance of boulomaic modality is the same that was found in the older study on German (Brünner 1983).

Concerning the status of conditional clauses, the results suggest that they indeed belong to a relatively low level in the layered clause structure, that is, are subject to tight integration in the main clause. My data concerning other types of similar adverbial clauses, namely causal and concessive clauses, suggest that conditionals are even dramatically more restrictive than those. The following Table 6 shows conditional markers as a whole in comparison to the causal *no=de* and the concessive *no=ni*, which are also classified as the same B layer by Minami (1993) as the conditionals.

Note that frequencies in Table 6 and Table 7 are normalized to a number of 10000 occurrences in order to eliminate distortions through the large differences in raw frequency between individual markers and constructions.

Table 6. Normalized occurrence of modal markers in conditionals vs. causals & concessives

Conditionals	Causal (*no=de*)	Concessive *no=ni*
1	14	33

The numbers in Table 6 mean that if a language corpus of the same make-up as the one used in this study had exactly 10000 conditionals and 10000 modal markers, in exactly one case a modal marker would occur in a conditional clause, but 14 would

occur in a causal *no=de* clause and even 33 in a concessive *no=ni* clause. The restrictiveness of conditional clauses with respect to modal marking is thus striking.

Now turning our attention to the "internal" differences between the four conditional constructions of Modern Japanese, again large differences emerge, as can be seen in Table 7:

Table 7. Normalized occurrence of modal markers in individual conditional constructions

–(r)u-to	–(r)eba	–Tara	nara
0.1	1	3	14

The figures show that on both ends of the extreme, a modal marker is over a hundred times more likely to occur in a *nara*-marked protasis than in an *–(r)u=to*-marked protasis. *–(r)eba* and *–Tara* are in between. This roughly confirms the observations in previous research (Section 3) that attributed the loosest relationship between the protasis and apodosis to *nara*, and the tightest to *–(r)u=to*.

The conditional clause containing the lone instance of an epistemic marker, *hazu*, cited as ex. (8), is marked by *nara*, as would be expected.

(8) *Yooryoo~doori=ni   keiryooka~si.ta* **hazu=nara,** *geNzai=no*
     guideline~way=ADV trim~do.PST EPI=CON   current=GEN
     gakusyuu naiyoo=wa   sakugeN~kaishi~mae=ni   kurabe
     study   contents=TOP reduction~start~before=DAT compare
     haNbuN~ika=ni nat.te   i.ru   hazu=da=ga,….
     half~below=DAT become.GER be.NPS EPI=COP=AVS
     'If [the curriculum] had [actually] been trimmed according to the guideline,
     the current contents of study should be less than half before the reduction
     started.'   (Mainichi Newspaper 1998)

Hazu in (8) does not contribute anything to the meaning in the clause and seems like a "slip of tongue", presumably because of priming or semantic prosody in agreement with the second instance of *hazu* in the main clause. If it would have to be translated by any means, it could be rendered as something like 'If *the expectation is that* [the curriculum] had [actually] been trimmed according to the guideline'. Another way to interpret the occurrence of *hazu* here is as some kind of conditional mood, comparable to *should* in English conditional protases (in fact, *hazu* is often translated as 'should'). However, unlike its English counterpart *should*, a conditional mood use of *hazu* has not been recorded. The fact that epistemic modals do not contribute much to conditional clauses may be due to the fact that protases as such are already modalized in an essential manner, as they suspend the factuality of a proposition. In any case, it is fair to say that explicit epistemic marking in the protasis of Japanese conditional clauses is practically non-existent.

4.2   Pragmatic biases of conditionals with modal marking in the protasis

The goal of this section is to identify quantitative pragmatic biases in the actual occurrences of modality in the protases of conditionals. The questions are with which kind of speech acts are they associated and what person of the subject are they directed towards.

The first striking observation is that only a small minority of sentences with a modally marked conditional protasis are pragmatically unmarked with respect to speech-act type. Table 8 breaks down the total by speech-act type of the sentence (that is, factually the apodosis).

Table 8. Speech acts in the apodoses of conditional constructions with modal markers in the protasis

Sentence type (speech act in apodosis)	Proportion (ratio)
Requests and suggestions	0.64
Prohibitions and permissions	0.06
Commissives	0.11
Representatives	0.19
Total	**1.00**

As shown in Table 8, only 19% of all sentences with a modally marked protasis were pragmatically representatives, while 81% of the sentences expressed a willful (volitional or deontic) speech act. The tendency for the sentence as a whole (that is, in the first place the apodosis) to express a willful speech act is the greater the more permissive the conditional marker is for modal marking, as is shown in Table 9:

Table 9. Proportion of apodoses with deontic speech acts by conditional marker

Conditional marker on the protasis	Proportion of apodosis with deontic speech act
–(r)u-to	0.07
–(r)eba	0.80
–Tara	0.90
nara	0.96

As Table 9 reveals, in almost all instances of conditional protases containing a modal marker and ending on *nara*, the sentence ended on a deontic speech act. The proportion is also very high with *–(r)eba* and *–Tara* but extremely low with *–(r)u=*to, which seems to be the polar opposite of *nara* also in this respect.

In Table 10 we break down the type of assertion in those 19% of the conditionals that ended on a representative speech act (cf. Table 8):

Table 10. Modalization in the apodosis in conditionals ending on a representative speech act

Modalization	Proportion (ratio)
Epistemic (possibility, prediction)	0.110
Evaluation	0.017
Non-epistemic, non-evaluative	0.067
Total	**0.194**

The data in Table 10 show that even the majority of the representative sentences were modalized in some manner in the apodosis, either epistemically or by providing an evaluation. The latter can be viewed as a deontic modality in disguise, as this type of modality in its grammaticalized form is frequently expressed by fixed evaluative expressions in Japanese , as in (9) with *–(r)u=to i-* 'you'd better'.

> (9) *Sono hureemu=no soto=ga*   *siri-ta.kereba*   *sono toki=wa*
>   this   frame=GEN   outside=NOM know-BOU.CON that time=TOP
>   *ziyuu=ni soozoo~si.te*   *mi.ru=to*   *i.i.*
>   free=ADV imagine~do.GER see.NPS=CON be.good.NPS
>   'If you want to know [what is] outside this frame, then you'd better imagine freely' (lit. '…it is good if you imagine freely')
>
> (Yamada Ryō: *Daydream* (novel), 2003)

If the roughly 12% of the representative sentences that are epistemically or evaluatively modalized are subtracted, only about 7% of the sentences with modally-marked conditionals remain that are really unmarked in the apodosis.

The pragmatic markedness of the conditional constructions with modal marking in the protasis can be demonstrated from yet another angle, namely that of the subject of the sentence. Table 11 shows the person of the subject of the main clause (that is, the apodosis) of sentences contained a modalized protasis, split up by conditional marker.

Table 11. Proportion of person of the subject of conditional sentences with a modalized protasis, by conditional marker

	–(r)u=to	*–(r)eba*	*–Tara*	*nara*	**overall**
1st person	0	0.13	0.27	0.19	0.18
2nd person	0	0.54	0.61	0.44	0.49
3rd person	1	0.33	0.12	0.37	0.33

As the numbers in Table 11 reveal, roughly half of all sentences have a second person subject, a third has third person subjects, and only a small minority has a first person subject. *–(r)u=to* is peculiar again in having only 3rd person subjects. This is actually due to a discursive pattern that will be discussed in 4.3.

Note that as a rule the subject of the protasis is the same as in the apodosis. Table 12 shows that this is the case in roughly three quarters of all conditional constructions with a modalized protasis. Conditional constructions with *–(r)eba* are most likely to have the same subject in protasis and apodosis, those with *–(r) u=to* the least likely, and the tendency with *nara* conforms exactly to the average.

Table 12. Same subject and different subject in conditional constructions with a modalized protasis, by conditional marker

	–(r)u=to	*–(r)eba*	*–Tara*	*nara*	**overall**
same subject	0.6	0.85	0.64	0.74	0.74
different subject	0.4	0.15	0.36	0.26	0.26

In the next section, we will zoom in on the actual patterns of usage.

4.3   Patterns of usage

As seen in 4.1, the most conspicuous tendency overall is that in 212 out of 299, that is 71% of the cases in which a modal marker occurs in a conditional clause, it is the volitional *–ta-*. Furthermore, in 72% of these sentences with *–ta-*, that is 152, or 51% overall, the sentences ends on a directive. These are of course typically 2nd person oriented. That is, the typical conditional construction with a modal marker in the apodosis, looks like (10) with a 2nd person subject, the boulomaic marker *–ta-* in the protasis, and a deontic apodosis:

(10)   *I.i   kaɴkei=o   **moti-ta.kereba**, hito=no   hanasi=o*
        good   relationship=ACC have-BOU.CON   person=GEN talk=ACC
        *kitiɴto   **kik.u=beki=des.u**.*
        properly   listen.NPS=DEO=POL.NPS
        'If you want to have good relationships, you should properly listen to what
        people say.'   (Ozaki Yutaka: *Shinjiru koto* (novel), 2001)

As seen in Chapter 3, a previous analysis of modal constructions in discourse in German identified the same prevalent pattern. This is a striking finding given that both languages are neither genetically nor areally related to each other. Brünner (1983: 184) suggested that in this pattern the protasis provides a goal or point of orientation, and a source of necessity for the event in the apodosis. This applies perfectly to ex. (10). "Having a good relationship" is the goal, and simultaneously the source of necessity for "listening well". Overall, the speech act constitutes an

advice that the speaker gives to the listener. This is usually the case when the main clause contains a modal marker corresponding to modal verbs in English or German.

However, there is one more dominant pattern of usage which fell outside the range of Brünner's (1983) analysis, who focused on modal verbs only. The apodosis can also be marked by an imperative as in (11).

(11)　**Warai-ta.kereba** *watasi=no　mae=de*　　**warat.te　kudasa.i.**
　　　laugh-BOU.CON　I=GEN　　　front=LOC　laugh.GER　give.IMP
　　　'If you want to laugh, laugh in front of me!'
　　　　　　　　　　　　　　　　　　(Hayashi Fumiko: *Hōrōki* (novel), 1930)

In the case of an imperative in the apodosis, the verb in the protasis and the apodosis are often identical, or of a similar meaning. The event in the protasis is a goal or a necessity that the speaker disapproves of and attributes to the volition of the hearer. The overall meaning is "If you really think you have to do it, go ahead!", and the speech act overall is a rhetorical permission. (12) has different verbs in the protasis and the appodosis but the discursive pattern is the same.

(12)　**Korosi-ta.kereba** *wasi=ni* **sikake.te　　k.oi.**
　　　kill -BOU.CON　　I=DAT　　attack.GER　come.IMP
　　　'If you want to kill [someone], come and attack *me!*'
　　　　　　　　　　　　　　　(Shiba Ryōtarō: *Kunitori Monogatari* (novel), 1966)

Thus, this discourse pattern apparently has a negative semantic prosody[4] and is an expression of disapproval or defiance clad in the guise of a rhetorical permission.

There are two more patterns of usage that, although far less frequent than those with boulomaic *–ta-*, stand out. The first is that deontic *–(a)na.kereba nar-ana-i* 'must' virtually only occurs in protases with *nara*, except for a single example, in which it occurs in a clause with *–(r)eba*. The typical conditional with *–(a)na.kereba nar-ana-* thus looks as in example (13):

(13)　*Reiko=ga* **de.te　　i-na.kereba　　　nar-ana.i=nara,　　　semete**
　　　PN=NOM　leave.GER　be-deo[NEG.CON　become-NEG.NPS]=con　at.least
　　　*natu=no　　aida=wa　　**tanosi.ku　　yar.oo.**
　　　summer=GEN　duration=TOP　cheerful.ADV　do.HOR
　　　'If you (Reiko), have to leave, then let's at least enjoy ourselves during [this]
　　　summer!'　　　　　　　　(Tsuruoka Yūji: *Yonjugo kaiten no natsu* (novel), 1991)

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4. Semantic prosody means that "a given word or phrase may occur most frequently in the context of other words or phrases which are predominantly positive or negative in their evaluative orientation […]. As a result, the given word takes on an association with the positive or, more usually, the negative, and this association can be exploited by speakers to express evaluative meaning covertly" (Hunston & Thompson 2000: 38).

The sentence ends on a hortative and may be a suggestion in terms of speech act type, but there is no specific frequent discourse pattern with *–(a)na.kereba nar-ana-*. The main clause could also be a simple statement as in (14).

(14) *Soosa=ga   ugoi.te   i.ru=dake=de   **ritoo~si-na.kereba***
      investigation=NOM move.GER be.NPS=LIM=ESS leave.party~do-NEG.CON
      nar-ana.i=nara   *ima=no   sikkoobu=wa*
      become-NEG.NPS=CON   now=GEN   leadership=TOP
      i-na.ku   nar.u.
      be-NEG.ADV   become.NPS
      'If one would have to leave the party just because an investigation has been launched, the whole current party leadership would be gone.'
      (Mainichi Newspaper 1998)

So, the fact that *–(a)na.kereba nar-ana-* is practically only embedded in *nara* is merely a grammatical pattern, or shows a grammatical constraint, and does not entail a discursive pattern. There are two conceivable reasons for this grammatical pattern. (1) *nara* indicates a looser connection between the two clauses, and thus permits deontic modality, which the others don't permit. Note that the three instances of the other obligation marker *beki* are also all found in a *nara*-marked protasis. (2) *–(r)u=to, –Tara*, and *–(r)eba* are themselves potential part of the construction *–(a)na.kereba nar-ana-*, which has variants such as *–(a)na.i=to nar-ana-* and *–(a)na-kat.tara nar-ana-*. Only *nara* does not participate in this construction. Therefore, *nara* is the only marker that is easy to distinguish from the obligation construction in the protasis.

The other pattern, which involves an evidential, is of greater interest with respect to pragmatics and discourse. As was saw above in 4.1, *–(r)u=to* hardly allows any modal markers inside the protasis. Moreover, it turns out that it is only a single marker that can actually be found with *–(r)u=to*, namely the evidential *yoo* (appearance). The pattern can be illustrated with example (15):

(15) *Matsuda Moto seNmu=wa   "Dau=no   otikomi=ga   **tuduk.u***
      PN   PN   director=TOP Dow=GEN depression=NOM continue.NPS
      yoo=da=to,   *sekai   keizai=ni   eikyō=o*
      EVI=COP=CON world economy=DAT influence=ACC
      atae-kane-na.i"=to   huaN.si~si,…
      give-NPO-NEG.NPS=QUO anxiety.view~do
      'Executive director Matsuda Moto took an anxious view, "If the Dow continues to be depressed, this could influence the world economy"'
      (Mainichi Newspaper, 1998)

The protasis expresses some event that if materialized would lead to the negative consequences described in the apodosis. The sentence overall thus expresses an apprehension. There is no corresponding pattern in English or German that I am

aware of. A literal translation of the protasis would be 'if there is evidence that X will occur'.

The apodosis with *yoo=da=to* is not only a salient grammatical pattern, but also contains a salient semantic prosody. If the protasis ends on *yoo=da=to*, the hearer can already expect something negative to be described in the apodosis.[5] This pattern also explains the extreme numbers of *–(r)u=to* in Table 9 and Table 11. The event described is always some third person event (that is, not in the hands of the speaker or the hearer) (Table 11), and the apodosis typically contains some kind of negative prediction (Table 9), that is, a representative instead of a directive or commissive speech act, which are typical for all other conditional markers with an apodosis containing modal marking. Interestingly, although combinations with other conditional markers, i.e., *yoo=de areba, yoo=dattara*, and *yoo=nara*, are also found in the corpus, they usually don't share the same semantic prosody with *yoo=da=to*, as can be seen in ex. (16).

(16) *Go.situmoɴ=ga*   **gozaimas.eɴ yoo=desi.tara,** *kore=de kono*
      HON.question=NOM be[HON]-NEG EVI=COP.CON   this=ESS this
      kisya   happyookai=o   owar-ase.te
      reporter presentation=ACC end-CAU.GER
      itadaki-ta.i=to   omoi-mas.u
      get-BOU.NPS=QUO THINK-POL.NPS
      'If there are no [further] questions, I will hereby end the press presentation.'
                                                    (Komatsu Sakyō: *Shuto Shōshitsu* (novel), 1983)

It is therefore clear that the specific semantic prosody is bound to the specific construction with *–(r)u=to*.

5. Conclusion

The goal of this paper was first to provide evidence for the tightness of clause integration with conditional clauses relative to other types of subordinate clauses and for the differences between several types of conditional clauses in Japanese. Second, we wanted to identify pragmatic and discursive patterns associated with the use of modality in conditional clauses. The findings are as follows:

1. This paper adds to evidence that Japanese conditional sentence constructions are tighter integrated than their closely related peers, specifically causal and probably also concessive constructions (cf. also Minami 1993; Narrog 2015).

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5.   Interestingly, this semantic prosody seems to have developed fairly recently. It is not yet present in the examples from pre-war texts that I found.

This is in apparent contradiction to van Valin (2005), where conditional constructions are ascribed a status of 'loose semantic cohesion' and 'weak syntactic link' on the level of 'clausal coordination' (cf. Table 1).

While the present study was exclusively based on Japanese data, Narrog (2015) showed that conditional sentence constructions among others allow less topic phrases than causal clause constructions cross-linguistically. Therefore there is a good chance, that the results of this study are not entirely language-specific but replicable in other languages as well.

2. Distinct differences could be found between the four highly grammaticalized conditional markers in Modern Japanese: –*(r)u=to* affords the tightest clause integration. It practically allows only a single modal marker and the main clause is almost always declarative (a representative speech act). In contrast, *nara* affords the loosest clause integration. It allows boulomaic, deontic and evidential markers inside the protasis, and the apodosis is in most cases a directive or commissive.

3. With respect to modality, the results confirm the scope hierarchy between Japanese modal markers demonstrated in Narrog (2020). The epistemic and evidential markers with the widest scope are not found in the protases of conditionals, while narrow-scope boulomaic markers are extremely frequent compared to markers of all other categories. Deontic markers are in between, as corresponds to their scope properties.

4. Conditional constructions with modal marking in the apodosis overwhelmingly instantiate deontic speech acts, and are often other-directed.

5. Three discourse patterns were identified:
   a. Boulomaic marker in the protasis and modal marker or construction (modal verb equivalent) in the apodosis: The sentence expresses advice to the hearer and the protasis expresses a target of action or a necessity.
   b. Boulomaic marker in the protasis and imperative in the apodosis: The sentence expresses a rhetorical permission to the hearer about an action that the speaker disapproves of ("If you really want to do it, do it!")
   c. Evidential marker *yoo* in the protasis, and a declarative apodosis expressing an apprehension

   Patterns (5b) and (5c) have a negative semantic prosody.

This study was based on Japanese data. While the claim with respect to the tightness of clause integration with conditionals vs. other types of adverbial clauses concerns clause structure and scope, and therefore should apply quasi universally to other languages as well, the findings about discourse patterns are in the first place language-specific. However, it is striking that pattern (5a) was found to be

just as dominant in a genetically and areally totally unrelated language (Brünner 1983). This points to the possibility that a kind of universal pragmatic reasoning is involved. I suspect that (5b), which is also fairly transparent with respect to the contribution of the modal marker and the conditional clause, would likewise be found in other languages if investigated. When it comes to English, the problem is that the most common boulomaic modal marker *want to* is not a modal but a semi-modal and therefore has not been included in many studies of modality. However, one may expect similar results. (5c) is not very transparent with respect to the contribution of the modal element and might be a language-specific grammatical pattern.

The bias towards certain types of marked speech acts in the apodoses strongly suggests that conditionals with a modalized protasis are used to achieve specific goals in the interaction between speaker and hearer, rather than to simply indicate the logical relationship of two propositions. While I didn't analyze the data for register, it is also striking that despite the heavy written bias of the Japanese corpus, most examples were from represented conversation, be it in novels or in newspaper texts. To borrow Akatsuka's (1986) wording, conditionals with modal marking in the protasis are clearly "discourse-bound". The frequency of distributions is largely driven by pragmatics rather than syntax.

Lists of abbreviations

ACC	accusative	FOC	focus
ADV	adverbial	GEN	genitive
AVS	adversative	GER	gerund
BOU	boulomaic (modality)	HON	honorific
CAU	causative	LIM	limitative
CON	conditional	LOC	locative
COP	copula	NEG	negation
DAT	dative	NPO	negative potential
DEM	demonstrative	NPS	non-past
DEO	deontic (modality)	POL	politeness
EPI	epistemic (modality)	PST	past
ESS	essive	QUO	quotative
EVI	evidential	TOP	topic
EXM	exemplative	VBZ	verbalization

Acknowledgments

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CHAPTER 8

Present-day English constructions with *chance(s)* in Talmy's greater modal system and beyond

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Based on qualitative and quantitative corpus research, this chapter argues that constructions with *chance(s)* in Present-day English enrich Talmy's (1988) greater modal system in various ways. Firstly, in their modal uses they are equivalent to core modal auxiliaries and encode especially dynamic and epistemic meanings. We maintain that the partial decategorialization of *chance* allows for more fine-grained expression of modal meanings by bringing in constructional templates that incorporate slots for potential premodification, as in *have a good chance of* V-*ing*. Secondly, they can express caused-modal meanings, in which case a causative operator is added to a basic modal meaning. Finally, structures with *chance(s)* also exceed Talmy's (1988) greater modal system, as they can still be used lexically, which core modals no longer can.

Keywords: force dynamics, epistemic modality, dynamic modality, complementation, shell noun, lexicalization, grammaticalization, discourse prominence, decategorialization, verbo-nominal patterns

1. Introduction

This chapter deals with Present-day English constructions with the noun *chance(s)*, which is a semiotic noun or "shell noun", i.e. an abstract noun that is used to "characteriz[e] and perspectiviz[e] complex chunks of information which are expressed in clauses or even longer stretches of text" (Schmid 2000: 14). More specifically, it focusses on constructions in which the content of this shell noun is either explicitly or implicitly present in the co-text, i.e. the actual words

surrounding this node, by means of a complement. This complement can be clausal, taking the form of an *of*-gerundial clause in (1) and a *to*-infinitival clause in (2), or phrasal, taking the form of a prepositional phrase whose noun phrase complement contains an action nominal, as in (3).

(1) Having been kicked out of the Spanish Cup in the early rounds by Figueres, of the second division, they now have only a mathematical *chance* of winning la liga, which is to say no chance at all.   (WB, sunnow)[1]

(2) I thought you would die and I'd never get the *chance* to tell you I was s-s-sorry.   (WB, brbooks)

(3) Last November's referendum on the method of electing the president scuppered his *chances* for the job – leaving it to a future freely elected parliament to select the new head of state.   (WB, brspok)

Looking at the etymology of this noun tells us that it was borrowed from Old French and is attested in English from Early Middle English onwards. The oldest meanings of *chance* listed in the OED*Online* are "[t]he falling out or happening of events; the way in which things fall out; fortune; case"; "[a]n opportunity that comes in any one's way. Often const. *of*"; "[a] possibility or probability of anything happening: as distinct from a certainty: often in plural, with a number expressed." The OED also points out that *chance* is often used in phrases, such as "[t]o stand a (fair, good) chance"; "Is there any chance of….?"; "[t]o be in with a chance". Our study will show that the earliest – happenstance – meaning of *chance* is very infrequent in the data studied, and that *chance* is indeed found in a number of recurrent patterns or phrases. For a detailed account of the diachrony of constructions with *chance*, the reader is referred to Van linden (2020).

The examples in (1) to (3) not only illustrate different types of complements found with *chance*, they also exemplify, we argue in this chapter, three distinct uses, viz. lexical, grammatical and caused-modal use. In (1) *chance* shows lexical use, in which statistical probability is at stake. In (2) *I'd never get the chance* expresses the dynamic modal meaning of participant-imposed impossibility as the *I*-person would never be able to apologize. In (3) it is said that the referendum has decreased the likelihood of him getting the job of president. Rather than expressing a modal meaning, this is a caused-modal use, in which *scupper his chances* adds a (semantically) negative causative operator to the basic epistemic meaning. On the basis of these observations, we put forward that constructions with

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1. See Section 2 for more information on the Collins Wordbanks*Online* corpus (WB) used for this study.

chance(s) enrich the greater modal system (cf. Talmy 1988) in three ways (cf. Van linden & Brems 2017). Firstly, they expand the inventory of, mostly, epistemic and dynamic modal expressions, as they appear to be functionally equivalent to modal auxiliaries. Secondly, they also go beyond the functional reach of core modal auxiliaries by still allowing lexical uses, as shown in (1), which is no longer possible for the core modals. Thirdly, they can express 'caused modality' in augmented event structures that add a (positive/negative) causative operator as in (3). More generally, this work on constructions with *chance(s)* fits in with earlier work on the grammaticalization of constructions with semiotic nouns such as *doubt* (Davidse, De Wolf & Van linden 2015), *question* (Davidse & De Wolf 2012), *way* (Davidse et al. 2014), *fear* (Brems 2015), *wonder* (Gentens et al. 2016; Van linden, Davidse & Matthijs 2016) and *need* (Van linden, Davidse & Brems 2011), which combine with either complements or relative clauses and have been shown to have developed modal uses over time.

For the basic distinction between lexical and grammatical uses of constructions with *chance(s)* we use the criteria proposed by Boye and Harder (2007, 2012) in terms of primary versus secondary discourse status, as implemented in the studies on semiotic nouns referred to above as well. They argue that lexicalization and lexical status involve discourse primariness, whereas grammaticalization and grammatical status involve coded discourse secondariness. This will be explained in more detail in Section 3.

The chapter is organized as follows. Section 2 presents the data and methods used for the synchronic corpus study underlying this chapter. Section 3 discusses how we distinguished between the three main expression types observed, i.e. lexical, grammatical and caused-modal uses, drawing on Boye & Harder's (2007, 2012) criteria used to tell between lexical and grammatical expressions. Comparing the three main uses of constructions with *chance(s)*, we will also focus on the role of polarity in grammaticalization, and on reflexes of decategorialization of the noun *chance* in grammatical uses (cf. Hopper 1991). Sections 4 to 6 will then home in on the three main uses separately, providing in-depth qualitative and quantitative discussions of, respectively, modal, caused-modal and lexical(ized) uses. In these sections we will use the term 'verbo-nominal patterns' to refer to constructions in which *chance(s)* together with a verb brings in a complement. This can be the case in modalized grammatical uses (e.g. *get the chance* in (2)) as well as lexicalized uses in which *chance* is incorporated into a complex predicate (e.g. *take a chance*; see Section 6.2). Constructions in which the semiotic noun *chance(s)* itself brings in the complement will be referred to as regular uses when they are lexical (see Section 6.4). Section 7 wraps up with some overall conclusions.

2.   Data and methods

The dataset for this chapter is drawn from the British subcorpora of Collins Word-bank*Online* (henceforth WB), excluding brregnews, i.e. British regional newspapers like the *Belfast Telegraph* and *The Irish Times*. More precisely, we took two random samples of 250 tokens each targeting the lemma *chance*, one from the spoken and one from the written British English subcorpora. Table 1 gives an overview of the specific subcorpora that were used, specifying the total number of tokens per subcorpus and their contents. For each of the examples given in this chapter, we will mention the subcorpus it comes from, using the labels in the first column.

Table 1. British subcorpora in WB used

Subcorpus	Total number of tokens	Description
brbooks	76,062,449	Fiction, Non-Fiction
sunnow	51,805,654	Sun, News of the World
times	46,759,194	Times, Sunday Times
brmags	16,349,388	Magazines
brnews	6,006,167	Newspapers
brephem	4,977,155	Ephemera: Pamphlets, Brochures, Tickets etc.
brspok	41,403,450	Transcribed Speech: British Spoken Corpus: Cobuild, BBC World Service

It is clear from Table 1 that for the British subcorpora the written data outweigh the spoken ones. This holds true for WB as a whole with written data of various kinds making up 88.88% of the corpus and spoken data only 11.12%.

The corpus query targeted the lemma *chance*, thus netting in both singular and plural uses of the noun. We manually sorted the data keeping only semiotic or shell uses of the nouns that have complements, which are either overtly expressed as in (4) and (6), or retrievable from the co(n)text (5):

(4)   They saw her entry into the war as an opportunity to pursue their own interests rather than as a *chance* to devise a new alliance strategy.
                                                                                    (WB, brephem)

(5)   Mr Bush is being criticised for not having pursued the Iraqi leader when he had the *chance*.   (WB, brspok)

(6)   If you are in debt and under stress, the *chances* are that your personal life is suffering.   (WB, brbooks)

In (5) the implied complement is *to pursue the Iraqi leader* and can be retrieved from the preceding co-text. Complements can take the form of a *to*-infinitive (4), *that*-clause (6), *of*-gerundial (1), or preposition + action nominal (3) among others.

We excluded hits in which *chance* functions as a nominal classifier, as in *a chance finding* in (7) for instance, as well as hits in which *chance* was incorrectly tagged as a noun but was in fact a verb form, as in (8). In addition, we excluded phrases such as *by chance* (9).

(7) There were no differences except for clotting function, though this may be a *chance* finding. (WB, brmags)

(8) I didn't want to *chance* losing my kids. (WB, brspok)

(9) If, *by chance*, anyone disagreed with this, they were executed or sent to a labour camp, under Joseph Stalin, or declared mentally ill and put in an asylum under Leonid Brezhnev. (WB, brspok)

The remaining two sets of 250 relevant examples each were then classified into three main expression types, i.e. grammatical(ized), lexical(ized) and caused-modal uses, to which we will turn immediately below.

3. General overview: Tripartite classification

This section sets out to explain the criteria used to distinguish between lexical and grammatical uses of constructions with *chance(s)* based on Boye & Harder (2007, 2012), as well as the recognition criteria for caused-modal uses, comparing also the frequencies of these three uses in the corpus data. In addition, it will concentrate on two aspects of grammaticalization discussed in the literature, i.e. the role of negative polarity as a trigger for the development of modal meaning, and effects of decategorialization. The grammatical uses of constructions with *chance(s)* concern the expression of modal meanings, mostly dynamic and epistemic, with the possibility of the former getting a deontic inference, and some examples being vague between dynamic and epistemic meanings (see Section 4).

For the distinction between lexical and grammatical uses, we used the criteria proposed by Boye and Harder (2007, 2012) in terms of primary versus secondary discourse status. They argue that lexicalization and lexical status involve discourse primariness, whereas grammaticalization and grammatical status involve coded discourse secondariness. "Grammar is constituted by expressions that by linguistic convention are ancillary and as such discursively secondary in relation to other expressions" (Boye & Harder 2012: 2). As opposed to lexical expressions,

grammatical ones, such as modal auxiliaries, are "noncarriers of the main point serving instead an ancillary communicative purpose as secondary or backgrounded elements" (Boye & Harder 2012: 6–7). In keeping with Davidse, De Wolf & Van linden (2015: 26), we argue that because of their discourse primariness lexical uses of *chance(s)* are inherently "addressable" (Boye & Harder 2007: 581–585; 2012: 7–8) for instance by means of tags, *really*-queries and *yes/no*-questions as shown in (10a)–(10c) respectively. Example (4) from Section 2 is repeated here as (10):

(10)   They saw her entry into the war as an opportunity to pursue their own interests rather than as a *chance* to devise a new alliance strategy.

<div align="right">(WB, brephem)</div>

    a.   It was a chance to devise a new allegiance, wasn't it?
    b.   It was a chance to devise a new allegiance strategy. – Really?
    c.   Was it a chance to devise a new allegiance strategy?

In (10) the notion of chance is discourse primary as it is the main point of the communication to see whether something should be qualified as an opportunity or a chance. Obviously, the co-text is very important in this analysis.

By contrast *The chances are* in (11), which repeats (6), is secondary in the discourse compared to the proposition it modifies. It cannot be queried by a *yes/no*-question, nor tagged, as shown in (11a) to (11c):

(11)   If you are in debt and under stress, the *chances* are that your personal life is suffering. (WB, brbooks)
    a.   Are the chances that your personal life is suffering?
    b.   ?The chances are that your personal life is suffering. – Really?
    c.   *The chances are that your personal life is suffering, aren't they?

In (11) *the chances are* modifies the following lexical content, which is the main point of the communication, by assessing the likelihood with which it will occur (see Section 4 on modalized expressions). In (11b) the query by means of *really?* is as such not impossible, but it is important to note that it does not target the matrix with *chances are*, but rather the contents of the complement clause: would your personal life really be suffering in these circumstances?

It should be noted that the distinction between lexical and grammatical use is not always clear-cut. That is, some cases had better be analysed as bridging contexts (Evans & Wilkins 2000: 550), i.e. examples that contextually support both a lexical and a grammatical reading. A case in point is (12).

(12)   We gave it everything we had but it was not quite enough. We had a *chance* to win it but there are no excuses. (WB, times)

In a lexical reading, the chance referred to in (12) refers to the football players having a chance to score the winning goal, and this is the most important information. In

a grammatical reading, *chance* refers more generally to the whole game offering the opportunity to win and the sentence is interpreted as the speaker assessing, in hindsight, that their team could have won (epistemic judgement), or the speaker indicating that their team had the capacities to win (dynamic expression), but unfortunately did not succeed. For a more detailed discussion of these modal notions, the reader is referred to Section 4. As indicated in Table 2 below, bridging contexts are very infrequent in our datasets, and will hence not be discussed in further detail.

The third main type of use we distinguish in this chapter is that of caused-modal uses, as in (13) (cf. Van linden & Brems 2017):

(13)   Chairman John Yorkston has admitted Richard Gough's plan to draft in
Archie Knox as his right-hand man has boosted his *chances* of being Pars
gaffer.   (WB, sunnow)

In these patterns a (positive or negative) causative operator is added to a basic modal meaning. In (13) Richard Gough's plan to draft in Archie Know as his right-hand man makes it more likely that he will become the manager of Dunfermline Athletic Football Club (or "Pars gaffer"). Rather than epistemically assessing the likelihood of the propositional content coded in the complement, as in (11), examples like (13) make a statement on how to *increase* the likelihood of something. As will be explained in greater detail in Section 5, we do not consider caused-modal uses to be grammatical proper.

Table 2 below presents the quantitative instantiation of the three main expression types in the spoken and written datasets studied, which will be discussed in more detail in Sections 4 to 6 below. In addition to describing the semantic and discursive features of structures with *chance*, these sections will also look for correlations of the three expression types with specific constructional properties, such as the presence of a larger unit *chance* takes part in (e.g. *have a chance*), the formal type of complement, and modification of the noun *chance*, as well as polarity value preferences.

Table 2. The distribution of types of uses of *chance* in spoken and written UK English

	Spoken		Written		Total	
OVERVIEW	**n**	**%**	**n**	**%**	**n**	**%**
Modal	117	46.80	87	34.80	204	40.80
Caused-modal	41	16.40	54	21.60	95	19.00
Lexical(ized)	90	36.00	108	43.20	198	39.60
Bridging modal/lexical	2	0.80	1	0.40	3	0.60
Total	**250**	**100.00**	**250**	**100.00**	**500**	**100.00**

Table 2 shows that there are more modal uses in the spoken data. In fact, Fisher's exact tests indicate that the share of modal uses is significantly larger in the spoken dataset compared to the written data (p = .008). This might indicate that the grammaticalization of *chance(s)* in spoken language precedes changes in the written mode. This is in keeping with Halliday (1978), Chafe (2003) and Du Bois (2003), who have all singled out casual conversational language as an important locus of language change and innovation because it is less subject to overly conscious forms of monitoring or engineering. The shares of caused-modal and lexical(ized) uses do not differ significantly across the two language modes studied. Whenever the mode variable is found not to reach statistical significance, the findings for the two datasets will be conflated in a single table in Sections 4 to 6.

We now turn to the role of polarity in the development of grammatical meanings in patterns with *chance*. Whereas previous research on other semiotic nouns has shown that negative polarity is often an important trigger for their grammaticalization (see among others Davidse et al. 2014 on *no way*; Davidse & De Wolf 2012 on *no question*; Davidse, De Wolf & Van linden 2015 on *no doubt*; and Van linden, Davidse & Matthijs 2016 on *no wonder*), this seems far less the case for constructions with *chance(s)*. Tables 3 and 4 show the percentages of the three main uses related to polarity.

Table 3. Polarity values among types of uses of *chance* in spoken UK English

	Positive polarity		Negative polarity		Total	
Spoken	**n**	**%**	**n**	**%**	**n**	**%**
Modal	81	69.23	36	30.77	117	100.00
Caused-modal	35	85.37	6	14.63	41	100.00
Lexical(ized)	69	76.67	21	23.33	90	100.00
Bridging modal/lexical	0	0.00	2	100.00	2	100.00
Total	**185**	**74.00**	**65**	**26.00**	**250**	**100.00**

Table 4. Polarity values among types of uses of *chance* in written UK English

	Positive polarity		Negative polarity		Total	
Written	**n**	**%**	**n**	**%**	**n**	**%**
Modal	64	73.56	23	26.44	87	100.00
Caused-modal	44	81.48	10	18.52	54	100.00
Lexical(ized)	94	87.04	14	12.96	108	100.00
Bridging modal/lexical	1	100.00	0	0	1	100.00
Total	**203**	**81.20**	**47**	**18.80**	**250**	**100.00**

If we first compare Tables 3 and 4, we see that the shares of positive and negative polarity do not differ so much across the two datasets studied. This is validated by a Fisher's exact test; the p-value does not reach the .05 level of significance (p = .06). If we then home in on the difference in polarity preferences between the basic uses, we find that – if we disregard the infrequent bridging contexts – modal uses show significantly higher rates of negative polarity than lexical(ized) and caused-modal uses (Fisher's exact p = .004 for spoken and written data together). Yet, compared to other semiotic nouns such as *wonder, doubt* and *way*, the association between negative polarity and grammatical meaning is far weaker in the case of *chance*. Van linden (2020) shows that this observation holds for the diachronic development of constructions with *chance* as well.

A second aspect of grammaticalization we consider relevant to our corpus study is one that has received considerable attention in grammaticalization research, also beyond the study of semiotic nouns in English, i.e. Hopper's (1991) principle of decategorialization. This principle measures the 'degree' of grammaticality or grammaticalization of an item or construction; it refers to the fact that as a noun or lexical verb grammaticalizes they typically lose (some of) the morphological properties associated with their original lexical category. For countable nouns this concerns the singular/plural contrast, but also the possibility to be premodified by adjectives. The principle hence predicts that in its lexical use *chance(s)* still acts as a real noun that can be modified by adjectives and can appear in the singular and plural form. This is motivated by the categoriality principle (Hopper & Thompson 1984), which states that categories, i.e. word classes, should be related to their basic discourse functions. In this view, nouns are viewed as the prototypical instantiation of the basic discourse functions of identifying referents and their morphosyntactic properties are attributable to these functions. As we will see in Sections 6.1 to 6.4, lexical uses do indeed appear quite easily with a variety of adjectives and we also find singular count, plural count as well as uncount uses of *chance*.

As will be argued in Section 4, the premodifying adjectives that appear in grammatical uses are restricted to degree modifiers such as *better, good* and *fair*. They are compatible with and can be said to further reinforce the modal value expressed rather than attest to *chance* still being a noun and hence lexical in nature (cf. Davidse & Van linden 2019). Figure 1 shows that in the three main uses distinguished here *chance* is premodified in less than 30% of the cases. This figure includes data from both datasets studied, as the shares of examples showing premodification do not differ significantly across spoken and written mode (Fisher's exact p = .6). Interestingly, our data show that modalized expressions may very well show premodification of *chance*; the difference in frequency with lexical(ized) uses is not statistically significant (Fisher's exact p = .1). It will be shown in Sections 4 to 6 that it is not the frequency of premodification that matters in relation to the type of use, but rather the semantic nature of the premodifiers.
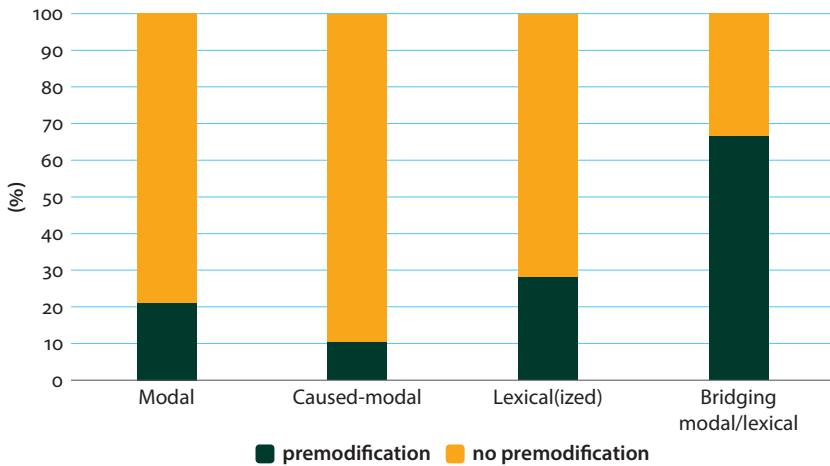
Figure 1. Premodification of *chance* across the basic uses in spoken and written UK English

Similarly, in the context of the grammaticalization of size noun expressions such as *a lot of* and *a bunch of*, Brems (2011: 194–201) showed that both lexical uses and grammatical quantifier uses occur with premodifying adjectives, seemingly undermining decategorialization and grammaticalization claims. However, the premodification patterns differ systematically and are reduced to degree modifiers like *whole* for quantifier uses, whereas lexical uses appear with all kinds of premodification. It was argued that this partial decategorialization displayed by quantifier uses does not detract from their being grammatical and that this potential for restricted premodification actually enriches the quantifier paradigm. In almost the same vein, Brems (2011: 191) argued that plural size noun quantifiers such as *lots of* and *heaps of* have lost their true plural meaning and instead reinforce the grammatical quantifier semantics. This also goes for *chance* and *chances*, which refer to a single chance and more than one chance respectively in their lexical use, whereas in their grammatical uses this functional contrast is lost. In sum, we argue that modal constructions with *chance* and *chances* do show at least partial decategorialization, which seems in keeping with the idea of ongoing grammaticalization processes.

4. Modalized expressions

In the first type of constructions to be dealt with in more detail, *chance(s)* is used in modalized expressions which convey basically dynamic or epistemic meaning, or which are vague between these two meanings, as discussed in Section 4.1. Section 4.2 will show that these expressions show less variety in terms of

constructional properties than the caused-modal and lexical(ized) ones discussed in Sections 5 and 6.

4.1   Types of modal meaning

Patterns with *chance* are found to express different modal notions in the Present-day English data studied; Table 5 details the quantitative instantiation of these in the spoken and written datasets. It is clear that the different types of modal notions take up similar shares across the two mode types studied; Fisher's exact tests confirm there are no statistically significant differences between the two types for any modal notion. We can see that epistemic and dynamic modality account for equal shares of about 40%.

Table 5. The types of modal meanings expressed by structures with *chance*

Modalized expressions	Spoken		Written		Total	
	n	%	n	%	n	%
Dynamic	49	41.88	36	41.38	85	41.67
Dynamic + deontic	6	5.13	2	2.30	8	3.92
Dynamic/epistemic	14	11.97	12	13.79	26	12.75
Epistemic	44	37.61	36	41.38	80	39.22
Epistemic + volitional	3	2.56	1	1.15	4	1.96
Epistemic/polar	1	0.85	0	0.00	1	0.49
Total	**117**	**100.00**	**87**	**100.00**	**204**	**100.00**

Epistemic modality has been defined as involving the speaker's (or someone else's) assessment of a propositional content in terms of likelihood. Epistemic expressions thus convey the degree of probability of a specific propositional content, as assessed by a modal source (cf. Palmer 1979: ch. 3, 2001: 24–35; Bybee, Perkins & Pagliuca 1994: 179–180; van der Auwera & Plungian 1998: 81; Nuyts 2006: 6). An example with *chance* is given in (14).

(14)   It [i.e. NATO] has spoken of extending the hand of friendship to the Soviet Union and Eastern Europe. It has declared that it'll take account of legitimate Soviet security worries. And there's every *chance* the NATO summit will unveil a revised military strategy for the Alliance.   (WB, brspok)

In (14), *chance* is found in the verbo-nominal pattern (VNP) *there* BE (det) CHANCE,[2] and the utterance can be paraphrased as 'the NATO summit will most likely unveil

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2.   In the rendering of matrix patterns, (det) stands for (determiner).

a revised military strategy for the Alliance.' The speaker thus uses the pattern with *chance* to give their assessment of the future NATO summit unveiling a revised military strategy for the Alliance in terms of likelihood. Note that the meaning of (high degree of) probability is not the main point of uttering (14); epistemic assessments are always ancillary to the propositional content they apply to.

In a few cases (2%, see Table 5), we found epistemic meanings with an implicature of volitionality. In (15), for example, the speaker not only estimates the occurrence of Stevie going in January as impossible, they also imply that they do not want that to happen. This implicature very much hinges on the ensuing co-text, which explicitly refers to the club's intentions. In our data, it is restricted to constructions showing negative polarity.

(15) But chief executive Rick Parry is backing boss Rafael Benitez to lead a drive for honours that will convince local boy Gerrard to stay with the club he has supported since he was a boy. Parry said: "There is no *chance* of Stevie going in January. That just won't happen. Our intention is that we will never let him go." (WB, sunnow)

One example presents a special case of negative polarity construction in which *no chance* is not incorporated in a larger unit and is used as an anaphoric adverbial which serves as a response to a preceding speech act, cf. (16).

(16) "But so are you two. You two will get together" – "Oh yes" – "and you'll say Right I want this and he'll say *No chance*." – "No chance. We can't do it. That's it." (WB, brspok)

No chance thus functions as an emphatic variant to the negative response item *no* (cf. Huddleston & Pullum 2002: 849; Brems & Van linden 2018; Van linden 2020). Uses like in (16) express the same basic meaning of epistemic impossibility; they are termed 'epistemic/polar' in Table 5 and account for a mere 0.50%.

In addition to epistemic modality, modalized structures with *chance* are found to express dynamic meaning in over 40% of the cases (see Table 5). Whereas the definition of epistemic modality given above is fairly uncontroversial, the category of dynamic modality is not generally recognized; for example, it is conflated with deontic modality in the two-way classification between root and epistemic modality (e.g. Coates 1983; Sweetser 1990). In those accounts that do include it as a separate basic modal category, it has received both narrow and broad definitions. The traditional definition is a narrow one, involving the ascription of an ability or capacity to the subject participant of a clause, as in *Jones can speak Spanish* (see von Wright 1951: 28; see Depraetere & Reed [2006: 281–282] for an overview of the relevant literature). In a broader, more recent definition, dynamic modality is taken to apply to all indications of abilities/possibilities, or needs/necessities inherent in agents or, more generally, participants of actions (which are not necessarily

syntactic subjects) or in situations (Palmer 1979: 3–4, ch. 5–6, 1990: ch. 5–6; Perkins 1983: 11–12; Nuyts 2006; Van linden 2012: 12–16). What is common to both definitions is that this type of modality does not involve an attitudinal assessment (e.g. of the speaker); rather, the abilities/possibilities or needs/necessities are indicated on the basis of grounds that are internal to (the participants in) the situation. This chapter adopts the broader definition, which applies in (17).

(17) "It's great for us," Richardson said. "It's been well documented that the club's struggling for cash and I'm just pleased we've got the *chance* to test ourselves against Premiership opponents here."   (WB, times)

In (17), the opportunity for the club to test themselves against Premiership opponents certainly does not reside in the physical abilities of the players, but rather in the external circumstances – or the context of the utterance – that is, decisions on the calendar of the soccer season. The VNP HAVE (GOT) (det) CHANCE can here be paraphrased by the semi-modal *be able to*: 'I'm just pleased we're able to test ourselves against Premiership opponents here.'

In about 13% of the cases (see Table 5), *chance* occurs in VNPs that are vague between epistemic and dynamic meanings. Semantically vague examples are different from bridging context, which involve semantic ambiguity (see Section 3 above), in that they involve "two or more semantic features *simultaneously* playing a role in the interpretation of a structure: grasping the meaning of such a structure involves incorporating two or more different semantic features into one global interpretation" (Willemse 2007: 562). The relevant cases here could be interpreted epistemically and dynamically at once. Example (18) is a case in point.

(18) He knew he was being followed. Since he was quite unable to run he had no *chance* of outstripping his pursuer, so he resigned himself to imminent recapture.   (WB, brbooks)

In (18), the same paraphrase proposed for (17) works ('he was not able to outstrip his pursuer'), but at the same time another paraphrase with the semi-modal *be likely to* also seems to adequately capture the meaning of HAVE (det) CHANCE here: 'he was unlikely to outstrip his pursuer.'

Finally, there are a small number of cases in which the basic modal meaning is dynamic, but in which the co-text triggers an additional deontic implicature (about 4 % in Table 5). Deontic modality has traditionally been associated with the notions of permission and obligation (e.g. von Wright 1951: 36; Lyons 1977: 823–841; Kratzer 1978: 111; van der Auwera & Plungian 1998: 81). While more recent approaches have argued to restrict the category to purely conceptual meanings related to the desirability of a situation, i.e. an attitudinal assessment on the basis of SoA-external grounds (Nuyts et al. 2010; Van linden & Verstraete 2011), this chapter will include directive notions like obligation and permission under the

label of deontic modality. It is the latter notion that is strongly implied in example (19) below, especially because of its preceding co-text.

(19)   "What about erm do you think while you were at school there was anything that you weren't allowed to do because you were a girl?" – "Mm. as well we had the *chance* to play football and we had a" – "Oh right" – "girls' football team and er it was really good."   (WB, ukspok)

In (19), the pattern with *chance* indicates what the girls were able to do within the circumstances at school (they had the opportunity to play football), but because the preceding question explicitly asks about instances of absence of permission, a directive-deontic notion, the pattern HAVE (det) CHANCE here also comes to imply the notion of permission. Note that the speaker reports here on the existence of permission; they do not grant this permission themselves. That is, we are dealing here with objective deontic modality rather than subjective deontic modality (cf. Verstraete 2001).

4.2   Constructional properties

Interestingly, the data indicate that the types of modal notions expressed by verbo-nominal patterns with *chance* discussed above correlate with certain constructional characteristics, such as the type of VNP (or matrix construction), the formal types of complement, polarity value preferences, and types of premodifiers. As the spoken and written datasets did not show statistically significant differences in terms of the distribution of modal notions (Table 5), the tables in this section conflate the two datasets, with a total of 204 examples.

Table 6. VNPs of modalized expressions with *chance* in spoken and written UK English

VNP	dynamic	Dynamic + deontic	Dynamic/ epistemic	Epistemic	Epistemic + volitional	Epistemic/ polar	Total
(the) CHANCES *are*	–	–	–	11	–	–	11
GET (det) CHANCE	12	3	–	–	–	–	15
HAVE (GOT) (det) CHANCE	69	3	20	18	–	–	110
STAND (det) CHANCE	1	–	2	4	–	–	7
there BE/SEEM (det) CHANCE	3	2	3	47	2	–	57
no CHANCE	–	–	1	–	2	1	4
Total	**85**	**8**	**26**	**80**	**4**	**1**	**204**

A first observation is that the 204 examples are realized by just five VNPs, which differ in terms of specialization for modal subtype, as evident from Table 6. The pattern (the) CHANCES *are*, for example, is used in epistemic expressions only, whereas GET (det) CHANCE is restricted to dynamic expressions (with or without deontic inference). The most frequent patterns, HAVE (GOT) (det) CHANCE and *there* BE/SEEM (det) CHANCE are also the most versatile ones. In addition to five VNPs, the string *no* CHANCE is also attested without a verb and without overt complement in expressions that combine epistemic meaning with other types of meaning.

If we now turn to the formal types of complement found for each modal notion expressed, as detailed in Table 7, we can draw conclusions similar to those on the distribution of VNPs across modal subtypes. *That*-clauses specialize in epistemic expressions, while *to*-infinitives are restricted to expressions that are (at least) dynamic in meaning. More versatile complement types include *of*-gerundial clauses and *of*-prepositional phrases whose noun phrase complement refers to an event or a propositional content. In about 7% of the cases and across many modal meanings, the complement is not overtly expressed, but can be inferred from the co-text (see example (5) above).

Table 7. Types of complements in modalized VPNs with *chance* in spoken and written UK English

Modalized expressions	*that*-clause	*to*-inf	*of* V-*ing*	*of*-PP (event/ prop)	*for*-PP (event)	*on*-PP (event)	implied	Total
Dynamic	–	66	9	2	1	–	7	85
Dynamic + deontic	–	6	1	1	–	–	–	8
Dynamic/epistemic	–	4	17	2	–	–	3	26
Epistemic	34	–	26	18	–	1	1	80
Epistemic + volitional	–	–	1	1	–	–	2	4
Epistemic/polar	–	–	–	–	–	–	1	1
Total	**34**	**76**	**55**	**24**	**1**	**1**	**14**	**204**

Furthermore, the data point to two correlations between modal subtype and polarity value of the modalized expressions with *chance*, i.e. the two least frequent modal notions only occur in negative polarity contexts, cf. Table 8. In the case of epistemic + volitional uses (e.g. (15) above), the combination with negative polarity is statistically significant (Fisher's exact $p = .006$) compared with other modal subtypes. All the other types of modal meanings occur far more frequently (about 73%) in positive than in negative polarity contexts.

Table 8. Polarity values in modalized expressions with *chance* in spoken and written UK English

Modalized expressions	Positive polarity		Negative polarity		Total	
	n	%	n	%	n	%
Dynamic	62	72.94	23	27.06	85	100.00
Dynamic + deontic	7	87.50	1	12.50	8	100.00
Dynamic/epistemic	17	65.38	9	34.62	26	100.00
Epistemic	59	73.75	21	26.25	80	100.00
Epistemic + volitional	0	0.00	4	100.00	4	100.00
Epistemic/polar	0	0.00	1	100.00	1	100.00
Total	145	71.08	59	28.92	204	100.00

Finally, as referred to in Section 3 above, the premodifiers found with *chance* in modalized expressions convey quantification or degree modification of the overall modal meaning expressed (cf. Davidse & Van linden 2019 on *wonder*). Frequent examples include the indefinite quantifiers *little* and *more*, and the evaluative adjectives *good, better, fair* and *real*.

5. Expressions of caused modality

While patterns with *chance* are found to be polysemous in the modal domain, expressing a wide range of grammatical, qualificational meanings similarly to English modal auxiliaries (Section 4), they also exceed the functional range of the modal auxiliaries in that they are found in what we call "caused modality" constructions (cf. Van linden & Brems 2017). Again, we can distinguish a number of semantic subtypes within this use, which will be discussed in Section 5.1. In Section 5.2, we will home in on the constructional properties of the types of caused-modal uses found.

5.1 *Chance* and Talmy's greater modal system

The category of "caused modality" constructions has been recently proposed by Van linden & Brems (2017) to refer to constructions which add a causative operator to a basic modal meaning. An example is given in (20).

(20) The Welsh star [i.e. Ryan Giggs] added: "When I get the children to Manchester, I'd like them to meet all the United lads – it'll give the kids a *chance* to touch people they'd only before seen on TV."   (WB, sunnow)

The pattern GIVE (det) CHANCE in (20) shows an augmented event structure compared to dynamic utterances like (17) above, in that an additional Causer participant has been added. This is clear from the corresponding paraphrase 'it [i.e. meeting Giggs' teammates from Manchester United] will *make* it *possible* for the kids to touch people they'd only before seen on TV'. The subtype illustrated in (20) is termed caused-dynamic meaning. Table 9 indicates the different subtypes of caused-modal meanings attested in the corpus. Fisher's exact tests point out that there are no statistically significant differences between the spoken and written datasets for any subtype. Caused-dynamic expressions like (20) above chalk up about 50% of the caused-modal uses.

Table 9. The types of caused-modal meanings expressed by structures with *chance*

	Spoken		Written		Total	
Caused modality	n	%	n	%	n	%
Caused-dynamic	18	43.90	29	53.70	47	49.47
Caused-dynamic +deontic	15	36.59	13	24.07	28	29.47
Caused-epistemic	8	19.51	12	22.22	20	21.05
Total	41	100.00	54	100.00	95	100.00

Second most frequent are examples like (21) below, in which a basic caused-dynamic meaning is overlaid with a deontic implicature (about 30%, see Table 9). Example (21) could thus be regarded as similar to the non-caused example (19) above, to which a causative operator has been added: 'Voting is due to start on Friday afternoon to allow people to cast their ballots before they head off to the country for the weekend.'

(21) Voting is due to start on Friday afternoon to give people the *chance* to cast their ballots before they head off to the country for the weekend, which is common here. (WB, ukspok)

We are of course not the first ones to note semantic affinity between modal and causative expressions. In fact, the patterns we found with *chance* offer support for – and onomasiologically enrich – Talmy's (1988: 80–81) "greater modal system", which is part of his (then proposed) semantic category of force dynamics. This category is concerned with "how entities interact with force" (Talmy 1988: 49); the main force-dynamic (semantic) roles include the Agonist, i.e. the focal force entity, and the Antagonist, i.e. the force entity that opposes the Agonist (Talmy 1988: 53). The greater modal system includes regular-verb members (the causative verbs *make/let/have/help*) as well as modal auxiliaries (or modal idioms like *had better*), as in the second and first line in (22) respectively.

(22)   He can/may/must/should/would not/need not/dare not/had better
        I made him/let him/had him/helped (him)
        –push the car to the garage.   (Talmy 1988: 81, Example (33))

Talmy (1988: 81) argues that the members of this system share the same syntactic properties, as they all combine with bare infinitives, and the same semantic properties, as they all have force-dynamic reference. However, the members fall into two groups in terms of which force-dynamic participant is mapped onto the subject function: causative verbs code the Antagonist as subject, while modals code the Agonist as subject. This difference amounts to a difference in verb argument structure, in which causative structures have an additional syntactic slot for the Causer participant (Antagonist in Talmy's terms) compared to structures with modal auxiliaries. The same relation holds between the caused-modal structures with *chance* in (20) and (21) compared to the modalized structures in (17) and (19) above. Expressions with *chance* thus evidence the conceptual connection between basic modal and caused-modal meanings that is at the basis of Talmy's (1988) greater modal system.

    In addition to caused-dynamic structures, with or without deontic implicature, we also found patterns with *chance* that we propose to analyse as caused-epistemic, which – in our understanding – is not included in Talmy (1988). They account for about 20% of the caused modality constructions. Examples are given in (23) and (24).

(23)   The mayor has expressed concern that anti-English feeling in the city
        [i.e. Turin], aroused by the Heysel stadium tragedy five years ago, could
        greatly increase the *chances* of violent disorder. (…) The majority of the
        thirty-five Italians who died at Heysel were Juventus supporters from Turin.
                                                            (WB, brspok)

(24)   Having now sampled what Scottish life has to offer, the player is keen to stay
        for longer – but fears a dispute over a transfer fee might scupper any *chance*
        he has of making the move permanent.   (WB, brbooks)

In (23), the mayor of Turin is concerned that anti-English feeling could make violent disorder more likely, and in (24), a dispute over a transfer fee might make it unlikely that football player McKenna's move from Cottbus to Edinburgh – initially on loan – becomes permanent. Note that (24) is grammatically positive but at the same time semantically negative because of the verb *scupper*.

5.2   Constructional properties

In terms of constructional characteristics, caused-modal expressions with *chance* differ most notably from modalized expressions in that they show a lexically varied set of verbs with more specific meanings than the verbo-nominal patterns

surveyed in Table 6 above. Other properties to be dealt with in this section include the formal types of complement, polarity value preference and prenominal modification. As the spoken and written datasets for caused-modal uses did not show statistically significant differences (cf. Section 5.1, Table 9), the tables in this section again put the two datasets together, totalling 95 examples.

Let us start with the verbo-nominal patterns found in caused-modal expressions, which are presented in Table 10. Comparing this table to Table 6 above, it is clear that far fewer tokens (95 vs. 204) occur in far more matrix types (23 vs. 5 or 6),

Table 10. VNPs of caused-modal expressions with *chance* in spoken and written UK English

Pattern	Caused-dynamic	Caused-dynamic + deontic	Caused-epistemic	Total
ALLOW X (det) CHANCE	–	2	–	2
BOOST (det) CHANCES	–	–	1	1
COST X (det) CHANCE	2	–	–	2
DENY X (det) CHANCE	1	1	–	2
DILUTE (det) CHANCES	–	–	1	1
ENHANCE X's CHANCES	–	–	1	1
GET (det) CHANCE	2	2	–	4
GIVE X (det) CHANCE	31	18	3	52
HEIGHTEN (det) CHANCES	–	–	1	1
IMPROVE (det) CHANCES	–	–	3	3
INCREASE X's CHANCES	–	–	3	3
JEOPARDIZE (det) CHANCES	1	–	–	1
KEEP UP (det) CHANCES	–	–	1	1
MINIMIZE (det) CHANCES	–	–	1	1
OFFER X (det) CHANCE	7	3	–	10
PROVIDE X *with* (det) CHANCE	1	–	–	1
QUASH (det) CHANCE	–	1	–	1
RAISE (det) CHANCE	–	–	1	1
REDUCE (det) CHANCE	–	–	2	2
REMOVE (det) CHANCE	1	–	–	1
SCUPPER (det) CHANCE	–	–	2	2
STRANGLE (det) CHANCE	–	1	–	1
WRECK (det) CHANCES	1	–	–	1
Total	**47**	**28**	**20**	**95**

and that the verbs carry more specific semantics. Caused-modal expressions thus show far greater lexical variability than modalized utterances. This lexical specificity, in our view, is another reason to deny grammatical status to caused modality.

Another observation regarding the VNPs in Table 10 is that they divide in semantically positive (e.g. *allow, boost, increase, raise*) and semantically negative items (e.g. *cost, deny, dilute, scupper, wreck*), for each of the three semantic subtypes.

Moving on to grammatical polarity, we can observe that caused-modal expressions predominantly occur in positive polarity contexts (83%), as shown in Table 11. The differences between the semantic types of caused modality are not statistically significant, with Fisher's exact p-values ranging between *p* = .3 and *p* = 1.

Table 11. Polarity values in caused-modal expressions with *chance* in spoken and written UK English

Caused modality	Positive polarity		Negative polarity		Total	
	n	%	n	%	n	%
Caused-dynamic	41	87.23	6	12.77	47	100.00
Caused-dynamic + deontic	23	82.14	5	17.86	28	100.00
Caused-epistemic	15	75.00	5	25.00	20	100.00
Total	**79**	**83.16**	**16**	**16.84**	**95**	**100.00**

In terms of formal types of complement, detailed in Table 12, the caused-modal expressions are similar to the modalized ones in that they combine with clausal complements in more than 80% of the cases, but they differ in that they do not pattern with *that*-clauses, which account for 16.5% of the modalized expressions (see Table 7 above). While caused-dynamic expressions clearly favour *to*-infinitival complements (as do dynamic modal expressions, cf. Table 7), caused-epistemic expressions prefer *of*-gerundials.

Table 12. Types of complements in caused-modal VNPs with *chance* in spoken and written UK English

Caused modality	*that*-clause	*to*-inf	*of* V-*ing*	*of*-PP (event/ prop)	*for*-PP (event)	implied	Total
Caused-dynamic	–	23	2	1	0	2	28
Caused-dynamic + deontic	–	35	6	3	1	2	47
Caused-epistemic	–	1	15	3	1	0	20
Total	**0**	**59**	**23**	**7**	**2**	**4**	**95**

The last constructional property to be looked at is prenominal modification. Figure 1 in Section 3 indicated that among the three main types of uses, caused modality features the lowest share of premodifiers (10.5%). If we take a closer look at the semantics of these premodifying elements, we find not only quantifiers (*little, more*) and evaluative adjectives expressing degree modification (*great, fair, best*), just like we recorded for modalized expressions, but also ordinal numbers (*second*) and nominal classifiers (*long-term*), which cannot serve the purposes of quantification or degree modification. These findings on the premodification of *chance* thus constitute another ground on which we do not regard caused modality as a purely grammatical category.

6.   Lexical(ized) expressions

As explained in Section 3, in lexical uses *chance* and *chances* are considered to be discourse-primary, i.e. the main point of the communication. The co-text in these uses makes it clear that these nouns refer to specific events or things that can be considered to constitute an opportunity or a coincidence. In Sections 6.1 to 6.4 we distinguish between subtypes of lexical uses in terms of the constructional template they occur in. Although lexical(ized) uses take up about 40% of the data analysed (see Table 2 in Section 3), they are treated here with far less quantitative detail than the other two main uses in the context of this volume.

6.1   Lexical uses: *Chance* is discourse-primary

We first focus on uses in which *chance(s)* is discourse-primary and combines with a limited set of light verbs like *have* and *be*. Interestingly, as we have seen in Section 4, the constructional template with *have* can also accommodate modal uses in which *chance(s)* is discourse-secondary. In examples (25) to (27), however, the co-text makes clear that we are dealing with discourse-primary uses. Note that the template with *be* is different from those in modalized expressions, as it involves predicative structures with fully referential subjects (cf. (26)–(27)), while the latter involve existential structures (cf. (the) CHANCES *are*; *there* BE (det) CHANCE in Table 6).

(25)   Mackie was the goal hero again in 70 minutes when Quino, Hart and Culkin got in a tangle and the Dons youngster pounced to poke the ball through the keeper's legs. The Dons twice had good *chances* to grab a dramatic late winner.   (WB, sunnow)

(26)   Britney is constantly looking for more grown-up pop and that is exactly what Natasha manages. "It is also a brilliant *chance* for Natasha to raise her profile in America."   (WB, sunnow)

(27)   Nicola Chenery, 33, hopes to conceive by the end of the year using a controversial technique not usually available in Britain. She and partner Mike Smith, 52, from Plymouth, have saved £6,000 for gender selection IVF treatment. (…) Nicola said yesterday: "Ever since I was a child I dreamed one day I would be a mum with a daughter. I love my four boys, but this could be my last *chance* to have a baby girl."   (WB, sunnow)

Example (25) refers to two real chances to score a goal in the context of a football match. In (26) American popstar Britney Spears contacting the British singer Natasha Bedingfield to write songs for her offers the latter an exceptional opportunity to raise her profile in America. In (27) an expensive and controversial IVF treatment abroad is seen as the last opportunity Nicola Chenery has to have a daughter. In examples (25) to (27) *chance(s)* is premodified by adjectives that further qualify or evaluate the opportunities, for instance in terms of how realistic or brilliant they are, as in (25) and (26) or whether it is seen as the final one (27).

6.2   Lexicalized uses: *Chance* in complex predicates

Chance or *chances* can also combine with a limited set of lexically full verbs including *take* to form a complex predicate that allows for a paraphrase involving the verb *to risk*, as in (28).

(28)   They gave the bands dressing rooms at opposite ends of the backstage area. A spokesman said: "We didn't want any punch-ups and took no *chances* on Liam and James coming face to face."   (WB, sunnow)

In (28) the T in the Park organisers do not want to risk any kind of bust-up between the British bands Oasis and Starsailor and therefore give them dressing rooms at opposite ends of the backstage area.

6.3   Lexical uses: *Chance* meaning 'coincidence'

In just two cases, *chance* has the specific happenstance meaning of 'coincidence'. These cases show the template *it* BE (det) CHANCE + *that*-clause, i.e. extraposition constructions[3] with anticipatory subject *it* that refers to a specific situation (coded in a *that*-clause) as being a coincidence or not. Remarkably, in (29), negative *It is no chance* gets a mirative overtone and expresses that the content of the complement clause is unsurprising (Delancy 2001: 369; Simon-Vandenbergen & Aijmer 2007: 37; Gentens et al. 2016). Van linden, Davidse and Matthijs

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[3].   For a critical assessment of the extraposition construction from a diachronic perspective, see Davidse and Van linden (2019).

(2016) have argued that mirative uses of *no wonder* typically work within a discourse schema involving a mirative marker (i.e. *no wonder*), a proposition that is assessed miratively, and a justification motivating this assessment. In (29) too we see that the fact that Shakespeare owned a legal textbook, rather than another type of textbook, is assessed as unsurprising given that he was litigious throughout his life.

(29)   Will Shakspere [sic] was indeed leapingly ambitious and determined. He was startlingly confident of his own abilities (as Nashe tells us) and had a greedy eye for gold. It is no *chance* that the book bearing his Westminster address is a legal textbook -- Will was to prove litigious and acquisitive throughout his life.   (WB, brbooks)

In the other case (30), there is no such mirative overtone; *it's just like chance* points out that it is purely coincidental, and not on purpose, that two people happened to buy similar boots.

(30)   that I I got for Christmas a nice pair of boots and then erm I I She didn't see them and then er she went out and bought herself a pair of boots and they were very similar. So sometimes it's just like *chance* that we wear Mm. Mm. the same things.   (WB, brspok)

6.4   Regular uses

What we call 'regular uses' of *chance(s)* include structures in which *chance(s)* does not form a larger unit with a verb in the way it does in all the examples discussed so far (apart from the adverbial use in Section 4). That is, in regular uses, it is the noun *chance(s)* itself that brings in the complement, rather than the combination of *chance(s)* + verb. Regular uses display a lot of variety in terms of their constructional make-up. *Chance(s)* and its complement can for instance be the direct object of the main verb (31) or the subject of a clause, as in (32) and (34). Example (33) is similar to the existential construction *There is an eighty per cent chance of a shower*.

(31)   Lydia Syson of the BBC assesses the *chances* of success of this new populist approach to Canada's perennial problem.   (WB, brspok)

(32)   Nina Blair, however, appeared to be deteriorating and her condition was critical; the *chances* of her survival were said to be minimal.   (WB, brnews)

(33)   At the moment we're talking an eighty per cent *chance* of a shower.
                                                                (WB, brspok)

(34)   That is why England's botched *chance* to sell cricket to a young public increasingly attracted by other sports, will probably be rued for years to come.   (WB, times)

In these lexical uses *chance(s)* can be premodified by a percentage (33) or other specific adjectives such as *botched* in (34). As mentioned earlier, this kind of premodification can be seen as a true lack of decategorialization and further proof that *chance(s)* is truly nominal and lexical here, as its lexical meaning can still be modified by various adjectives.

7.   Conclusion

In this chapter we have shown that constructions with *chance(s)* enrich Talmy's (1988) greater modal system in a number of different ways. In their modal uses they are equivalent to core modal auxiliaries and encode especially dynamic and epistemic meanings. In addition, dynamic uses can get an objective deontic inference when the co-text mentions some sort of authority, in which case the modalized utterance as a whole comes to refer to an ability that is due to or linked to permission being granted. Epistemic uses can get volitional inferences when the co-text contains an explicit reference to someone's intentions. Those cases then assess the likelihood of an event and indicate whether the (represented) speaker would like this to happen or not. In addition, some constructions are also genuinely vague between two modal values, namely dynamic and epistemic meaning. In such examples it is impossible and unnecessary to disambiguate between these two, as they refer both to abilities inherent in a situation or participant, and an assessment of the likelihood of something happening. Rather than seeing such cases with inferences or vagueness as detracting from the grammatical status of these modal uses, we want to argue that it is actually part of their assets within the modal paradigm and can be seen as pragmatico-semantic enrichment of the modal paradigm (cf. Brems & Davidse 2010).

In addition to this type of enrichment, constructions with *chance(s)* also bring in constructional variation and enrichment in at least two ways. Firstly, modal uses can either appear in verbo-nominal patterns, forming clausal structures, or as the anaphoric adverbial *no chance*. In the latter case, it is not integrated into a larger unit and functions as an emphatic negative response item to a speech act. With regard to verbo-nominal patterns, it was noted that modal uses typically appear with a limited set of very frequent light verbs including *have* and *be*. Partly because of these verbo-nominal patterns, modal uses of *chance(s)* can still appear with a restricted set of premodifiers, as in *have a good/fair/amazing chance*. We argued that such premodifiers modify the modal value and do not attest to *chance* still being a noun and hence lexical in nature. In addition, the plural form *chances* can appear in modal uses too. In both cases we argue that this partial decategori-alization enriches the paradigm by allowing for more fine-grained and expressive

renderings of modal meanings, bringing in constructional templates that incorporate slots for potential premodification.

Verbo-nominal patterns with *chance(s)* also further enrich the greater modal system in that they can express caused modality, more specifically caused-dynamic and caused-epistemic meanings, the former potentially involving a deontic inference. The category of caused-epistemicity, we feel, is new with regard to the causative notions already put forward by Talmy (1988). We argued that the category of caused modality is not purely grammatical, as it adds a causative operator to basic modal meanings. This claim squares with the lexical specificity found among the matrix verbs and premodifiers of *chance(s)* in caused-modal uses.

Constructions with *chance(s)* also exceed the range of modal auxiliaries because they still have lexical uses, which modal auxiliaries typically no longer have. These lexical uses either appear in complex predicates such as *take (no) chance(s)*, providing an alternative to 'to risk', or in verbo-nominal patterns with light verbs that are similar in surface structure to those attested for modal uses. Furthermore, there are also regular uses, which do not form part of a larger unit including a verb but bring in their complement by themselves.

With regard to polarity, finally, we noted that negative polarity is more frequent for modal uses of *chance(s)* constructions overall, but its role seems less important here than for other semiotic nouns, for which it was found that negative polarity was a trigger in their grammaticalization (e.g. *(no) wonder* (Van linden, Davidse & Matthijs 2016; Gentens et al. 2016), *(no) doubt* (Davidse, De Wolf & Van linden 2015), *(no) way* (Davidse et al. 2014), *(no) question* (Davidse & De Wolf 2012). In the case of *(no) need*, in turn, grammatical uses also emerged in positive negative polarity contexts, but the data nevertheless show a clear diachronic tendency to express more abstract modal meanings (e.g. deontic rather than dynamic) when combined with negative polarity (Van linden, Davidse & Brems 2011). Future research is needed to reveal why negation serves as a triggering or facilitating factor in some but not in other lemma-specific grammaticalization paths.

Acknowledgements

Corpus

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Moving to modal context

Register, genre and text type

A genre-based analysis of evaluative modality in multi-verb sequences in English

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This paper explores the nature of evaluative modality in multi-verb sequences with the deictic verb *go* as the first verb in English. It deals with four types of multi-verb sequences: *go-and-V, go-to-V, go-V*, and *go-Ving*. First, the paper proposes a general classification of multi-verb sequences. Second, by using the concepts of *cotext* and *context*, it shows the characteristics of each type of multi-verb sequence from the viewpoints of inflection of the first verb, the second verb selection, and genres of language use. Consequently, one conclusion can be drawn: while the *go-to-V, go-V*, and *go-Ving* sequences allow for a cotext-based interpretation, the *go-and-V* sequence can allow for both cotext-based and context-based interpretations.

Keywords: multi-verb sequence, evaluative modality, deixis, genre, frequency

1. Introduction

This paper explores the nature of evaluative modality observed in multi-verb sequences with the deictic verb *go* as the first verb in English. The aim is two-fold. The first is to propose a general classification of multi-verb sequences based on the semantic and syntactic relationships between the first verb *go* and second verb of the sequence. The second is to show the characteristics of the multi-verb sequences from the viewpoints of inflection of the first verb, the second verb selection, and genres of language use by using the concepts of *cotext* and *context*.

To provide appropriate context for our approach, we briefly explain the multi-verb sequence. In this paper, the term *multi-verb sequence* is defined in four ways in English: the *V-and-V, V-to-V, V-V*, and *V-Ving* sequences, where the first verb slot is always a single verb, and the second verb slot can be either a single verb or verb in a verb phrase. In this paper, the first verb is always the deictic verb *go*, and

the second verb can be either intransitive or transitive. The multi-verb sequence always lacks an intervening word or phrase between the first verb *go* and the second verb. (1) and (2) show examples of the four types of multi-verb sequences.

(1) a. He went and spoke to the manager.

  b. He went to see her on Sunday.

  c. Go wash your hands.

  d. He never went swimming.

(2) a. Why did you have to go and upset your mother like that?

  b. I did not go to change anything in the house.

  c. Did you have to go wreck my ideas?   (Zwicky 1969: 433)

  d. It's a secret, so don't go telling everyone.

From a syntactic viewpoint, each type of multi-verb sequence in (1) and (2) has a reduced structure in which one multi-verb sequence does not include two verb phrases, despite the existence of two verbs.[1] This means that each type of multi-verb sequence in (1) and (2) is part of a single verb phrase. From a semantic viewpoint, (1) and (2) show that there are two types of the first verb *go*. This paper refers to them as the lexical *go*, where the first verb *go* expresses deictic motion, as in (1), and the attenuated *go*, where the first verb *go* is used in its non-motion meaning, as in (2). Specifically, the attenuated *go* in (2) is used as a marker of evaluative modality. The concepts of *cotext* and *context* play a pivotal role in differentiating the lexical *go* and attenuate *go*.

This paper focuses on four types of multi-verb sequences with the attenuated *go*, as in (2). In the following sections, based on a general classification of

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1. Matsumoto (2015) points out one constraint on the multi-verb sequence with a reduced structure. The constraint is the integrity constraint in (i).

(i) the integrity constraint
  No word can be inserted between the first verb and the word following the first verb in the multi-verb sequence with a reduced structure.

Viewing the integrity constraint from the opposite side, a word or more than one word can be inserted between the first verb and the word following the first verb in the multi-verb sequence with a full syntactic structure where one multi-verb sequence always includes two verb phrases because of the existence of two verbs.

Carden and Pesetsky (1977) note a phonological difference between the *go-and-V* sequence with a reduced structure and the one with a full syntactic structure. While the *go-and-V* sequence with a reduced structure represents the reduced pronunciation of *and* when spelled *'n'* in phrases like *rock'n'roll*, the *go-and-V* sequence with a full syntactic structure has a pause before *and* (see Pullum 1990).

multi-verb sequences, this paper shows how the differences in the four types of multi-verb sequences with the attenuated *go* are closely related to the inflection of the first verb, the second verb selection, and genres of language use in a complicated way. This paper is structured as follows. Section 2 provides a brief descriptive and methodological background for the analysis of multi-verb sequences. Section 3 explains four types of multi-verb sequences with the attenuated *go* in terms of cotext and context. Section 4 provides an interpretation of the quantitative data of multi-verb sequences, and finally, Section 5 offers concluding remarks.

2. Descriptive and methodological background

In this section, the descriptive and methodological background is presented. Section 2.1 offers working definitions of the terms *cotext* and *context*. Section 2.2 briefly discusses previous accounts with respect to the single verb *go* as one of the properties of components of multi-verb sequences. Section 2.3 provides a general classification schema of multi-verb sequences based on the semantic and syntactic relationships between the first verb *go* and the second verb of the sequence. Section 2.4 establishes the relation between cotext and context, employing the working definitions of *cotext* and *context* provided in this paper.

2.1 Working definitions of cotext and context

Context has been long been a core concept in the field of pragmatics. Researchers generally agree that context is relevant in the determination of what is said. Based on this general agreement, for example, Lyons (1995: 271) states that the context of an utterance includes not only the relevant cotext, but also the relevant features of the situation of utterance. Although there are no strong objections to his statement, there are at least two crucial questions in Lyon's statement. One is what the exact meaning of cotext is, and the other is what the relevant features are. Since the relevant features that researchers primarily focus on vary between researchers, the term *context* has taken on different meanings based on each researcher. Goodwin and Duranti (1992) point out the difficulty in providing a single, precise definition of *context*. In this paper, cotext and context differ significantly. This subsection offers the working definitions of *cotext* and *context*, refining Halliday's definitions.

First, we provide the working definition of *cotext*. Based on Halliday's (1964: 178) definition that cotext is linguistic material in the surrounding text, the working definition of *cotext* is defined as follows: a particular word, phrase, or clause that is used together with the relevant word, phrase, or clause in a single sentence or a unit of talk. At this point, it is necessary to clearly explain the terms

single sentence and *unit of talk*. In written English, a single sentence begins with a capital letter and usually ends with a full stop or question mark. In our working definition, with respect to written text, a single sentence is a sentence that includes exactly one independent clause – that is, a simple sentence, as in (3) – or a combination of an independent clause and a dependent clause – that is, a complex sentence, as in (4).

(3)   We had toast and orange juice for breakfast.

(4)   We'll stay at home if it rains.

For instance, in (4), if the relevant phrase is *at home*, the cotext is *we'll stay if it rains*. A compound sentence itself, as in (5), is not considered a single sentence because it includes at least two independent clauses joined by a conjunction or semicolon.

(5)   Mom hated the movie, but dad thought it was good.

However, a simple or complex sentence embedded in a compound sentence is considered a single sentence. In this respect, if one conjunction precedes one simple sentence, one simple sentence with one conjunction is regarded as a single sentence. In (5), if the relevant clause is *it was good*, the cotext is *but dad thought*. With respect to spoken text, Schiffrin (1987: 36) notes that discourse markers as sequentially dependent elements mark boundaries between units of talk. In spoken text, where one discourse marker is observed, a part of the discourse marker brackets, as in (6), is regarded as a unit of talk (see Goffman 1974, Schiffrin 1987).

(6)   Debby: And you were born in North Philadelphia.
         Ira: No. I was born in uh in – in South Philadelphia, [but I moved to
                     North Philadelphia when I was a year old].   (Schiffrin 1987: 159)
         (A unit of talk is noted in square brackets by the present author.)

In this regard, a unit of talk in spoken text is equivalent to a single sentence in written text. The working definition of *cotext* discussed here is vital to understanding the concept of *context* employed in this paper.

Next, we provide the working definition of *context*. Modifying Halliday's (1964: 178) definition that "context refers to information outside of the text, available to a reader through understanding of genre, situation, and world knowledge", this paper defines the term *context* as follows. Context is twofold: one is surrounding text, which is not part of the relevant single sentence or relevant unit of talk, and the other is information that is beyond the relevant single sentence or relevant unit of talk available to a reader or hearer through their understanding of something non-linguistic such as behavior, genre, situation, or knowledge of the

world. In (5), if the relevant single sentence is *but dad thought it was good*, the surrounding text regarded as context is *Mom hated the movie*. In (6), if the relevant unit of talk is *but I moved to North Philadelphia when I was a year old*, information regarded as context is, for instance, that Debby lives in Philadelphia. Based on the working definitions of *cotext* and *context*, in Section 2.3, we explain the relation between cotext and context to highlight their important role in differentiating multi-verb sequences with the lexical *go* from those with the attenuated *go*.

2.2   The deictic motion verb *go*

The verb *go* is not only the most typical verb of motion, but also a deictic verb of motion. Regarding the deictic verb *go*, Fillmore (1971) explains that in specifying directional motion, *go* represents motion toward a goal where the speaker is not located at the time of an utterance. In this sense, *go* is source-oriented. (7) expresses Tom's movement from an unnamed location to the shop.

(7)   Tom went to the shop around noon.

(7) implies that the speaker was not in the shop, and the time reference *around noon* is understood as referring to the moment of Tom's departure from the presupposed location where his movement began. *Go* is used only when the speaker is not at the goal.

Based on Fillmore (1971), Clark (1974) explores non-literal or idiomatic uses, where *go* refers to a change of state rather than actual motion. In such non-literal or idiomatic uses, the normal state of being serves as the deictic center. The normal state as the deictic center should always be the source of *go*. Because the destination of the motion *go* is specified as somewhere other than at the deictic center, non-literal or idiomatic uses with *go* should only occur to indicate departure from the normal state, as in (8) and (9).

(8)   a.   Tom went into a coma yesterday.
      b.   *Tom went out of the coma yesterday.

(9)   a.   He went mad.
      b.   *The motor went alive again.

Clark also observes what she calls an evaluative use of *go*. The evaluative use is closely related to the normal state and motion use. The evaluative use represents another form of deixis. When considered a favorite viewpoint or generally acceptable attitude, the evaluative use of *go* defines its destination as somewhere other than the speaker's location at the time of the utterance. The destination of *go* evokes a neutral or negative evaluation. (10) seems more indicative of the speaker

who acts as a neutral observer, rather than a participant, and is uncommitted to the merits or demerits of growing tomatoes.

> (10)   The tomatoes are going along nicely this year.   (Clark 1974: 327)

(11) definitely suggests an airplane crash. This is confirmed by the fact that (12) cannot be modified by the adverb *safely*.

> (11)   The plane went down near the lake.   (Clark 1974: 327)

> (12)   *The plane went down safely near the lake.   (Clark 1974: 328)

Clark concludes that the evaluative use of *go* is a reflection of the speaker's viewpoint.

Bourdin (2003) scrutinizes *go-unVed* sequences. *Go-unVed* is *go* in combination with a past participle with the prefix *un-*. *Go* in the *go-unVed* sequence always functions as a marker of evaluative modality, which signals speakers' attitudes toward a situation in which the speakers specifically view themselves as deviating from their own personal assumptions or expectations about what is right or desirable. Essentially, the evaluative marker *go* signals the modal notion of counter-normativity, as in (13).

> (13)   I could never get a straight answer out of the bank. Many of my letters went unanswered.

(13) implies that it is common courtesy to answer letters and that people expect that sort of behavior. In a detailed and exact way, the *go-unVed* sequence shows what Bourdin calls impersonal quality. Impersonal quality is equivalent to a speaker's negative judgment on behalf of society because the violated norm tends to be perceived as a deviation or dissonance from a standard, rule, principle, or convention that is considered fundamentally right. Thus, it is fair to state that the modal marker *go* inherits the characteristic of what Clark (1974) calls the evaluative use of *go*. This modal marker *go* is significantly related to four types of multi-verb sequences with the attenuated *go* to be discussed in Section 3.

2.3   General classification of multi-verb sequences with the first verb *go*

To offer an in-depth analysis of membership in four types of multi-verb sequences, this subsection provides an overall picture of multi-verb sequences (see Matsumoto 2015). Table 1 shows the general classification schema of multi-verb sequences. In Table 1, L stands for lexical, and A for attenuated. From a syntactic viewpoint, various uses of the four types of multi-verb sequences can be categorized into two groups: the full-syntactic structure group, where one multi-verb sequence involves two verb phrases; and the reduced-structure group, where one

Table 1. General classification schema of multi-verb sequences

group	type	V-to-V		V-and-V		V-V		V-Ving	
		L	A	L	A	L	A	L	A
full-syntactic									
reduced-structure	semi-complement								
	adjunct/oblique								

multi-verb sequence is part of a single verb phrase. In many cases, the four types of multi-verb sequences with the first verb *go*, regardless of whether the first verb is lexical or attenuated, belong to the reduced-structure group. From a semantic viewpoint, the reduced-structure group discussed here can be categorized into two types: the semi-complement type and adjunct/oblique type. In the semi-complement type, the word sequence after the first verb behaves like a non-finite complement of the first verb and is in the semantic scope of the first verb. The sequence is virtually obligatory. In the adjunct/oblique type, the word sequence after the first verb is not in the semantic scope of the first verb, but it semantically acts either as an adjunct of the first verb or an oblique argument of the first verb. As mentioned in Section 1, two types of verbs occur as the first verb in multi-verb sequences: the lexical first verb, where the first verb is used in its basic meaning; and the attenuated first verb, where the first verb is used in its non-basic meaning. In Table 1, L stands for the lexical first verb, and A for the attenuated first verb.

The four types of multi-verb sequences with the lexical *go*, as shown in (1), belong to the adjunct/oblique type, whereas the ones with the attenuated *go*, as shown in (2), belong to the semi-complement type. For the first verb *go*, the attenuated first verb in the adjunct/oblique type and lexical first verb in the semi-complement type are virtually nonexistent. Each of the two types in the reduced-structure group can be further subcategorized into semantic subtypes. Regarding the adjunct/oblique type, the *go-and-V, go-to-V*, and *go-V* sequences have only one semantic subtype, referred to as the motion-purpose subtype in this paper. Each type of multi-verb sequence in (1) belongs to the motion-purpose subtype. In the motion-purpose subtype, the first verb *go* expresses deictic motion, and what appears to be the second verb phrase functions with a purpose in relation to the first verb.

In contrast to the *go-and-V, go-to-V*, and *go-V* sequences, the *go-Ving* sequence has four subtypes, which this paper calls the motion-purpose, motion-manner, motion-subject-depictive, and motion-result subtypes. The second verb plays an important role in differentiating the four subtypes in the *go-Ving* sequence. In the motion-manner subtype, the second verb always represents a manner of motion, as in (14).

(14)   Where's Lavinia? She's gone prowling the streets again. (Bolinger 1983: 156)

In the motion-subject-depictive subtype, the second verb has two features. One is that the second verb functions as subject-depictive, as in (15).

(15)   a.   Bill went screaming down the hill.   (Goldberg 2006: 52)
          b.   He went crying into his father's office.

As Goldberg (2006) and Salkie (2010) point out, the other is that the first verb *go* is required to take a prepositional phrase as a directional complement, such as *down the hill* in (15a) and *into his father's office* in (15b). In the motion-result subtype, the second verb represents a resulting state, as in (16).

(16)   I tripped and went sprawling.

Regarding the semi-complement type, the *go-and-V, go-V*, and *go-Ving* sequences have only one semantic subtype, which this paper calls the modality subtype, where the first verb *go* functions as a marker of evaluative modality. Each type of multi-verb sequence in (2) belongs to the modality subtype. In contrast to the *go-and-V, go-V*, and *go-Ving* sequences, the *go-to-V* sequence has two subtypes, which this paper calls the modality and contribution subtypes. In the contribution subtype, the first verb *go* is used to express 'to contribute to as a result'. According to Gesuato (2009), the first verb *go* collocates with inanimate subjects, most of which are pronominal, as in (17).

(17)   It just goes to show you can't always tell how people are going to react.

Broadly, *go* in (17) inherits the feature of the motion use of *go* and retains its source-oriented interpretation. Table 2 shows the general classification of multi-verb sequences regarding the first verb *go*. Based on the general classification of multi-verb sequences, this paper clarifies the characteristics of each type of multi-verb sequence.

2.4   Relation between cotext and context

Employing the working definitions of *cotext* and *context* provided in Section 2.1, this subsection establishes the relation between cotext and context to show that each plays an important role in differentiating multi-verb sequences with the lexical *go* from the attenuated *go*. This subsection discusses multi-verb sequences with the lexical *go* in the adjunct/oblique type. Section 3 deals with multi-verb sequences with the attenuated *go* in the semi-complement type. Before dealing with the four types of multi-verb sequences, we describe lexical and attenuated uses as a single verb. In this paper, both the lexical and attenu-

Table 2. General classification of multi-verb sequences regarding the first verb *go*

group	type	subtype	go-to-V		go-and-V		go-V		go-Ving	
			L	A	L	A	L	A	L	A
reduced-structure	semi-complement	modality		+*		+		+		+
		contribution		+						
	adjunct/oblique	motion-purpose	+			+	+			+
		motion-manner								+
		motion-subject-depictive								+
		motion-result								+

* stands for applicable.

ated uses as the single verb are divided into two groups. The first represents the inflection-bound group, and the second represents the inflection-free group. Both the inflection-bound and inflection-free groups are further divided into two types in terms of cotext and context, respectively. The first indicates the cotext-based interpretation, which is called the cotext-based type. The second involves a context-based interpretation. This paper calls the second type context-based.

First, we show which inflection group and interpretation type the use of the single verb *go* belongs to. In general, both the lexical *go* and attenuated *go* as the single verb belong to the cotext-based type in the inflection-free group. For the lexical *go*, (18) displays each inflected form of the verb *go*.

(18)   a.   Let's go home.
       b.   He goes to school.
       c.   We're going to Japan in the summer.
       d.   Tom went into the kitchen.
       e.   The students had gone abroad to study.

In (18), a particular word or phrase in the cotext determines the meaning of the verb *go*, because the word or phrase in the cotext functions as an animate subject or goal argument. For example, in (18b), if the relevant word is *goes*, the cotext is *he, to*, and *school*. The animate subject is *he*, and the goal argument is *to school*. In contrast, in many cases, the attenuated *go* does not express motion. A typical example is the *go*-adjective sequence. In the *go*-adjective sequence, the verb *go* produces each inflected form, as in (19) and (20).

(19) a. Dad'll go mad when he sees what you've done.

b. In these temperatures, milk goes sour very quickly.

c. People were going berserk with excitement.

d. The crowd went wild as soon as the singer stepped onto the stage.

e. Her face had gone white.

(20) a. When offenders go unpunished, they cease to see the law as a deterrent.

b. His hard work largely goes unrecognized.

c. Nowadays, such treatment isn't going unanswered.

d. City Hall went unpaid for months.

e. His achievements have not gone unnoticed.

In (19) and (20), a particular adjective following the verb *go* in the cotext determines the meaning of the verb *go*. The attenuated *go* in (19) expresses a change of state, and that in (20) expresses a state rather than a change of state. It also functions as a marker of evaluative modality because the adjective following the attenuated *go* is limited to the *unVed* form. Therefore, it is fair to state that the interpretation of the sentence or utterance not only with the lexical *go*, but also with the attenuated *go* as a single verb does not depend on context. It is emphasized that the single verb *go*, regardless of whether it is lexical or attenuated, always belongs to the cotext-based type in the inflection-free group.

Next, we show which inflection group and interpretation type the four types of multi-verb sequences with the lexical *go* belong to. From the standpoint of inflection, the *go-and-V, go-to-V*, and *go-Ving* sequences belong to the inflection-free group. In each type of the three multi-verb sequences, the verb *go* can be inflected, as in (21)–(23).

(21) a. Did you go and visit him?

b. She goes and buys green salad.

c. We don't really like going and asking them.

d. He went and told the hotel manager.

e. You should have gone and told him.

(22) a. Where do the children go to play?

b. My husband goes to watch football every Saturday.

c. This note is to thank you very much for going to see Paul in the hospital.

d. However, when I went to call the doctor, she miraculously recovered.

e. We haven't gone to look for them.

(23) a.   You'll need a bike to go cycling.

  b.   So what do you do when he goes shopping?

  c.   This is a good day for going fishing.

  d.   We all went swimming.

  e.   Everybody's gone surfing!

In contrast, the *go-V* sequence belongs to the inflection-bound group. Zwicky (1992) points out that both the first verb *go* and second verb in the *go-V* sequence are always in the bare form in terms of morphological marking, as in (24) and (25).

(24) a.   Go look at him!

  b.   I go observe the starts whenever there's an opportunity.

  c.   He wants to go hunt for his etchings.   (Zwicky 1969: 430)

  d.   You can go buy food somewhere else.

(25) a.   *She goes observe the starts whenever there's an opportunity.

  b.   *I went play in all the concerts.

  c.   *I am always going talk to you.

  d.   *I have gone race down the street.   (Zwicky 1969: 428–429)

From the standpoint of interpretation, since they belong to the adjunct/oblique type, all four types of multi-verb sequences with the lexical *go* can be understood in the same way as the single verb lexical *go* – that is, to be interpreted in terms of cotext, rather than context. They all belong to the cotext-based type. However, there is a potential problem in a specific *go-and-V* sequence, as in (21d). In (21d), there are two possible interpretations, because the differences in the meaning of the first verb *go* give rise to different interpretations. Stated differently, (21d) can be classified as both the motion-purpose subtype and modality subtype in terms of cotext. Which subtype is given to (21d) depends on the context. In this respect, although the *go-and-V* sequence in the motion-purpose subtype can allow for both cotext-based and context-based interpretations, primacy is given to the cotext-based interpretation. In Section 3, we discuss the polysemy of the *go-and-V* sequence in detail.

  Table 3 shows the top ten second verbs used most frequently in the four types of multi-verb sequences in the *Collins WordBanks Online (CWO)* corpus.[2]

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2.   *Collins Wordbanks Online* is based on five world forms of English: UK, US, Australia, Canada, and South Africa. This paper uses only British English.

Table 3. Top ten second verbs used most frequently in the *CWO* in the four types of multi-verb sequences with *go* (frequency in parentheses)

	go-to-V (token 2116, type 302)	go-and-V (token 2632. type 343)	go-V (token 319, type 94)	go-Ving (token 2249 type 322)
1	*see* (476)	*see* (364)	*get* (47)	*shop* (408)
2	*show* (124)	*get* (234)	*see* (43)	*swim* (128)
3	*live* (97)	*do* (200)	*find* (19)	*look* (104)
4	*get* (81)	*have* (158)	*do* (17)	*fish* (78)
5	*visit* (65)	*buy* (105)	*buy* (15)	*beg* (55)
6	*make* (45)	*play* (70)	*fetch* (12)	*club* (54)
7	*meet, watch* (40)	*sit* (69)	*hang* (10)	*walk* (49)
8	*do, have, stay* (35)	*look* (67)	*ask, tell* (6)	*hunt, race* (45)
9	*help, look* (34)	*talk* (59)	*be, say* (5)	*fly* (43)
10	*pick, prove* (31)	*find* (53)	*eat, have, make, sit, take* (4)	*run, travel* (40)

Table 3 shows the second verbs occurring in the semi-complement and adjunct/ oblique types. Based on Table 3, the majority of the four types of multi-verb sequences belong to the adjunct/oblique type. Multi-verb sequences in the adjunct/oblique type have two features. One is related to the temporal relationship, and the other to the subject. For the temporal relationship, the deictic motion that the first verb *go* expresses and activity that what appear to be the second verb phrase expresses are required to occur sequentially or simultaneously. Regarding the subject, the multi-verb sequence with the lexical *go*, in many cases, takes the animate subject. Since they collocate with the inanimate subject, both the *go-to-show* and *go-to-prove* sequences in Table 3 belong to the semi-complement type. Therefore, the interpretation of the multi-verb sequence with the lexical *go* tends to depend on the second verb and subject. This reinforces the idea that multi-verb sequences with the lexical *go* belong to the cotext-based type.

3.   Four types of multi-verb sequences with the attenuated *go*

This section discusses the four types of multi-verb sequences in the modality subtype in the semi-complement type. The four types of multi-verb sequences share two features. First, as mentioned above, the first verb *go* is attenuated and functions as a marker of evaluative modality. Second, since the word sequence after the first verb *go* is in the semantic scope of the first verb *go*, the second verb can be any

verb. In the following subsections, each type of multi-verb sequence expressing evaluative modality is explained in terms of cotext and context.

3.1   The *go-to-V* sequence

According to the *Oxford English Dictionary (OED)*, the *go-to-V* sequence, where motion in space has been lost, takes place in negative or hypothetical situations. The first verb *go* occurring in such a negative or hypothetical situation is mostly in a bare form, because the first verb *go* usually follows an auxiliary verb plus an adverb *not*. Since this word sequence as an auxiliary verb plus *not* creates a negative or hypothetical situation, the interpretation of the *go-to-V* sequence does not depend on context. In this respect, the *go-to-V* sequence belongs to the cotext-based type in the inflection-bound group.

The *OED* also shows that the *go-to-V* sequence is used to express "to do anything so improper as to do" or "to be so foolish, bold or severe as to do". The meaning expressed by the *go-to-V* sequence supports the modal notion of counter-normativity. In (26), the auxiliary verb creates a hypothetical situation.

(26)   Sure nobody would go to kill so good a creature.[3]   (Visser 1969: 1400)

The speaker expects that nobody was so foolish or bold as to kill so good a creature. The speaker thinks that to kill so good a creature is a counter-normative act. In (27), where the negative situation is provided, the speaker thought they were not so foolish or bold as to do it.

(27)   Indeed, I did not go to do it.   (*OED*)

The *OED* indicates that both (26) and (27) were written in the eighteenth century. The newest citation in the *OED* was written in the nineteenth century, as shown in (28).

(28)   'Dear ma'am', uttered Nurse Gill, 'you'd never go to suspect her!'   (*OED*)

There are no non-*OED* examples to illustrate the evaluative modality in the *CWO*. Concerning the CWO, it is interesting that there are very few examples not only of the negative sentences of the *go-to-V* sequences in the motion-purpose subtype, but also of the *would-go-to-V* sequence that can be interpreted as

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3.   (26) is paraphrased by Visser (1969). The original sentence comes from the *OED*, and it is as follows: *Sure nobody wou'd go to kill so handsome and good a creature.*

the motion-purpose subtype.[4] Therefore, we conclude that the *go-to-V* sequence expressing evaluative modality is hardly used in present-day English and that it sounds archaic.

3.2   The *go-Ving* sequence

Bolinger (1983), Bourdin (2003), Goldberg (2006), and Salkie (2010) point out that the first verb *go* in the *go-Ving* sequence expressing evaluative modality is usually in the bare form, as in (29) and (30).[5]

(29) a.   Don't go blabbing on your sister.

   b.   If they go stirring up trouble I'll have the law on them.

   c.   You always go blaming me for everything.

   d.   Why does he go messing up my desk every time he comes here?

(30) a.   *You always went blaming me for everything.

   b.   *She always goes blaming me for everything.

(Bolinger 1983: 162–163)

From (29) and (30), the *go-Ving* sequence belongs to the inflection-bound group. From a semantic standpoint, the *go-Ving* sequence has two features. First, Salkie (2010) states that the subject is always human. Second, the *go-Ving* sequence expresses disapproval of the kind of behavior that the speaker mentions or tells the hearer not to behave in that way. The speaker thinks that such behaviors are counter-normative. According to Bolinger (1983), the *go-Ving* sequence expresses a willful act. Bourdin (2003) contends that the *go-Ving* sequence has an interpersonal quality equivalent to a speaker's negative evaluation, which tends to depend on particular circumstances or to be fraught with dissonance from a standard, rule, principle, or convention that is considered fundamentally right. Goldberg (2006) notes that what appears to be the second verb phrase is interpreted as an instantaneous action and that the speaker disapproves of such an action. Based on these three previous studies, *go* emphasizes undesirability – that is, counter-normativity – in the eyes of the speaker.

We also explain why (31) and (32) belong to the semi-complement type.

(31)   You shouldn't go reading the newspaper all day.

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4.   In this case, the auxiliary verb *would* is used to state that something happened often or regularly in the past.

5.   Bolinger (1983) states that the past participle form of *go* is marginally acceptable, as in (i).

(i)   ?He had gone messing up my desk again.   (Bolinger 1983: 162)

(32)   Pat'll go telling Chris what to do, you'll see.   (Goldberg 2006: 52–53)

If they belong to the adjunct/oblique type, (31) and (32) can be explained in terms of cotext. Since the second verbs *read* and *tell* in (31) and (32) do not represent a manner of motion, (31) and (32) do not belong to the motion-manner subtype. Since they do not take a prepositional phrase as a directional complement, (31) and (32) do not belong to the motion-subject-depictive subtype. Since the second verbs *read* and *tell* do not represent a resulting state, (31) and (32) do not belong to the motion-result subtype. To clarify why (31) and (32) do not belong to the motion-purpose subtype, it is necessary to show that the *go-Ving* sequence in the motion-purpose subtype has one semantic feature that differs from the *go-to-V, go-and-V*, and *go-V* sequences in the motion-purpose subtype. As the first verb *go* expresses motion, the goal in the *go-and-V, go-to-V*, or *go-V* sequences is a restricted area or specific place. For instance, (33a), (33b), and (33c) imply a restricted area or specific place such as a grocery store.

(33)   a.   They go and buy ten eggs every day.
         b.   They go to buy ten eggs every day.
         c.   They go buy ten eggs every day.

However, Bolinger (1983) points out that the goal in the *go-Ving* sequence in (34) is an unrestricted area such as a shopping area, a shopping mall, or one or more shops, even if it may be just around the corner.

(34)   They go shopping every day.

The goal in (34) is not a restricted area or specific place such as a grocery store. If (31) is in the motion-purpose subtype, the expressions *you shouldn't* and *the newspaper all day*, observed as cotext, must be interpreted as going from one place to another or to several places all day while reading the newspaper. Judging from this situation, this interpretation is bizarre. Similarly, in (32), we cannot understand that Pat will go from one place to another or to several places while telling Chris what to do. Therefore, (31) and (32) do not belong to the motion-purpose subtype. We conclude that (31) and (32) belong to the modality subtype in the semi-complement type. Clearly, the interpretation given depends on the cotext. The modality subtype belongs to the cotext-based type in the inflection-bound group.

3.3   The *go-and-V* sequence

In contrast to the *go-to-V* and *go-Ving* sequences, the *go-and-V* sequence displays each inflected form of the verb *go*, as in (35).

(35)   a.   Go on, go and prove me wrong now.

         b.   Mary says some of the right things, and then unfortunately she goes and does the opposite.

         c.   Nobody thought Mary could climb Everest, but she went and did it!

         d.   Tom's gone and lost the car keys!

From (35), the *go-and-V* sequence belongs to the inflection-free group. From a semantic standpoint, the *go-and-V* sequence has a purely emotive meaning with an overlay of annoyance, disapproval, foolishness, boldness, surprise, or the like (e.g., Stefanowitsch 1999). The *go-and-V* sequence expresses not only an unexpected situation leading away from a normal and expected course of events, but also the speaker's attitude toward such a situation. The *go-and-V* sequence represents either the speaker's negative or positive judgment.

Note that the first verb *go* in the *go-and-V* sequence with an inanimate subject conveys a slightly different meaning from the one with an animate subject. As in (36) and (37), if the subject is inanimate, the first verb *go* retains no sense of movement.

(36)   The bottle went and broke.   (Stahlke 1970: 91)

(37)   The TV has gone and broken down.   (Huddleston & Pullum 2002: 1302)

In general, an inanimate subject such as a bottle or TV does not express motion from a particular place to another. Therefore, in (36) and (37) we do not regard the first verb *go* as lexical. Both (36) and (37) belong to the modality subtype and represent the speaker's attitude toward the situation that what appears to be the second verb phrase expresses. For instance, the speaker was annoyed that the bottle or TV broke. In this respect, the *go-and-V* sequence with an inanimate subject belongs to the cotext-based type in the inflection-free group.

In contrast, the *go-and-V* sequence with an animate subject reveals an interesting case of polysemy in which one *go-and-V* sequence can be classified as both the motion-purpose and modality subtypes. Each example in (38) is a single sentence including the *go-and-V* sequence in (35).

(38)   a.   Go and prove me wrong now.

         b.   She goes and does the opposite.

         c.   She went and did it!

         d.   Tom's gone and lost the car keys!

As mentioned in Section 3.2, the goal of the first verb *go* of the *go-and-V* sequence in the motion-purpose subtype is a restricted or specific place. In (38a), if the *go-and-V* sequence belongs to the motion-purpose subtype, one possible interpretation,

namely that the hearer has to go to a restricted or specific place to prove that the speaker is wrong, seems bizarre. Similarly, in (38d), one possible interpretation that Tom went to a restricted or specific place to lose the car keys seems bizarre. Both (38a) and (38d) are thus interpreted as the modality subtype, and they allow for a cotext-based interpretation. In (38a), *go and prove me wrong now* indicates the speaker's anger or irritation. The speaker thinks that the hearer is wrong. However, since the hearer does not know why the hearer is wrong, the speaker thinks that the hearer cannot show why the speaker is wrong by providing facts or information. In (38d), the speaker thinks that it was stupid of Tom to lose the car keys.

On the other hand, in (38b) and (38c), there is the possibility that the *go-and-V* sequence is classified as both the motion-purpose and modality subtypes. In such cases, the meaning of the *go-and-V* sequence depends on the context. In (35b), where the context is provided, since the surrounding text *Mary says some of the right things* functions as context, the *go-and-V* sequence shows that the speaker is annoyed by or disapproves of something like proceeding without thinking. (35b) represents the speaker's negative judgment. Similarly, in (35c), where the context is provided, since the surrounding text *nobody thought Mary could climb Everest* functions as context, the *go-and-V* sequence shows that the speaker is surprised at what Mary did. (35c) represents the speaker's positive judgment.

An important point is raised here. The *go-and-V* sequence, which allows for a cotext-based interpretation – as in (36), (37), (38a), and (38d) – retains no sense of movement, but in the *go-and-V* sequence that necessitates a context-based interpretation – as in (35b), (35c), (38b), and (38c) – some kind of movement to a different location may be involved. This movement is a sign that the *go-and-V* sequence can be classified as both the motion-purpose and modality subtypes. In the *go-and-V* sequence in the modality subtype, as Newman and Rice (2008: 18) point out, the sense of motion directed away from a deictic center that the *go-and-V* sequence in the motion-purpose subtype always expresses seems far less salient than the activity expressed by what appears to be the second verb phrase. At the same time, the intent to carry out the activity expressed by what appears to be the second verb phrase is more prominent than the deictic motion expressed by the first verb *go*. In contrast, in the motion-purpose subtype, the deictic motion and the activity carry equal weight.

In terms of cotext and context, the *go-and-V* sequence with an inanimate subject belongs to the cotext-based type in the inflection-free group. The *go-and-V* sequence with an animate subject belongs to either the cotext-based or context-based type in the inflection-free group. The cotext-based and context-based types are not necessarily mutually exclusive in the *go-and-V* sequence. In sum, the *go-and-V* sequence always belongs to the inflection-free group and can allow for both a cotext-based and context-based interpretation.

3.4   The *go-V* sequence

As mentioned in Section 2.4., the *go-V* sequence, where both the first and second verbs are always in the bare form, belongs to the inflection-bound group. From a semantic standpoint, the *go-V* sequence has two features. One is related to the negative implication that signals the modal notion of counter-normativity. The other is related to an agentive interpretation of the subject.

Jaeggli and Hyams (1993: 322) point out that the *go-V* sequence only allows for an agentive interpretation.[6] In (39), whether the single verb *bother* represents an agentive interpretation or not is yes or not.

(39)   a.   My children bother Mary.

b.   My children go bother Mary.   (Jaeggli & Hyams 1993: 322)

Whereas (39a) can express either that the children intentionally bother Mary or that they are the cause of Mary being bothered, (39b) only has an intentional reading. In (39b), the speaker notices that what annoys Mary is that the speaker's children are intentionally misbehaving. The speaker thinks that such a situation is not good. At this point, we explain why the first verb *go* in (39b) is attenuated. As mentioned in Section 3.2, the goal of the first verb *go* of the *go-V* sequence in the motion-purpose subtype is a restricted or specific place. In (39b), if the *go-V* sequence belongs to the motion-purpose subtype, one possible interpretation that the subject *my children* habitually go to a restricted or specific place to intentionally bother Mary seems bizarre. Similarly, in (40), the possible interpretation that it is necessary for the hearer to go to a restricted or specific place to wreck the speaker's ideas seems bizarre.

(40)   Did you have to go wreck my ideas?   (Zwicky 1969: 433)

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6.   The *go-V* sequence in the motion-purpose subtype only allows for an agentive interpretation, as in (i) and (ii).

(i)   They deliberately go occupy the land.   (Shopen 1971: 260)
(ii)   *The smoke fumes go inebriate the people upstaits.   (Shopen 1971: 259)

Shopen (1971) notes that the important difference between the *go-V* and *go-and-V* sequences in the motion-purpose subtype is related to a selection restriction imposed on the subject. The *go-and-V* sequence allows for either an agentive or a non-agentive interpretation for the subject, as in (iii) and (iv).

(iii)   They deliberately go and occupy the land.   (Shopen 1971: 260)
(iv)   The smoke fumes go and inebriate the people upstairs. (Shopen 1971: 259)

In (40), the speaker is surprised and angry that the hearer deliberately wrecked the speaker's ideas. Thus, the *go-V* sequence with the attenuated *go* belongs to a cotext-based type in the inflection-bound group.

In the discussion above based on cotext and context, we have shown the differences in the four types of multi-verb sequences expressing evaluative modality. The *go-to-V, go-V* and *go-Ving* sequences belong to the cotext-based type in the inflection-bound group. However, the *go-to-V* sequence is archaic. Whereas the specific *go-and-V* sequences categorized as the modality subtype belong to the cotext-based type in the inflection-free group, the polysemous *go-and-V* sequence that can be categorized as both the motion-purpose subtype and modality subtype belongs to the context-based type in the inflection-free group. As mentioned in Section 2.1, the concept of *context* defined in this paper is twofold: surrounding text and information. We have also shown that the surrounding text as context is adopted to determine the meaning of the polysemous *go-and-V* sequence. This reinforces Halliday's (1978: 133) view that there will always be many theoretically possible interpretations ruled out by the surrounding text. Since information as context deserves further consideration, in the next section, we illustrate the crucial role of information as context in explaining the differences in the four types of multi-verb sequences expressing evaluative modality.

4.   Quantitative data of the *go-and-V* sequence

In this section, by using one corpus, the *Collins Wordbanks Online (CWO)* corpus, we focus on the interpretation of the quantitative data of the polysemous *go-and-V* sequence that can be categorized as both the motion-purpose and modality subtypes. From a functional standpoint, it is necessary to show information as context in which the polysemous *go-and-V* sequence takes place. The context to be shown here is genres of language use, which represents the frequency of use per million words in six genres in the *CWO*. This paper uses only the UK sub-corpus in the CWO, which is divided into six genres: newspapers, books, magazines, ephemera, radio broadcast, and informal speech.[7] The newspaper, book, magazine, and ephemera sub-corpora are classified under written English, and the radio broadcast and informal speech sub-corpora under spoken English. Based on genres of language use, we focus on particular situations or types of writings where the *go-and-V* sequences are used by speakers and writers.

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7.   Ephemera are items designed to be useful or important for only a short time, especially labels, pamphlets, notices, tickets, and so on.

Data on the *go-and-V* sequences should be shown through a comparison with data from related settings. The related settings are the verb *go, go-adjective* sequence, *go-unVed* sequence, *go-to-V* sequence, *go-Ving* sequence, and *go-V* sequence. Table 4 shows the frequency of use per million words in spoken and written English in the *CWO*.

Table 4. Frequency of use per million words in spoken and written English in the *CWO*

	Spoken English	Written English
the verb *go*	4535.92	1952.91
the *go-adjective* sequence	34.68	47.01
the *go-unVed* sequence	1.24	7.42
the *go-to-V* sequence	46.24	26.54
the *go-Ving* sequence	46.91	24.98
the *go-V* sequence	12.13	3.12
the *go-and-V* sequence	151.04	17.09

The four types of multi-verb sequences in Table 4 include multi-verb sequences with the lexical *go* and attenuated *go*. While in the verb *go* and the four types of multi-verb sequences spoken English shows a higher frequency than in written English, in the *go-adjective* sequence and *go-unVed* sequence, written English shows a higher frequency than in spoken English.

Next, regarding various settings, we show the frequency of use per million words in terms of the six genres in the *CWO*. Figure 1 shows the frequency of use of the verb *go*. In Figure 1, the informal speech sub-corpus shows the highest frequency, and the book sub-corpus the second-highest frequency. Figure 2 shows the frequency of use of the *go-adjective* sequence. The *go-adjective* sequence in Figure 2 does not include the *go-unVed* sequence. In Figures 1 and 2, a markedly different distribution between the verb *go* and *go-adjective* sequence is observed. In Figure 2, the magazine sub-corpus shows the highest frequency, and newspaper sub-corpus the second highest frequency.

Figures 2 and 3 show that the *go-adjective* sequence presents a markedly different distribution from the *go-unVed* sequence expressing evaluative modality. In the *go-unVed* sequences, the highest frequency is found in the newspaper sub-corpus, and the book sub-corpus shows the second-highest frequency. For spoken English, while the highest frequency in the *go-unVed* sequence is found in the radio broadcast sub-corpus, the highest frequency in the *go-adjective* sequences is in the informal speech sub-corpus. This contrast validates the outcomes of two
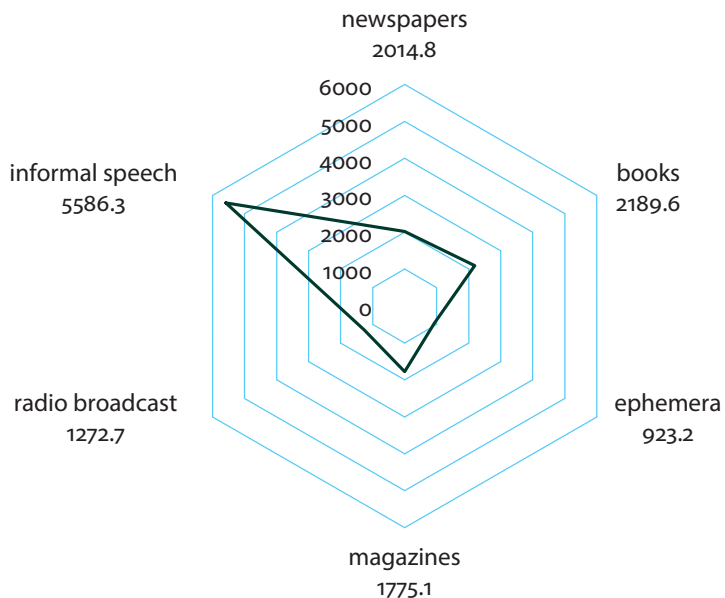
Figure 1. Frequency of use of the verb *go* per million words in terms of the six genres in the *CWO*
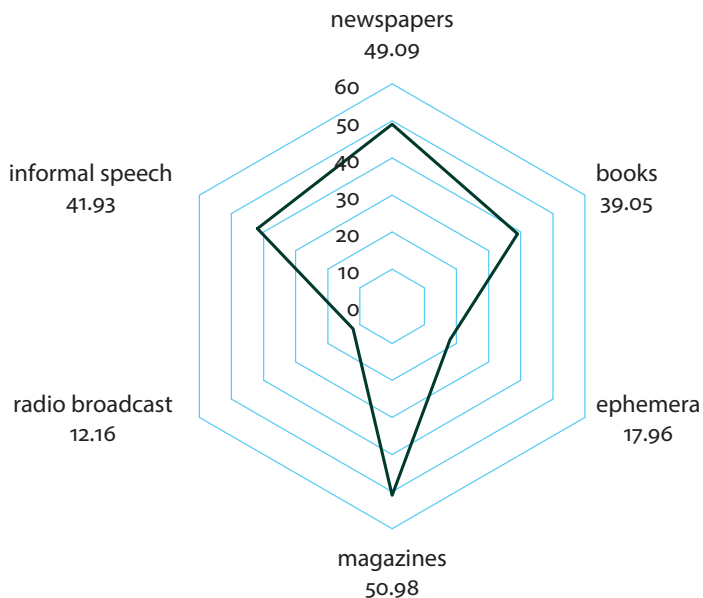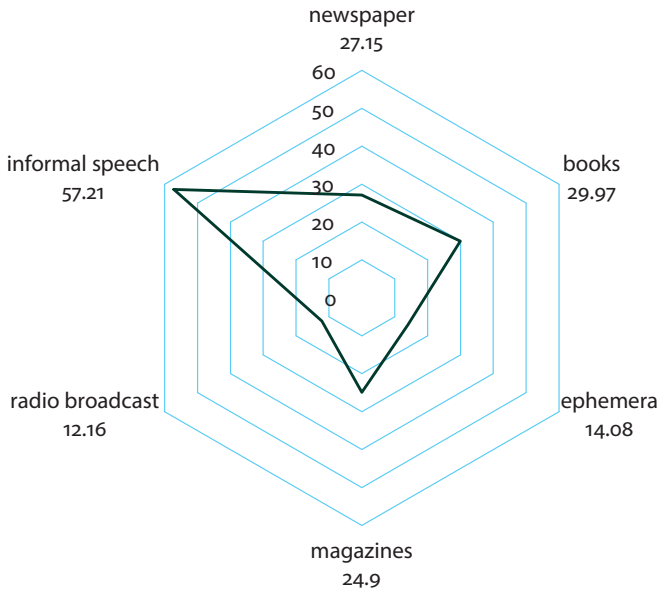

Figure 2. Frequency of use of the *go-adjective* sequence per million words in terms of the six genres in *CWO*
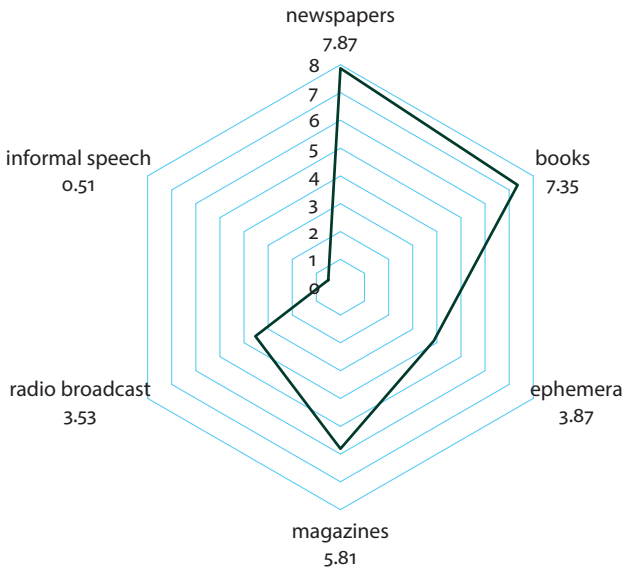
Figure 3. Frequency of use of the *go-unVed* sequence per million words in terms of the six genres in the *CWO*

previous studies. Bourdin (2003) states that the evaluative modality expressed in the *go-unVed* sequence is equivalent to a speaker's negative judgment on behalf of society. According to Schönefeld (2013), both the *go-adjective* and *go-unVed* sequences are distributed unevenly across the four registers of conversation, fiction, newspaper text, and academic prose in the *British National Corpus*, and the *go-unVed* sequence is prominent in academic prose. Although we have shown that the interpretation of the *go-unVed* sequence does not depend on the context, the interpretation of genres of language use as the context where the *go-unVed* sequence takes place validates the cotext-based interpretation of the *go-unVed* sequence. For instance, assuming that newspapers and academic prose should be impartial, the *go-unVed* sequence is used to deliver a speaker's negative judgment on behalf of society.

Figures 4 and 5 show the *go-Ving* and *go-V* sequences, respectively. In Figures 4 and 5, a relatively similar distribution between the *go-Ving* and *go-V* sequences can be observed. In spoken English, the informal speech sub-corpus shows a higher frequency than the radio broadcast sub-corpus. In written English, the book sub-corpus shows the highest frequency. Although they include the two multi-verb sequences in both the adjunct/oblique type and semi-complement type, Figures 4 and 5 are important in the sense of genres of language use as context where the two
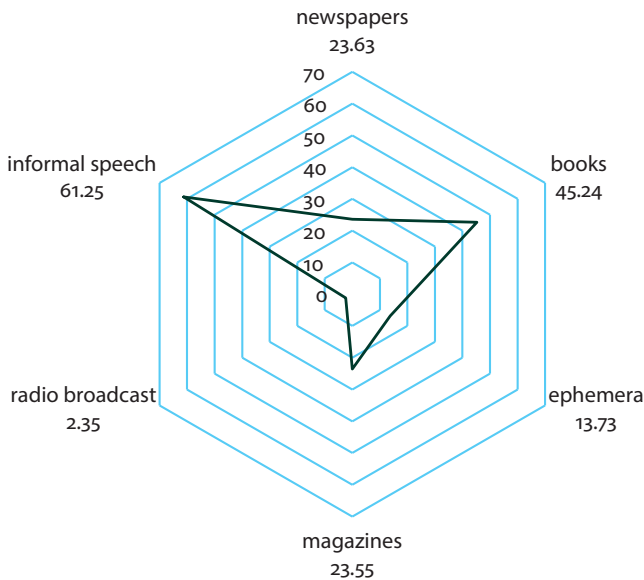
Figure 4. Frequency of use of the *go-Ving* sequence per million words in terms of the six genres in the *CWO*
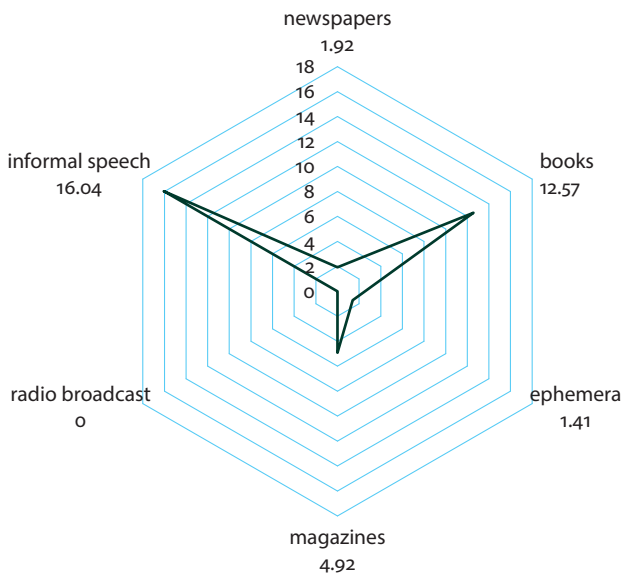
Figure 5. Frequency of use of the *go-V* sequence per million words in terms of the six genres in the *CWO*

multi-verb sequences take place.[8] Figures 4 and 5 show that both the *go-Ving* and *go-V* sequences exist in similar genres of language use. In addition to the similar genres of language use, we have shown that both the *go-Ving* and *go-V* sequences share another feature, the cotext-based interpretation, regardless of whether the first verb *go* is lexical or attenuated. Figure 6 shows the *go-to-V* sequence.

Figure 6. Frequency of use of the *go-to-V* sequence per million words in terms of the six genres in the *CWO*

Figure 6 includes both the *go-to-V* sequence in the motion-purpose subtype of the adjunct/oblique type and the one in the contribution subtype of the semi-complement type. It does not include the *go-to-V* sequence in the modality subtype, which is considered archaic. The distribution of the *go-to-V* sequence is slightly different from that of the *go-Ving* and *go-V* sequences, although it is relatively similar to them.

Figure 7 shows that the *go-and-V* sequence presents a significantly different distribution from the verb *go* and all other sequences discussed thus far.

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8.   We have shown that the *go-Ving* sequence in the modality subtype is in the inflection-bound group and that the first verb *go* is in the bare form. A relatively similar distribution between the *go-Ving* and *bare-go-Ving* sequences can be observed in terms of the frequencies of use per million words in the six genres in the *CWO*.
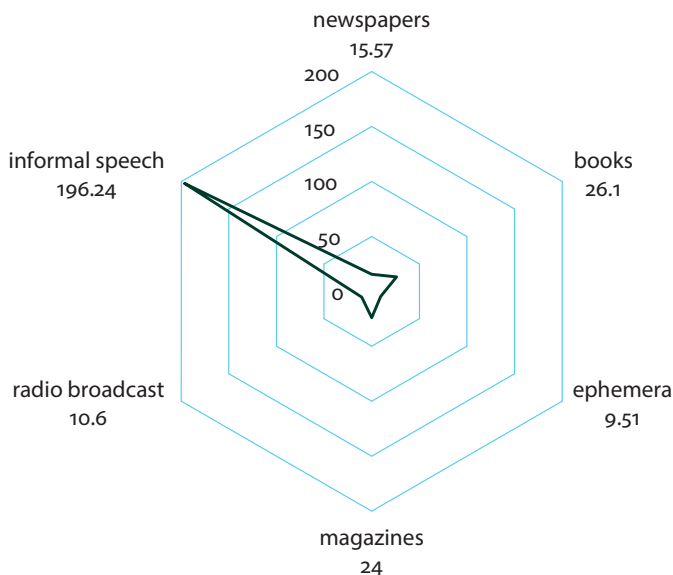
Figure 7. Frequency of use of the *go-and-V* sequence per million words in terms of the six genres in the *CWO*

The highest frequency is found in the informal speech sub-corpus. From a quantitative standpoint, this validates the outcome of some previous studies, where the *go-and-V* sequence is regarded as colloquial (e.g., Biber et al. 1999; Newman & Rice 2008; Quirk et al. 1985). Therefore, the uses of the *go-and-V* sequences are mainly restricted to informal speech. In general, the minimum requirements for informal speech are particular time, particular place, and particular persons. In other words, in informal speech, at least one speaker must exist at a particular time, in a particular place, and with at least one hearer at the same time. Such a situation represents a combination of all the things happening and all the conditions that exist at a particular time and in a particular place. In informal speech, the situation sets the appropriate context – in particular, what this paper calls information as context – irrespective of the presence or absence of utterance. In contrast, since they do not necessarily satisfy the minimum requirements, sentences or utterances occurring in all the other genres in the *CWO* – the newspaper, book, magazine, ephemera, and radio broadcast genres – give primacy to a cotext-based interpretation, rather than context-based interpretation.

Regarding the frequency of use per million words in terms of the six genres in the *CWO*, two main conclusions can be drawn. One is related to distribution. Broadly, a relatively similar distribution is observed in the *go-V, go-Ving*, and *go-to-V* sequences. The feature that these three types of multi-verb sequences share is the cotext-based interpretation. The *go-and-V* sequence, which allows for both

a cotext-based and context-based interpretation, shows a markedly different distribution from the three types of multi-verb sequences. The other is related to genres. The uses of the *go-V, go-Ving*, and *go-to-V* sequences are not restricted to a particular genre. Stated differently, the three types of multi-verb sequence tend to be observed in every genre in the *CWO*. In contrast, the use of the *go-and-V* sequence is mainly restricted to informal speech.

5. Concluding remarks

Modality is conveyed in language in various ways: morphological, lexical, syntactic, or via intonation. These are not mutually incompatible. This paper has explained the nature of evaluative modality observed in multi-verb sequences with the deictic verb *go* as the first verb from the viewpoints of inflection of the first verb, the second verb selection, and genres of language use based on the working definitions of *cotext* and *context*. Regarding the first verb and second verb selection, which are related to cotext, we have shown that in most cases, the multi-verb sequences take the lexical *go* and express deictic motion. In this regard, since such multi-verb sequences belong to the motion-purpose subtype, to a large extent, the second verbs are limited to verbs expressing activities. However, a small number of multi-verb sequences take the attenuated *go*, and most express evaluative modality, rather than deictic motion. Multi-verb sequences expressing evaluative modality share one important feature. The second verb can be any verb. Regarding the inflection of the first verb in the multi-verb sequence expressing evaluative modality, whereas the first verb in the *go-V, go-to-V*, and *go-Ving* sequences is in the bare form, no restrictions are imposed on the *go-and-V* sequence. For genres of language use related to context, whereas the *go-V, go-to-V*, and *go-Ving* sequences are not restricted to a particular genre, the *go-and-V* sequence takes place mainly in informal speech.

We have also shown the characteristics of each type of multi-verb sequence expressing evaluative modality in terms of cotext-based and context-based interpretations. Although it allows for a cotext-based interpretation, the *go-to-V* sequence that sounds archaic has not received wide currency. Both the *go-Ving* and *go-V* sequences allow for cotext-based interpretations. The two multi-verb sequences have one restriction on the subject. In the *go-Ving* sequence, the subject is human, and in the *go-V* sequence, the subject is agent. In contrast, the *go-and-V* sequence allows for either a cotext-based or context-based interpretation. The *go-and-V* sequence, which only allows for a cotext-based interpretation, tends to take an inanimate subject. The *go-and-V* sequence, which needs a context-based interpretation, imposes no restrictions on the subject. Based on the general classification

of multi-verb sequences, this paper has demonstrated that the concepts of *cotext* and *context* play a pivotal role in distinguishing each type of multi-verb sequence expressing evaluative modality from each type of multi-verb sequence expressing motion, and that these two concepts clarify the characteristics of each type of multi-verb sequence expressing evaluative modality.

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CHAPTER 10

Epistemic modals in academic English

A contrastive study of engineering, medicine and linguistics research papers

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The hypothesis of this paper is that writers who belong to different specific fields of knowledge use dissimilar epistemic modals in academic English. The first specific objective is to identify and contrast the epistemic modals used in engineering, medicine and linguistics research papers and the second is to classify the phraseological patterns associated with epistemic modals in these specific settings. The method was based on a corpus-based approach and, for this purpose, fifty academic papers in English belonging to the field of engineering, fifty more from the domain of linguistics and another fifty from medical academic journals were compiled. The results showed that there were differences in the epistemic modals used and in the phraseological units composed in engineering, medicine and linguistics research papers. Finally, conclusions were drawn.

Keywords: epistemic modals, research papers, academic English, specialised language

1. Introduction

This chapter deals with two different aspects that have traditionally been analysed separately, but which I believe are intertwined. On the one hand, most studies have focused on the nature of modality and on establishing differences between evidentiality, deontic modality and epistemic modality (Nuyts 2001; Papafragou 2006; von Fintel & Gillies 2007; Furmaniak 2011; Alonso-Almeida 2015a, 2015b; Alonso-Almeida & Carrió-Pastor 2016, 2019). On the other hand, an increasing amount of interest has also been paid to the phraseological units associated with some specific language devices (Charles 2006, 2011; Scott & Tribble 2006; Cortés

2013; Cunningham 2017; Carrió-Pastor 2017, 2019). This chapter investigates the different types of epistemic modals used in academic English in a corpus-based study and also pays attention to the phraseological units or bundles associated with the most frequent epistemic modals with the aim of categorising their patterns.

The evaluative meaning of utterances has been discussed by several researchers, for example Stubbs (1986) and Simpson (1993), who concentrate on the analysis of the lexical or grammatical functions of modal expressions. More specifically, the semantic interpretation of evaluative language has been a key issue in pragmatic and cognitive studies, which have mainly focused on the role of modal auxiliaries indicating modality (Palmer 1986; Hoye 1997; Nuyts & van der Auwera 2016).

In this study I analyse epistemic modals in an academic corpus, tagging the devices with a specific tool for identifying modality expressions (METOOL; see the description of the tool in the Methodology section). I think context is crucial when interpreting or using epistemic modals, as the specific settings of communication may change the meaning of some modal expressions. For example, *may* could be used in academic English in engineering showing probability of the actions to occur as in: "the final result *may* vary with the experimentalist doing the measurement" (Alonso-Almeida & Carrió-Pastor 2016: 292). In another context, in newspapers, *may* could have the function of implying a suggestion to the reader. For example, in "Trump says he '*may* take' hydroxychloroquine, even though there's no evidence it's effective or safe to prevent or treat coronavirus" (*Business Insider* 5/4/2020), the reporter is citing Trumps' statement and indirectly, *may* suggest that this drug could work as a coronavirus treatment. This could also happen if we study in detail different specific fields of knowledge in a genre, for example, in academic papers, we found epistemic modal auxiliaries in linguistics frequently reinforced with other mitigation devices, softening the speakers' assertion, as in: "Fillmore (1975: 67) *suggests* that the two *may* be *quite* related", but this was not the case in engineering and medicine.

Thus, the use of epistemic modality is particularly relevant in academic papers as sources of knowledge. Epistemic modality is mainly used to indicate the reliability of the method, the veracity and reliability of the results and the evidence showing that the paper represents an improvement in science.

Concerning epistemic modality, Palmer (1986: 41) stated: "The function of epistemic modals is to make judgments about the possibility, etc. that something is or is not the case. Epistemic modality is, that is to say, the modality of propositions rather than of actions, states, events, etc.". Later, Bybee, Perkins and Pagliuca (1994: 179) explained that epistemic modality is "concerned with matters of knowledge or belief on which basis speakers express their judgements about states of affairs, events or actions" and also Hoye (1997: 42) indicated that it "[…]

applies to assertions and indicates the extent to which the speaker is committed to the truth of the proposition".

In this chapter I discuss the frequency and patterns of epistemic modals that indicate epistemological positioning in three specific fields of knowledge in the genre of academic English. Therefore, this study takes an integrative corpus and discourse approach, showing how epistemic modals use different phraseological units to signal specific fields in academic writing. Here, epistemic modality is viewed as an indication of probability and possibility (Halliday & Matthiessen 2014; Cheng & Cheng 2014). The analysis presents some of the results of a research project (reference FFI2016-77941-P, financed by the Spanish *Ministerio de Economía y Competitividad*) in which metadiscoursal devices are detected with a tool specifically developed to identify and calculate the occurrences of metadiscoursal categories.

The hypothesis of this paper is that writers who belong to different specific fields of knowledge use dissimilar epistemic modals in English when they communicate their findings in research papers. The general objective of this paper is therefore to determine the differences in the use of epistemic modals in academic English when written by researchers from different fields of knowledge. The first specific objective is to identify and compare the particular epistemic modals used in engineering, medicine and linguistics research papers while the second is to identify the phraseological patterns associated with epistemic modals in these particular settings. The research questions I intend to answer are:

a. Do academic writers from different specific fields of knowledge use different epistemic modals? Which epistemic modals are used more frequently in academic papers related to engineering, medicine and linguistics?
b. Which is the most common epistemic value used in specific settings in academic English: certainty, probability or possibility?
c. Is epistemic modality subjective or objective in academic English?
d. Are there similar phraseological patterns in epistemic modality in different specific fields of academic English?

This chapter is organised as follows. First, the introductory section provides a general overview of the aims and objectives of the study. Then, in the second and third sections, the theoretical background of the study, i.e. epistemic modals, academic writing and phraseological patterns, is stated. After that, the sections 'Corpus' and 'Method' describe the different academic papers compiled and the procedure used in the study. Subsequently, the quantitative results are shown and some examples from the corpus are discussed in the section 'Results'. Finally, the conclusions are drawn in the last section.

2.   Epistemic modality

Modality has been analysed by many scholars (Palmer 1986; Stubbs 1986; Bybee, Perkins & Pagliuca 1994; Hoye 1997; Dixon 2005; Carrió-Pastor 2012, Nuyts & van der Auwera 2016; Alonso Almeida & Carrió-Pastor 2015, 2016, 2019) from different points of view considering a semantic perspective of language.

In the same way, modality has been divided very differently by scholars. It is generally categorised as a threefold distinction into epistemic (probability), deontic (obligation) and dynamic (ability/potentiality) modality (Halliday & Matthiessen 2014), as proposed by Palmer (1986: 39), although he points out that in language we can find many different kinds:

> […] starting first with eight or so possible kinds and concluding that basically there are three […] epistemic and deontic refer thus to different kinds of modality. We also need to distinguish between possibility and necessity and a third sort of modality that is exemplified by WILL and SHALL. For this distinction I shall use the term 'degree' of modality: possibility and necessity are different degrees of modality. It will sometimes be necessary to refer to kind and degree simultaneously, e.g. to epistemic possibility.

In this chapter I focus on epistemic modality, defined by Hoye (1997: 42) as "concerned with matters of knowledge or belief on which basis speakers express their judgements about states of affairs, events or actions". Hence, this chapter deals with the corpus analysis of academic English to identify the way writers with different specific backgrounds express their judgements about their results or findings. Expanding this definition, Bybee, Perkins and Pagliuca (1994: 179) indicated that epistemic modality, "[…] applies to assertions and indicates the extent to which the speaker is committed to the truth of the proposition" and, for them, it includes senses of possibility, probability, inferred certainty and counterfactuality. Cheng and Cheng (2014: 16), taking into account Halliday & Matthiessen's definition (2014), define epistemic modality as "related to conviction (Halliday 1994) and can be expressed in different forms: modal verbs (e.g. *may, might* and *must*), adjectives (e.g. *possible, probable, necessary*), adverbs (e.g. *probably, likely, perhaps*), nouns (*possibility, probability, necessity*) and phrases (e.g. *in my opinion, in all likelihood*). They also add that a projecting clause with a subjective orientation or an objective orientation could be used to express epistemic modality. Halliday and Matthiessen (2014) proposed three main categories of positioning strategies in epistemic modality, dividing it into high (which indicates certainty: *must* and *necessarily*), medium (which indicates probability: *probably* and *will*) and low (which indicates possibility: *possibly* and *might*) reliability. Recently, Alonso-Almeida and Carrió-Pastor (2019), in their analysis of the epistemic legitimising strategies used in online newspaper articles dealing with the independence

referendum in Scotland, identified epistemic modality as the most common resource that fulfilled a hedging function in the corpus analysed.

Here, I analyse the use of epistemic modality showing Halliday's textual meta-function (Halliday & Matthiessen, 2014: 30–31). Marín-Arrese (2011: 793) established different sub-categories of epistemic modality, considering it implicit and subjective, as opposed to Lyons (1977), who distinguished between subjective and objective epistemic modality: "while objective epistemic modality expresses an objectively measurable chance that the state of affairs under consideration is true or not, subjective epistemic modality involves a purely subjective guess regarding the truth" (Nuyts (2001: 385). Marín-Arrese (2011) identified three main domains (epistemic modality, personal evidentiality and mediated evidentiality) that entail different degrees of subjectivity and intersubjectivity. She (2011: 794) explains: "[…] the scale of subjectivity versus intersubjectivity, which concerns the degree to which the speaker/writer assumes personal responsibility and accountability (subjectivity) for the information proffered, or whether the information is presented as potentially shared by others (intersubjectivity)". This proposal defines more precisely the responsibility of the writer, adding the dimensions of implicit/ explicit and subjectivity /intersubjectivity/ objectivity to her previous proposal (2009). But she considers that epistemic modality is only subjective.

Additionally, Nuyts (2001: 386) defends that subjectivity "is not a distinction within the epistemic domain but within the evidential domain", again in contrast to Lyons' (1977) division. He prefers to use the labels 'subjectivity' and non-subjectivity' (rather than objectivity) as he believes "we are not dealing with two types of epistemic modality, but with an interaction of an epistemic with an evidential qualification" (Nuyts 2001: 386). This author also divides epistemic modality, from a syntactic point of view, into modal adverbs, modal adjectives, mental state predicates and modal auxiliaries. These concepts as well as this taxonomy of epistemic modality will be taken into account in the analysis of the corpus and in presenting and discussing the results.

Here I study epistemic modals to analyse the possible differences in the responsibility of the writer in academic English, distinguishing among the values of epistemic modality: high reliability, medium reliability and low reliability. I also follow the claim by Papafragou (2006: 1689) when she explains that "epistemic modality in language marks the degree and/or source of the speaker's commitment to the embedded proposition… it is seen as regularly contributing to truth conditions". Following Cheng & Cheng (2014), in the analysis I distinguish the orientation of epistemic modality (subjective implicit, subjective explicit and objective), the value of epistemic modality (high, median and low) and the concordances of typical epistemic modality.

In the results of this paper, from a corpus-driven analysis, I distinguish the concepts of subjectivity and non-subjectivity and follow a syntactic interpretation

of the epistemic modals identified. With the analysis of academic writing, I check whether the objective (or non-subjective) interpretations attributed to research writing do contribute to truth conditions (Papafragou 2006) given that a stable and reliable body of data is presented.

See below the categories relevant in this analysis in Table 1:

Table 1. Categories of epistemic modality of this study based on Marín-Arrese (2011), Nuyts (2001) and Cheng & Cheng (2014)

Epistemic modality		
Epistemic value	Expressions	Orientation
High reliability: Certainty Must P Certainly P	Modal adverbs (e.g. probably)	Subjective (e.g. must, may, might, will, in my (our) view, I (do not) think, in my (our) opinion, I am (we are) sure…)
Medium reliability: Probability Will P Probably P	Modal adjectives (e.g. probable)	Objective (e.g. possible, likely, possibility, perhaps, impossible, possibly, probably)
Low reliability: Possibility May P Perhaps P	Mental state predicates (e.g. I think, I thought, I believe)	
	Modal auxiliaries (e.g. may, might)	

3.   Modality, academic writing and phraseological patterns

Academic writing has been the focus of many researchers who have taken into account its disciplinary conventions. As Hyland (2005: 298) explains: "In academic writing, the choices individuals make are socially shaped and constrained by the possibilities made available to them by the discourse conventions of their disciplines"; he also considers that academic writing consists of "manifestations of the different epistemological and social assumptions of disciplinary communities". Academic writing reflects the objective conventions of the scientific world (Carrió-Pastor 2012, 2014). This aspect should be taken into account in the interpretation of the results of academic writing as epistemic modality may be used in a different way if academic concerns are clearly defined and a certain amount of knowledge is presupposed. Some researchers, such as Marín-Arrese (2011), Cheng & Cheng (2014), Zafiu (2018), Alonso-Almeida & Carrió-Pastor (2019), have based their epistemic modality studies on specific fields of knowledge, but fewer have used an academic corpus to exemplify and show epistemic modality (Thompson

2001; Hyland 2005; Vold 2006; Ferrari 2009; Carrió-Pastor 2012; Alonso-Almeida 2015a, 2015b; Alonso-Almeida & Carrió-Pastor 2016). I believe that there are still some aspects of academic writing that should be studied in depth, such as the identification of devices that act as epistemic modals taking into account their specific context and the phraseological units that are associated with them.

The identification of the connections between linguistic patterning and the use of epistemic modality in specialised contexts of academic discourse could be useful to identify whether the object of study and research field influence the authors' use of the different kinds of epistemic modals. Additionally, it could also be beneficial for educational purposes, by making it possible to identify the purpose of epistemic devices and the phrases associated with them in academic papers that can potentially be included in textbooks to show their collocations or bundles in different specific fields of knowledge of academic English.

Focusing on collocations, phraseology is an area of research that has been of interest to a number of researchers over the last thirty years. Some researchers have paid attention to establishing patterns in language (Hunston & Francis 2000; Scott & Tribble 2006; Granger & Paquot 2008; Charles 2006, 2011; Fiedler 2017; John, Brooks & Schriever 2017; Kim & Yeates 2019), while others focused on identifying the phraseological units associated with academic language (Durrant 2009: Durrant & Mathews-Aydınlı 2011; Vincent 2013; Cortes 2013; Le & Harrington 2015; Grabowski 2015; Cunningham 2017; Carrió-Pastor 2017, 2019). In this analysis, I follow the distributional or corpus-driven approach, which has been used by researchers such as Hunston & Francis (2000), Scott & Tribble (2006), Saber (2012), Cortes (2013) and Carrió-Pastor (2017, 2019). This chapter reports on a corpus-based study that takes into account the importance of the identification of the most common phrases in academic English. This may be helpful to determine the different patterns followed by academic writers in specific settings and to provide lists of formulaic phrases that represent the variation that exists in writing research papers in English. I believe that if language patterns are not identified when studying a specific aspect of language (in this case, epistemic modality), it is not possible to take a comprehensive view of the real use of language (Charles 2011).

4.   Corpus

The corpus of this analysis was compiled from academic research journals. In order to obtain a representative corpus of the three specific domains under study, fifty academic papers in English belonging to the field of engineering, fifty from the domain of linguistics and fifty from medical academic journals were compiled. The papers were published between 2016 and 2018.

The criteria followed to choose the journals were, first, that they were included in Journal Citation Report (JCR index), as this reputed index only includes journals that carefully select the most relevant and representative papers in that specific area of knowledge.

Second, in the case of multi-authored papers (which is quite common in engineering and medical papers), 60% of the authors should be native English speakers. This percentage was agreed after observing the authorship of papers and noticing that a higher percentage would make difficult to gather the corpus. This aspect was checked with some authors in papers where we had some doubts in this respect.

Finally, steps were taken to ensure that the papers were gathered from a representative number of different sub-fields of knowledge (e.g. in linguistics: phonology, language learning, syntax, etc.; in medicine: cancer, preventive medicine, surgery, etc.; and in engineering: electricity, mechanics, computing, agronomy, etc.).

Once the one hundred and fifty papers had been collected, it was seen that the medical journals included shorter papers and so it was decided that the results had to be normalised. The papers were converted into text format to be processed and the tables, figures, graphs, references and names of the authors were eliminated from the texts to avoid noise in the automatic analysis of the corpus. Each paper in the corpus, now in text format, was tagged with the same tag as the paper in Portable Document Format (PDF). This was important as a way to check that the meaning of the devices identified was epistemic, to extract examples and to disambiguate some possible errors. Table 2 shows the characteristics of the corpus:

Table 2. Data of the corpus compiled

Field of knowledge	No. of texts	Types	Tokens
Engineering	50	20,547	631,787
Medicine	50	17,894	454,573
Linguistics	50	19,357	636,620
Total	**150**	**57,798**	**1,722,980**

5.   Method

Once the corpus had been compiled and converted into text format, the three sub-corpora in the corpus were uploaded and processed with METOOL, a tool developed as part of the research project FFI2016-77941-P (funded by *Ministerio de Economía y Competitividad*, Spain). METOOL identifies rhetoric devices

automatically and the different annotators tag the devices taking into account the context and the meaning of the device in its specific context. Ten taggers are involved in the tagging of rhetoric devices and in the training of the tool. The tagging of each device is double-checked by a native speaker of English to guarantee the successful identification of the rhetoric markers. The devices are tagged taking into account the context and then collocations are also shown in a list taking into consideration their frequencies. By clicking on one sample, the tagger can see the sentence, paragraph or text in which the device has been identified. Thus, the correct tagging of the devices is guaranteed provided that they are interpreted in context and they are double checked.

In this study, epistemic modals were identified, tagged in the three sub-corpora and then manually classified in the categories established for epistemic modality. As pointed out before, epistemic modality was analysed taking into account the division of Marín-Arrese (2011) into 'High reliability: Certainty (*must P, certainly P*)', 'Medium reliability: Probability (*will P, probably P*)' and 'Low reliability: Possibility (*may P, perhaps P*)'. The analysis carried out by Nuyts (2001) was also taken into consideration, in which epistemic modals are divided into 'Modal adverbs' (e.g. *probably*), 'Modal adjectives' (e.g. *probable*), 'Mental state predicates' (e.g. *I think, I thought, I believe*) and 'Modal auxiliaries' (e.g. *may, might*). To complement this, I also took into account the proposal of Cheng and Cheng (2014), who distributed the orientation of epistemic modality in 'Subjective implicit epistemic modality' (e.g. *must, may, might, will*), 'Subjective explicit epistemic modality' (e.g. *in my (our) view, I (do not) think, in my (our) opinion, I am (we are) sure…*) and 'Objective epistemic modality' (e.g. *possible, likely, possibility, perhaps, impossible, possibly, probably*), but in view of the nature of the corpus analysed it was simplified as subjective and objective epistemic modality (see Table 1).

In this way, the analysis of epistemic modality in this paper covers a syntactic and a semantic perspective, and studies the most common epistemic modals, their value, their orientation and their most common collocations. I have included in the taxonomy, first, the expressions and value of epistemic modals, differentiating among modal adverbs, modal adjectives, phrases, modal nouns and modal auxiliaries and in each of them I have considered the values of high reliability (certainty), medium reliability (probability) and low reliability (possibility). Second, I have detailed the results related to the orientation of epistemic modality, dividing this into subjective implicit epistemic modality, subjective explicit epistemic modality and objective epistemic modality. In the third and last part of the taxonomy I have included the collocations of typical epistemic modality.

After designing the most appropriate taxonomy to meet the objectives and the research questions of this study, epistemic modals were tagged with METOOL, as mentioned before, a tool developed at the University of Wolverhampton (Research

Institute for Information and Language Processing) that allows the semi-automatic identification of rhetoric devices. The aim of this data-driven methodology was to perform a quantitative analysis of the frequencies of use of epistemic modals by native speakers of English in three specific settings of scientific papers. Figure 1, below, shows one tagged text in METOOL and the concordance results can be seen in Figure 2:

Figure 1. Tagged text in the sub-corpus of medicine

Figure 2. Patterns found in the analysis of *might* in linguistics academic papers

I then selected each of the three sub-corpora uploaded and tagged in METOOL and searched for the epistemic modal expressions, obtaining the occurrences of epistemic proponents, which were examined very closely to identify their meaning in the co-text. Subsequently, the occurrences were normalised to 10,000 tokens, as the three sub-corpora had different number of tokens. The results were noted in tables and the frequencies were compared to determine the quantitative difference in the use of epistemic modals in the three domains. Their phraseological patterns were also identified and examples were discussed to determine whether writers adapted to the specific field of knowledge and to the expected readers and also to study the functional load that reveals modalising expressions. Finally, conclusions were drawn.

6. Results

The results of the analysis have been divided into different sections in response to the four research questions. A total of 4,385 epistemic modals were found in the analysis: 1,258 were found in the engineering corpus, 1,001 in the medicine corpus and 2,126 in the engineering corpus. The data obtained, their interpretation and examples are provided in Sections 6.1 (subdivided into 6.1.1, 6.1.2, 6.1.3 and 6.1.4), 6.2 (subdivided in 6.2.1, 6.2.2 and 6.2.3) and 6.3. The data are presented in occurrences (frequency) and normalised results (NR).

6.1 Expressions and value of epistemic modality

In this section, the syntactic expressions associated with epistemic modality found in the academic corpus are shown. The occurrences of modal adverbs (845), modal adjectives (895), phrases and mental state predicates (171), modal nouns (304) and modal auxiliaries (2,170) are detailed and some examples discussed. In total I found 1,258 epistemic modals in engineering, 1,001 in medicine and 2,126 in linguistics. Additionally, the value of epistemic modality is described in each category.

6.1.1 *Modal adverbs*

Table 3 shows the occurrences and the normalised results of the modal adverbs found in the three sub-corpora. Few adverbs were found in the corpus of academic papers and they are those that express judgements, as pointed out by Palmer (1986: 57). Most of them strengthen the possibility of something happening or suggest that something may happen.

Table 3. Results of modal adverbs

Modal adverbs	Engineering frequency (NR)	Medicine frequency (NR)	Linguistics frequency (NR)	Total
Unlikely	14 (0.22)	19 (0.41)	21 (0.32)	54 (0.31)
Likely	160 (2.53)	167 (3.67)	205 (3.22)	532 (3.08)
Necessarily	15 (0.23)	6 (0.13)	32 (0.50)	53 (0.30)
Probably	15 (0.23)	14 (0.30)	19 (0.29)	48 (0.27)
Possibly	4 (0.06)	21 (0.46)	9 (0.14)	34 (0.19)
Certainly	4 (0.06)	2 (0.04)	16 (0.25)	22 (0.12)
Perhaps	25 (0.39)	18 (0.39)	59 (0.92)	102 (0.59)
Total	**237 (3.75)**	**247 (5.43)**	**361 (5.67)**	**845 (4.90)**

The most frequent adverbs found in the three sub-corpora were *likely* (3.08) and *perhaps* (0.59), with the meaning that a fact will probably happen or is expected. In contrast, *possibly* (0.19) and *certainly* (0.12) were the least frequently used. Academic writers prefer the use of modal adverbials that express a fact that may be expected rather than adverbials that indicate certainty or probability.

As Von Fintel and Gillies (2007: 46) explain, epistemic modals "are context sensitive, they act as quantifiers over sets of worlds, just which sets being a function of context". It was noticed that *possibly* and *unlikely* were more frequently used in medicine than in linguistics and engineering, and it should also be noted that modal adverbs were more frequently used by medicine (5.43) and linguistics (5.67) researchers. Then, context matters in the use of modal adverbs when they refer to epistemic modality; academic writers tend to use more frequently two modal adverbs, but the frequencies differ if we analyse the specific frequencies in each field of knowledge. Engineers used less modal adverbs (3.75) given that, in general, they tend to use less epistemic modals due to the nature of their research. Some examples are shown in (1), (2), (3) and (4):

(1)   Eng. Corpus 04: "that the construction industry's focus on a zero vision has somewhat stymied its ability to ensure the transformational change required to abate rework and *perhaps* further improve safety."

Here, the authors' attitude expresses that they are not sure about the proposition (improve safety) but they express their opinion in the academic paper.

(2)   Med. Corpus 22: "Thus, strategies which restore insulin sensitivity will *likely* hasten recovery in burn victims."

In this example, the medical doctors are not sure about the recovery of the victims and use the modal adverb to express their uncertainty about this fact. The adverb

"marks the degree of the speaker's commitment to the embedded proposition" (Papafragou 2006: 1689).

(3)   Ling. Corpus 26: "the infinitive -e in rise *probably* counts for a non-broken-backed pattern."

In the academic paper, the author expresses the probability that something is true, but does not wish to report it as a statement of fact.

(4)   Eng. Corpus 09: "Because of these features, one failure scenario considers the potential but extremely *unlikely* failure of the entire volume."

In example 4, the authors use the modal adverb to show that they consider that a fact is not going to happen and this idea is reinforced with *extremely*. The authors distinguish between the idea that academic language should show objective interpretations guaranteed by a body of data and their own perception of the future failure of the experiment. Thus, they use the modal adverbial to show their subjective interpretation of the objective data provided in the academic paper.

These findings show that linguists, engineers and medical doctors emphasise probability and possibility more than certainty. Regarding the value of the modal adverbials detected in the three sub-corpora, the adverbs that expressed high reliability and certainty were *certainly* (0.12), *unlikely* (0.31) and *necessarily* (0.30). They were seldom used by engineers (0.06; 0.22; 0.23) and medical doctors (0.04; 0.41; 0.13) in their academic papers, suggesting that the authors do not show a high standard of truth. These results are in the same line as Cheng & Cheng (2014).

Concerning the values of medium reliability, that is, the probability of the propositions, the modal adverbials *probably* (0.27) and *likely* (3.08) were used in the three sub-corpora of engineering (0.23; 2.53), medicine (0.30; 3.67) and linguistics (0.29; 3.22). In all three of them, medium reliability has the highest overall frequency, followed by low reliability, that is, possibility. Low reliability is shown with the modal adverbials *perhaps* (0.59) and *possibly* (0.19) in the corpus. While there are some variations in engineering (0.39; 0.06), medicine (0.39; 0.46) and linguistics (0.49; 0.14), in general the frequencies were similar, although it should be pointed out that *perhaps* was used more frequently than *possibly* in engineering and linguistics, whereas low reliability was expressed in medicine with the two modal adverbials. This means that academic writers prefer to show a relatively low standard of proof of their experiments and research. The findings show that, even when modal adverbials are more frequently used by linguists, the distribution of values of epistemic modality is quite similar.

6.1.2 *Modal adjectives*

Table 4 shows the five adjectives with modal function found in the three sub-corpora of academic papers:

Table 4. Results of modal adjectives

Modal adjectives	Engineering frequency (NR)	Medicine frequency (NR)	Linguistics frequency (NR)	Total
Possible	201 (3.18)	82 (1.80)	352 (5.52)	635 (3.68)
Improbable	0 (0.00)	0 (0.00)	3 (0.04)	3 (0.01)
Impossible	9 (0.14)	2 (0.04)	12 (0.18)	23 (0.13)
Certain	39 (0.61)	20 (0.43)	165 (2.59)	224 (1.30)
Probable	2 (0.03)	6 (0.13)	2 (0.03)	10 (0.05)
Total	**251 (3.97)**	**110 (2.41)**	**534 (8.38)**	**895 (5.19)**

Modal adjectives are used as non-subjective in an impersonal form (preceded by 'it is…'), as pointed out by Nuyts (2001). They are frequently used to report the results of scientific research in different ways. In the corpus analysed, most of the writers show explicit logical reasoning with the adjectives *possible* (3.68) and *certain* (1.30). It should be noted that linguists (8.38) used modal adjectives more frequently than engineers (3.97) and medical doctors (2.41). Modal adjectives were used in the corpus to express possibility, as *certain* is not used to indicate certainty but with the meaning of 'some'; these findings are also in line with Cheng & Cheng (2014).

Some examples of the data retrieved can be seen below in (5), (6) and (7):

(5) Ling. Corpus 43: "if control fails during lexical selection, the most *probable* error is a semantic one (e.g. dog for cat)."

The writer expresses epistemic modality involving an inanimate subject and the verb 'to be'. This is not a frequent pattern in the three sub-corpora analysed and is similar to the results obtained in the analysis of the adverb *probably* (see Table 2). Thus, the emphasis of academic authors was more on possibility than on probability.

(6) Eng. Corpus 13: "A solution can be chosen among them either based on the *possible* predefined priorities on any of the production indices or based on the experience of a human expert."

The modal adjective expresses the speakers' attitude towards the proposition, modifying the meaning of 'predefined priorities'. This is emphasised with the second part of the proposition, 'the experience of a human expert', as the modal

adjective is not included, thereby stressing the possibility in the first part of the preposition but not in the second.

(7)   Med. Corpus 25: "However, they also did not practice *certain* generic communication skills, such as exploring the reason for the consultation or checking the feelings of the patient". "potential as intermediary destinations for *certain* ill and injured patients".

Here we have an example of the modal adverb *certain* used with the meaning of 'some', not to indicate certainty.

Concerning the value of the modal adjectives identified in the three sub-corpora, no occurrences of adjectives indicating high reliability, that is, certainty (e.g. *sure*) were found. The academic writers preferred the adjectives that show medium reliability, that is, probability. The adjectives *probable* (0.05) and *improbable* (0.01) were seldom used by researchers in the three disciplines. Academic writers preferred to express low reliability, that is, possibility, indicating a low standard of proof. *Possible* and *impossible* were used in linguistics (5.52; 0.18) and engineering (3.18; 0.14) more frequently than in medicine (1.80; 0.04). These results may reflect the fact that medical doctors prefer the use of other strategies to indicate possibility rather than the use of adjectives, as can be seen in Tables 3, 4, 5, 6 and 7.

6.1.3   *Phrases/ mental state predicates*

Table 5 shows the different phrases or mental state predicates used to indicate epistemic modality. The occurrences related to *think* and *believe* have been divided depending on whether the subject of the verbs is singular or plural. The data showed that the first person singular is mainly used in linguistics.

Table 5. Results of phrases and/or mental state predicates

Phrases/ Mental state predicates	Engineering frequency (NR)	Medicine frequency (NR)	Linguistics frequency (NR)	Total
We/ the authors believe	6 (0.09)	10 (0.21)	25 (0.39)	41 (0.23)
We are/feel sure	0 (0.00)	1 (0.00)	3 (0.04)	4 (0.02)
We think	3 (0.04)	2 (0.04)	27 (0.42)	32 (0.18)
In my/our opinion	2 (0.03)	11 (0.24)	9 (0.14)	22 (0.12)
In all likelihood	9 (0.14)	7 (0.15)	2 (0.03)	18 (0.10)
I think	0 (0.00)	0 (0.00)	15 (0.23)	15 (0.08)
In my view	0 (0.00)	0 (0.00)	15 (0.23)	15 (0.08)
I believe	0 (0.00)	0 (0.00)	14 (0.21)	14 (0.08)
I/we doubt	0 (0.00)	3 (0.06)	7 (0.10)	10 (0.05)
Total	**20 (0.11)**	**34 (0.74)**	**117 (1.83)**	**171 (0.99)**

The occurrences extracted from the three sub-corpora clearly showed that they "typically occur in contexts in which the speaker voices personal opinions", as Nuyts (2001: 390) pointed out in his paper. In academic research papers, the authors express their point of view or opinion about a topic on which they consider other authors have an antagonistic view and so they mitigate a statement by indicating that it is their opinion. If we compare this category with the rest of categories in this section, this is the least frequent. The results show that academic writers prefer other ways to contribute to truth conditions or to indicate possibility and probability, as academic discourse entails, in general, objective data and opinion based on experiments. It has been pointed out by some authors (Ivanic 1998; Hyland 2001) that some researchers prefer the use of first person sentences instead of the passive voice to present results in scientific English, but this is not so frequent, as can be observed in Table 4. The most frequently used phrases in the three specific fields are *we think* (0.18) and *we/the authors believe* (0.23). It should be highlighted that this category is more frequently used in linguistics (1.83) than in engineering and medicine.

Some examples of the data found can be seen in (8), (9) and (10):

(8)   Eng. Corpus 41: "Nevertheless, *we think* that the theory developed in previous studies could play a significant role for a deeper understanding of the CORSING technique and this will be a subject of future investigation".

The authors use a mental state predicate to explain their view, which is reinforced by the use of *nevertheless* that entails an opposing view to that of other researchers. The authors show a personal remark about the theory developed in previous studies.

(9)   Med. Corpus 48: "*We believe* there were cases found in the passive system that were not identified through active surveillance because they received care in other counties."

In this example, the mental state predicate is used to mitigate the opinion of the authors. The researchers are certain about the fact that there were cases that were not identified, but by using *believe* they suggest that they are "voicing a tentative and personal opinion which may be wrong, thus 'officially' leaving room for another opinion", as indicated by Nuyts (2001: 391).

(10)   Ling. Corpus 04: "*In our view*, this evidence points to an important role for compositional semantics in understanding implicatures."

In (10) the authors also mitigate their opinion, indicating that they do not have further evidence about this, leaving room for a reaction or disagreement on the part of the reader.

The value of the phrases or mental state predicates found in the corpus indicate more frequently medium reliability, following the same tone as the occurrences found in the previous categories. Regarding high reliability, *we are sure* and *we*

feel sure were the phrases analysed, but the frequencies were very low (0.02) and in engineering the frequencies were null, so researchers do not use high reliability instances. In the corpus, more occurrences related to medium reliability, that is, probability, were used, such as *in my opinion* (0.12), *in my view* (0.08), *we think* (0.18), *I think* (0.08), *I believe* (0.08), *we/the authors believe* (0.23). It should be highlighted that engineers (0.11) used very few phrases or mental state predicates while linguists used them more frequently, although this category, as pointed out before, was not popular among academic writers in general. Low reliability, that is, possibility, was expressed by *in all likelihood* (0.10) and *I/we doubt* (0.05). Very few frequencies were found and, additionally, engineers did not use these phrases.

6.1.4 *Modal nouns*
Table 6 illustrates the results for the modal nouns obtained in the three specific fields of knowledge. Although some authors (Nuyts 2001) do not include nouns as indicators of epistemic modality, I decided to follow Cheng and Cheng (2014) and included nouns as indicators of modality after considering the context of the corpus.

Table 6. Results of modal nouns

Modal nouns	Engineering frequency (NR)	Medicine frequency (NR)	Linguistics frequency (NR)	Total
Probability	51 (0.80)	62 (1.36)	33 (0.51)	146 (0.84)
Improbability	0 (0.00)	1 (0.02)	0 (0.00)	1 (0.00)
Possibility	28 (0.44)	16 (0.35)	94 (1.47)	138 (0.80)
Impossibility	0 (0.00)	0 (0.00)	2 (0.03)	2 (0.01)
Doubt	0 (0.00)	3 (0.06)	8 (0.12)	11 (0.06)
Necessity	4 (0.06)	2 (0.04)	0 (0.00)	6 (0.03)
Total	**83 (1.31)**	**84 (1.84)**	**137 (2.15)**	**304 (1.76)**

The most commonly used nouns to express epistemic modality were *probability* (0.84) and *possibility* (0.80). Some of the modal nouns, such as *impossibility, necessity, doubt* and *improbability*, were not used in one or more of the three fields (linguistics, medicine or engineering), as can be observed in Table 6. Thus, epistemic modality here is used mainly to express probability and possibility, which entails the subjective point of view of academic writers.

The examples in (11), (12) and (13) illustrate the way academic writers use modal nouns in their academic writing:

(11) Med. Corpus 50: "As part of a competing risks study across multiple cancer sites we have previously reported the risks and crude *probability* of breast cancer, other cancers and non-cancer deaths for women diagnosed with breast cancer in Queensland".

The modal noun is used in this sentence to infer some doubt about the fact of suffering from cancer, and by so doing the authors mitigate the way they explain the information about the illness.

(12)   Eng. Corpus 26: "This elevation of the hormones suggests the *possibility* of additional follicular waves in yaks."

The mitigating function of the noun is reinforced with the verb *suggest*, and thus the writers avoid responsibility for the proposition they describe.

(13)   Ling. Corpus 10: "moreover, this licenses the *possibility* that in some languages rightward repositioning is preferred to leftward."

The authors indicate epistemic modality by showing information that could be interpreted in another way in other languages, thus emphasising this possibility of the results being interpreted differently. Authors prefer to focus on possibility rather than on certainty.

The modal nouns identified in the corpus can be divided into different values. Regarding high reliability, the noun *necessity* indicates certainty, but it should be noticed that it was seldom used in the corpus (0.06). As far as medium reliability is concerned, that is, probability, the nouns *probability* (0.84) and *improbability* (0.00) were used with this value in the corpus, but this was not done in a significant way. Low reliability has the highest overall frequency, the nouns *possibility* (0.80), *impossibility* (0.01) and *doubt* (0.06) being used in the academic corpus to indicate a relatively low standard of objective data.

6.1.5   *Modal auxiliaries*

Table 7 shows the modal auxiliaries used as epistemic modals. Most studies have focused on studies of modal auxiliaries (Palmer 1986; Nuyts 2001; Papafragou 2006; Furmaniak 2011; Carrió-Pastor 2012, 2014; Alonso-Almeida & Carrió-Pastor 2016) but not many have considered different specific contexts of modal auxiliaries and their frequency based on corpus analysis.

Table 7. Results of modal auxiliaries

Modal auxiliaries	Engineering frequency (NR)		Medicine frequency (NR)		Linguistics frequency (NR)		Total	
May	535	(8.46)	384	(8.44)	611	(9.54)	1,530	(8.87)
Might	98	(1.55)	109	(2.39)	269	(4.22)	476	(2.76)
Must	12	(0.18)	14	(0.30)	35	(0.54)	61	(0.35)
Will	22	(0.34)	19	(0.41)	62	(0.97)	103	(0.59)
Total	**667**	**(10.55)**	**526**	**(11.57)**	**977**	**(15.34)**	**2,170**	**(12.59)**

The modal verbs included in this analysis and identified in the three sub-corpora with the meaning of epistemic modality were *may, will, might* and *must*. I found some examples of modal auxiliaries not used as epistemic modals; that is, their meaning was deontic or dynamic (Collins 2009), such as 'it *must* include differential weighting of the variants in order to produce the ubiquitous curves that are repeatedly observed [Ling. Corpus 20]', and 'while recycled materials *may* reduce embodied energy, if the use of these materials means a road' s life span is reduced' [Eng. Corpus 1]. In the first example, *must* acts as deontic, as it "is objective, with the source of the obligation ('the world') external to the speaker" (Collins 2009: 35) and in the second, *may* indicates dynamic modality, that is, theoretical possibility that "involves a potentiality for action that resides in the external situation. In this use may is often associated with a greater degree of formality than can" (Collins 2009: 96).

Modal auxiliaries were the most frequent category in the corpus (12.59). Alonso Almeida and Carrió-Pastor (2016: 304) also identified epistemic modality as the most frequent modal meaning in linguistics and engineering. As stated by these authors, the use of modal auxiliaries "may be justified by the authors' intention to mitigate the strength of their claim. This does not mean, however, that this mitigating effect follows from the authors' uncertainty concerning the accuracy of their findings, but as a desire to avoid imposition on their readers".

Focusing on the modal auxiliaries found in this study, the most commonly used modal verb was *may* (8.87), followed by *might* (2.76), which is in line with Cheng and Cheng (2014). *Must* is a modal verb whose function and meaning have been the focus of many studies (Palmer 1986; Papafragou 2006; Furmaniak 2011). In this study, *must* was the least frequent modal auxiliary, but in the examples found it conveyed a high degree of probability, which was inferred from evidence based on data analysis.

Some examples can be seen in (14), (15), (16), (17) and (18):

(14)   Eng. Corpus 38: "value of −1 indicating that this sample *might* have been assigned to a wrong cluster."

In this example, we can see that *might* + present perfect tense is equal to 'possibly + past tense form of be' and indicates a possibility, as in the study by Cheng and Cheng (2014).

(15)   Med. Corpus 17: "For example, a larger sample size *may* have detected differences in consent time."

In this example, the modal auxiliary refers to the probability of the actions occurring, and in this way the authors convey a different degree of certainty, as was identified by Alonso Almeida and Carrió-Pastor (2016) in engineering.

(16) Ling. Corpus 40: "If this suggestion is correct, it *may* be possible to provide an analysis of the North East Ambae and Pima expressions described by Hyslop and Smith."

The authors here use *may* to express probability and this meaning is reinforced with the use of *suggestion* and *possible* in the same sentence.

(17) Ling. Corpus 02: "Given the premise, Dan trusts most of Amy's friends and Sam admires most of Amy's friends *must* have the same truth value – both true or both false."

In this example, the available (direct) evidence compels us to the conclusion that the premise is true, following Sweetser (1990) and Furmaniak (2011). In this example, we can see *must* as an indication of the estimation of the status of the proposition, as strong probability.

(18) Eng. Corpus 14. "The constructed features produce smaller numbers of dimensions. This *will* consequently reduce computational demand."

In this example, epistemic *will* refers to what it is reasonable to expect, in this case, to reduce computational demand.

Concerning the value of the modal auxiliaries analysed, *must* indicates high reliability and certainty in the three sub-corpora analysed and *may* and *might* entail low reliability and possibility.

Finally, it can be observed in Figure 3 the most outstanding differences identified in the use of modalising devices in the three specific fields of academic English:
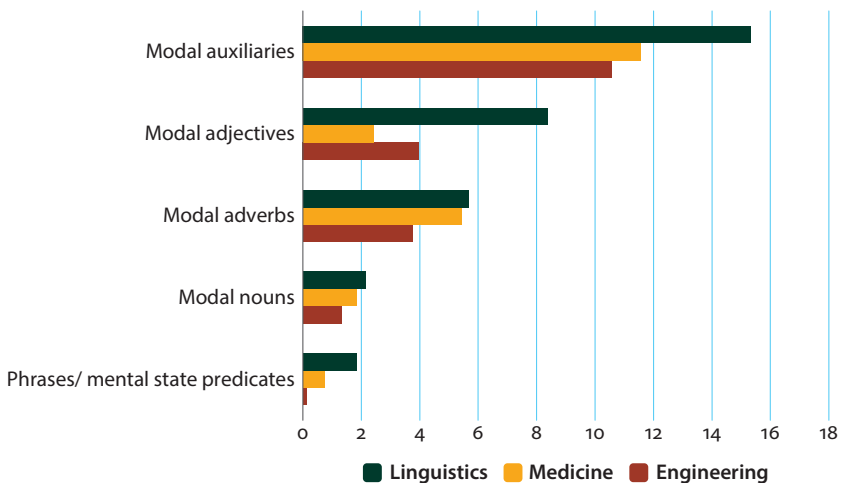
Figure 3. Comparison of the normalised results in the different epistemic modal expressions

6.2 Orientation of epistemic modality

In this section, the relative distribution of the types of epistemic modality in the three sub-corpora is described and discussed. The section is divided into three orientations of epistemic modality – subjective implicit, subjective explicit and objective – in which the nature of the modals found in the corpus is discussed. Lyons (1977) and Nuyts (2001) identified the difference between subjective and objective modality. Subjective means that a reader interprets a proposition considering personal evidence not based on objective data. On the contrary, the objective form "is used to state a conclusion based on more reliable scientific data" (Papafragou 2006: 1691). As explained by Papafragou (2006), following Palmer (1990), subjective epistemic modality indicates the degree of the speaker's commitment to the proposition. But if we consider the opinion expressed by Nuyts (2001: 386–7): "The dimension of subjectivity is thus probably not a distinction within the epistemic domain… is probably not limited to epistemic modality".

Here, some of the devices or phrases analysed previously from a corpus analysis perspective were studied taking into account their orientation. After considering the evidence from the literature pointed out above, the analysis conducted by Nuyts (2001) was followed, as he clearly distinguished the difference between objective and subjective and the way this can be applied to the specific corpora under study.

6.2.1 *Subjective epistemic modality*

In academic English, modal auxiliaries such as *may, must* and *might* may be used as indicators of subjective epistemic modality, being associated with probability, strong probability and possibility, respectively. In this chapter I focus on evidence related to their subjective implicit epistemic modality. In the three sub-corpora analysed, modal auxiliaries were used with the dimension of subjectivity, expressing poor or vague evidence as occurs in example (15) "a larger sample size *may* have detected differences". No evidence is shown about this clause and so the writers prefer the use of modal auxiliaries to express subjectivity. Other epistemic modals that were used to express subjectivity in the corpus were phrases and mental state predicates such as *in my view, in my opinion, in our opinion, I think* and *I believe*. As commented before in Table 4, subjective phrases were not frequently used in academic English, as researchers prefer to formulate reliable evidence that supports their findings. Only in the situations in which researchers were not really sure about their findings were subjective expressions used to indicate the degree of the researchers' commitment to the embedded proposition. In this sense, all the adjectives analysed in the corpus (e.g. *probable, possible*) entailed subjectivity, except for those included in an impersonal form, an aspect also noticed by Nuyts (2001).

6.2.2   *Objective epistemic modality*

Objective epistemic modality is described by Papafragou (2006: 1691), following Lyons (1977), as "objective interpretations [that] do contribute to truth conditions, since they mark an inference which is guaranteed by a stable and reliable body of data". In the corpus analysed, the adverbials were mainly used with an objective meaning, above all *likely, probably* and *perhaps*. Modal nouns were also used to show objective epistemic modality, such as *probability* and *possibility* in examples (11) and (12).

6.3   Collocations of typical epistemic modals

In this section, the typical expressions of probability and possibility are shown in Table 8. The most frequent epistemic modals found in the corpus of the three specific fields of knowledge were *may, possible* and *likely*. Thus, the functional meaning associated with these words in academic English was identified and the three specific fields of knowledge compared.

Table 8. Results of the phraseological patterns of the most frequent epistemic modals

Epistemic modals	Engineering	Medicine	Linguistics
MAY	Noun + may + reduce Noun + may + actually Noun + may + have Noun + may + be + past participle Noun + may + apply Noun + may + also + verb Noun + may + allow Noun + may + lead to Noun + may + not + be as	That + may + account Noun + may + increase Noun + may + be +adj. Noun + may + be + past participle Noun + may + benefit Noun + may + not be Noun + may + mitigate Noun + may + verb + to	Noun + may + appear Noun + may + differ Noun + may + be +adj. Noun + may + be + past participle Noun + may +in fact+ verb Noun + may + also+ verb Noun + may + not + verb Noun + may + not necessarily + verb
POSSIBLE	To be + possible + to May be + possible + to Verb + possible + noun To be + possible + but Possible + noun All the + possible + noun As a + possible + noun One + possible + noun A/ the + possible + noun	To be + possible + to May be + possible + to A/ the + possible + adjective + noun One + possible + noun Possible + noun + verb To + verb + possible + noun Noun + of + possible + noun It + to be + not + possible + to verb The + noun + possible + noun	To be + possible + to May be + possible + to Make it + possible + to It+ would be + possible + to A + possible + noun One + possible + noun To be + possible + but To verb + possible + noun Of + possible + noun Should be + possible That are + possible + for

Table 8. (*Continued*)

Epistemic modals	Engineering	Medicine	Linguistics
LIKELY	To be + likely + to To be more + likely + that The most + likely + that The most + likely + past participle Less + likely + in Would + likely + be Will + likely + be Will + likely + verb Most + likely + noun	To be + likely + to verb To be more + likely + that Most + likely + that Less + likely + to To be + more + likely + to verb Would + likely + verb To be + likely + that + clause To be + likely + to have Would have + likely + past participle To be + likely + past participle	To be + likely + to To be more + likely + to/ in Most + likely + that Less + likely + to A + likely + noun Would + also + likely + verb Another + likely + adjective + noun Might + also + be + likely + to verb It + is + likely + that + clause To be + likely + adjective+ to Seems + likely + to

It can be observed that most of the patterns are similar in the three specific areas of knowledge, as they follow the structures that are seen in other research papers. In this sense, we can say that academic writing uses standard collocations in epistemic modality to express probability and possibility in subjective and objective orientations. As the most frequent epistemic modals were selected from the corpus analysed, no data were included here, as the patterns shown in Table 8 are the most frequently found.

7. Conclusions

In this chapter, several aspects have been discussed. First, the different types of epistemic modality have been identified in a corpus of research papers that belong to three specific settings: engineering, medicine and linguistics and it has been noticed that epistemic modality was more frequently used by linguistics researchers, with a total of 4,385 epistemic modals. Second, the value and the subjective orientation of the corpus have been described and, finally, the collocations of the most frequent epistemic modals have been shown. In this sense, this study has mainly focused on the semantic and functional dimensions of academic writing in three specific fields of knowledge in order to understand their contextual implications on modality. This analysis is based on previous studies (Nuyts 2001; Papafragou 2006; Cheng & Cheng 2014; Alonso-Almeida & Carrió-Pastor 2016, 2019, Carrió-Pastor 2012, 2014, 2017, 2019) and tries to shed some light on epistemic modality used in specific contexts.

Thus, it was proven the hypothesis explained at the beginning of the research that writers who belong to different specific fields of knowledge used dissimilar epistemic modals in English (see Tables 3, 4, 5, 6 and 7). Linguists used more frequently epistemic modals, and more specifically they use, in descending order, modal auxiliaries (15.34), adjectives (8.38), adverbs (5.43), nouns (2.15) and mental state predicates (1.83). This may be caused by their deeper knowledge of modality and discourse conventions, using epistemic modality to make judgements about the possibility that propositions are certain or not (Palmer 1990). The most frequently used epistemic modals in engineering, medicine and linguistics were modal auxiliaries, as also pointed out by other researchers such as Cheng & Cheng (2014) and Alonso-Almeida & Carrió-Pastor (2016). Modal adjectives and adverbs were more frequently used by linguists than by engineers and medical doctors, as has been shown in Figure 3 and nouns and phrases/ mental state predicates are seldom used in the three sub-corpora. The data found in this analysis means that epistemic modality is mainly expressed in academic English by modal auxiliaries and adjectives, adverbs, nouns and mental state predicates contribute to strengthen or weaken the certainty, uncertainty or probability of the proposition. When comparing engineers, medical doctors and linguists, we observed that the latter know the importance of epistemic modality and so they use several devices to express different degrees of certainty, possibility or probability (see Examples 16 and 17).

Moreover, concerning the most common epistemic value used in specific settings (certainty, probability or possibility), it was observed in the different sections of the results that probability was the most frequently used and the most common value was low reliability. More specifically, writers prefer to use epistemic modality with the value of possibility, indicating a low standard of proof. As regards the subjective nature of epistemic modality in academic English, after the analysis of the results it was observed that, in theory, academic English should be objective given the characteristics of research, but in fact modal auxiliaries, adjectives and nouns were used with a subjective orientation. Finally, phraseological patterns in the different specific fields of academic English were identified and a closer examination of the concordances shows that syntactic patterns are repeated in the three specific settings to express epistemic modality, this means structural patterns do not depend on context or on the expected readers.

I believe the findings of this chapter may contribute to the understanding of epistemic modality in specific settings. Here, attention is paid to both the semantic aspects of language and also its syntactic nature. The value and orientation of modality are analysed in a corpus-driven analysis in an attempt to understand the particular modal strategies associated with academic language. I am aware that there are limitations such as the need for a deeper study of the frequencies of the phraseological units associated with epistemic modals, but this aspect could be analysed in future research.

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On the (con)textual properties of *must*, *have to* and *shall*

An integrative account

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This paper focuses on the (con)textual properties of root *must*, *shall* and *have to*. It is conducted within an evolving framework, Integrative Grammar. The account of the three modal forms that is given here is integrative in two senses. First, it shows that traditional semantic descriptions fail to account for how these forms are used in discourse and that a comprehensive characterisation of their conditions of use requires that (con)textual factors be taken into consideration. Two contextual levels are considered: the distribution of the modal forms according to discourse modes and their propensity to be used within specific discourse sequences. Second, this study shows that these (con)textual features and the forms' semantic, pragmatic and even syntactic properties are interconnected and throw light upon one another.

Keywords: English modals, discourse modes, modality, coherence relations, integrative grammar

1. Introduction

This paper is part of a wider study of English modal expressions that focuses on their (con)textual properties. It is conducted within an evolving framework, Integrative Grammar (cf. Pic & Furmaniak 2012; Furmaniak 2017, 2019, 2020), whose main tenet is that text-oriented properties should be fully integrated to the description of grammatical expressions and that they are intricately related to other functional and formal properties of the expressions.

Although there exists a wide body of studies on the English modals, most of them deal exclusively with their semantics in the strict sense, that is, in terms of

their function within the boundaries of the sentence, including their contribution to the speech-act. One notable exception is Rivière (1981)'s seminal paper on the epistemic uses of *must* and *should*, which suggests that a narrowly defined semantic description of the forms does not exhaust their meanings and fails to account for their conditions of use. Rivière thus concludes that

> in order to account for the restrictions on the use of *must* and *should*, a theory must reach beyond the semantic and syntactic characterization of the elements within the sentence and must take into account semantic relations which hold between syntactically unrelated sentences.   (Rivière 1981: 179)

Promising as it may have been, Rivière's original conception of what a grammatical characterisation of the modals should include has not been followed up.

Yet, although they do not explicitly refer to Rivière's work, Ward et al. (2003) adopt a similar view regarding the epistemic uses of *must* and *would*. They contend that the difference between the two forms could be better explained in terms of inter-sentential relations than in terms of degrees of likelihood, since both modals convey a high degree of certainty. Indeed, example (1), Ward et al. argue, shows that the use of *would* (unlike that of *must*) requires the presence of a salient open proposition, that is, a proposition that points to an information gap, which the modalised clause comes to fill with a relatively high degree of probability.

(1)   A: Who is the British woman over there?
       B: That would be J. K. Rowling.   (Borrowed from Ward et al. 2003: 74)

The use of a *Wh*-question by A makes the information gap salient and thus legitimises the use of epistemic *would*. Without a salient open proposition, as in (1′), the use of *would* would be infelicitous.

(1′)   # Can you see the woman over there? That would be J. K. Rowling.

In contrast, *must* is unproblematic in a context like (1′).

(1″)   Can you see the woman over there? That must be J. K. Rowling.

The conception of grammar underlying Rivière's and Ward et al.'s approaches is best summarised by Mithun (2008), who suggests that:

> [a]n awareness of processes of extension beyond the boundaries of the sentence can alert us to structures we might otherwise miss. They can also contribute to our understanding of the reasons behind certain basic morphological and syntactic patterns.   (Mithun 2008: 113)

In this paper, we follow Mithun (2008) in so far as we believe that the necessity to look "beyond the boundaries of the sentence" can be generalised to all modal expressions.

Implicit in Mithun's quotation is that components of different levels are inter-connected. For instance, Rivière (ibid.) has demonstrated that the discursive characteristics of *should* are related to its semantic, pragmatic and morpho-syntactic properties.

The second (con)textual dimension which we aim at integrating to the grammar of the modals is the relations between the various uses of a form and the types of texts in which it can or cannot be used. In truth, this aspect of the use of modal expressions has been more thoroughly explored (cf. Hermeren 1978; Coates 1983; Biber et al. 1999; Simon-Vandenbergen & Aijmer 2007; Collins 2009, inter alia) but, in our view, previous accounts have been unsatisfactory for various reasons.

First, with the exception of Biber et al. (ibid.), that kind of observations is often left at the margins of the semantic description of the grammatical forms and therefore treated as extra (i.e. non-essential) information. Second, attempts to account for the observed correlations between the use of a form and a text-type are few and/or unsatisfactory. For instance, Hermerén (1978: 176) observes that "although Cultural and Novels may not seem far apart stylistically, *will* is more than six times as frequent in the former as in the latter sub-category" or that "*should* is evidently rare in Sports", but no explanation whatsoever is given. Biber et al. (1999)'s endeavours to account for the observed correlations are no less convincing because they are based on large semantic categories (expressions of necessity or possibility) and not on narrower semantic values (obligation, permission, etc.). Coates (1983: 4) is only interested in variations resulting from the spoken/written opposition: she only relies on different kinds of texts for the sake of representativeness. The same goes with Collins (2009).

Another problem with most studies of English modal expressions stems from inappropriate corpora. More often than not, they are based on inconsistent textual typologies whose categories are both domains (e.g. religion, humanities, technology, etc.) and genres (e.g. newspaper reportage, commercial letter, mystery and detective fiction, etc.). Biber et al. (1999)'s corpus is built around four "super-genres" (conversation, academic, newspaper and fiction). Again, while conversation and fiction can be regarded as genres, "academic" and "newspaper" should be described as domains.

The confusion between domains and genres is problematic because they do not belong to the same level of analysis and can easily overlap (it is, for instance, perfectly possible to have a commercial letter that pertains to the domain of technology). However it may be, we contend that both domains and genres are inadequate to account for the textual properties of grammatical forms.

Domains include too many different text-types which display considerable formal and functional variation. For instance, within the academic domain, there is much diversity between, say, a research article and a text book.

This is why many linguists making allowances for grammatical variation according to text-types have opted for textual typologies based on genres. Indeed, there is less variation within one genre than within one domain. However, for theoretical and methodological reasons, we shall suggest that modes of discourse are a more appropriate level of analysis to account for text/forms relations.

2.   Discourse modes

First, methodologically, a systematic exploration of the relations between text-types and grammatical usage requires a closed set of text-types. Genres do not satisfy this requirement as they are known to form an open set both horizontally (new genres are constantly being invented) and vertically (genres can be almost endlessly divided into sub-genres and sub-sub-genres, as underlined by Krazem 2011).

As Swales (1990) has shown, genres happen to be heterogeneous both functionally and formally. A text belonging to a given genre can often be divided into several parts, each exhibiting different functional and formal properties, so that what could at first sight appear as a characteristic of the genre as a whole might well, in the end, be true of only one of its sections. This can be illustrated by the example of the passive voice, which has long been considered a feature of research articles. The truth is that although the passive is indeed more frequent in research articles than in many other genres, it happens to be a characteristic of the methods section of the research article and not of the genre as a whole (cf. Martinez 2005). This has led us to consider, following Swales (1990), Adam (1992) and Charaudeau (1992), among others, that an entire text (as a representative of a genre) is not a grammatical unit and that grammatically relevant units must be sought beneath the level of the text.

As we have shown in previous studies (cf. Pic & Furmaniak 2012), rhetorical divisions are more appropriate to the purposes of the grammarian who endeavours to investigate, in a systematic way, correlations between the use of grammatical forms and text-types. A rhetorical division is a textual unit instantiating a specific discourse mode, such as narration, description, argumentation, etc. (cf. Adam 1992; Charaudeau 1992; Longacre 1996; Meurer 2002; Smith 2003; Pic & Furmaniak 2012). A discourse mode can be defined as a particular use of the grammatical resources of the language in order to achieve specific socio-pragmatic purposes. Modes of discourse are therefore endowed with formal (grammatical) and functional properties, which makes them an appropriate level of analysis to account for the textual properties of grammatical expressions. There is some amount of variation among authors as to how discourse modes should be

called (kinds of text, discourse modes, sequential types, modes of organisation, rhetorical modes, etc.) and defined (structurally, grammatically or pragmatically) and as to the number of categories. Those terminological, definitional and typological differences are not as important as they seem. They mostly result from whether the focus is on the modes themselves as sub-systems of the language or on the rhetorical divisions (or textual units) that instantiate them. The difference is basically the same as between *langue* and *parole* or competence and performance. Scholars like Adam (1992) who investigate the textual units logically use the terms "text-/sequential types", which they describe structurally and pragmatically, while those who are interested in the sub-systems instantiating those text-types talk of "discourse/rhetorical/organisational modes" and characterise them in grammatical terms. Typological differences also result from the perspective taken on this two-facetted phenomenon. While there is a general consensus on a number of "core" categories (narration, description, argumentation and information), some other categories, such as instruction or explication, are more or less justifiable depending on the approach adopted. Our own conception of the phenomenon is of course closer to that of grammarians like Charaudeau (1992) or Smith (2003), but we do not reject structural and pragmatic accounts which are helpful in identifying which rhetorical type a given textual unit belongs to and, therefore, which discourse mode has been activated in the unit in question.

For reasons we cannot develop here for lack of space, we have retained seven modes of discourse: narration, description, information, argumentation, instruction, report and dialogue. In what follows, we give a short definition of each of these modes and describe their most notable properties.

Narration, illustrated by (2), is temporal and dynamic mode (cf. Smith 2003).

(2) Nolo's dogs **had sniffed out** the bear – most unluckily for Nolo as they **were leashed** to his sled *at the time*. In their excitement, the dogs **capsized** the sled and **scattered** Nolo's load of willow cords and blocks of frozen whale oil. Nolo **was thrown** from the runner, landing hard on the river ice. *By the time he **got to his feet***, the dogs and the empty sled **had reached the carcass** a quarter league downstream. Straight away Nolo **knew something was wrong**. (NAR_W_14)[1]

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1. Examples from our corpus will be followed by the file name of the text they are taken from. The first letters refer to the discourse mode (NARration, DESCription, ARGumentation, INFormation, INStruction, REPort and DIALogue), the next letter refers to the channel (Spoken or Written) and the number, to the file-number. The original sources of the text are given in the appendix.

Each event is chronologically and causally related to the previous one and the succession of causally related event leads the reader/hearer towards a final conclusion. Grammatically, the narrative mode makes extensive use of third-person pronouns, of the Past Simple and of the Pluperfect. The Present Simple, in its so-called narrative use, can also be found. As can be seen in (2), narrative passages typically contain specific bounded events and states (in bold) and time adverbials (in italics).

As shown by Smith (2003), **description**, exemplified by (3), usually makes reference to specific states (in bold), since the purpose of the descriptive text is to make explicit the properties of the main referent (here, the picture).

(3)   This picture **memorialises** two wealthy, educated and powerful young men. On the left **is** Jean de Dinteville, aged 29, French ambassador to England in 1533. To the right **stands** his friend, Georges de Selve, aged 25, bishop of Lavaur, who acted on several occasions as ambassador to the Emperor, the Venetian Republic and the Holy See. The picture **is** in a tradition showing learned men with books and instruments. The objects on the upper shelf **include** a celestial globe, a portable sundial and various other instruments used for understanding the heavens and measuring time. Among the objects on the lower shelf **is** a lute, a case of flutes, a hymn book, a book of arithmetic and a terrestrial globe.   (DESC_W_17)

Atelic events taking place at the time of reference can also be found. They are typically expressed by verbs in the Progressive. In descriptive passages, the progression is not temporal but spatial as the text moves forward through changes of the element described or, as in the example above, through thematisation of different parts of the entity described (cf. *on the left, to the right, on the upper shelf, on the lower shelf*). Typically, third-person subjects are used but first- and second-person subjects are far from rare, especially with perception verbs (cf. *I/we can see…, you could see…*).

The **argumentative** mode, exemplified by (4), is characterised by Smith (2003) as the mode in which the dominant referent is not the event but the fact or the proposition, that is, conceptual constructs which are connected by logical relations and that can be the targets of evaluative or epistemic judgements (in italics).

(4)   It *is likely* that the ability to pursue an over-arching objective (**e.g.** make a bow-andarrow) through a variety of chains of actions that achieve intermediate goals requires an ability called 'executive control', which allows a person to put one task in abeyance (in memory) while another is executed and then to retrieve the other task and execute it (Jackson et al., 1999). Only in this way can complex tasks be flexibly sequenced to overcome obstacles as they arise. This ability is associated with the front-most part of the pre-frontal cortex (Koechlin et al., 2003) and is *probably* of recent origin

(Streidter, 2005). It is also one of the last abilities <u>to develop within the individual brain</u> (Luciana et al., 2005). *As expected*, **then**, the special traits of human technology (**e.g.** composite tools) *appear* <u>to be of relatively recent origin in the human evolutionary record</u> (Stringer, 1992).   (ARG_W_03)

Argumentation therefore makes extensive use of subordination (underlined in the example) for two reasons. First, various kinds of adverbials (cause, consequence, condition, etc.) contribute to the expression of logical relations. Second, nominalisation (infinitivals, gerunds and *that*-clauses) marks the special status of the proposition/fact as a linguistic entity about which the speaker/writer can voice their point of view (e.g. *I think [that…], I like [to…], I don't mind [V-ing…]*).

Because the dominant entity is a conceptual representation and not a real-world event, the progression of the argumentative mode is not temporal. Propositions are ordered on the basis of the logical relations that hold between them. Beside the use of logical connectors (e.g. *consequently, therefore,…*) whose main function is to encode such relations, argumentative passages also contain many ordinals (*first, second,* etc.), space and time-adverbials such as *then, in the first place* or *besides,* used metaphorically, and metadiscursive expressions such as *in conclusion, to conclude, to start with…*(in bold in example (4)).

Information is a non-temporal mode which presents (allegedly) uncontroversial generalities. As example (5) shows, informative passages are characterised by the use of generic states or events in the Present Simple or Past Simple (in bold).

(5)   *Whales* **are distributed** throughout the world's oceans and seas, from the Equator to the polar ice, except for the landlocked Caspian and Aral seas. They **are mammals**, and they **share the defining traits of that group**: *they* **breathe air, are warm-blooded, give live birth, suckle their young on milk**, and **have hair**. <u>All</u> **are entirely aquatic**, with specialized adaptations such as flippers and tail flukes for living in water. Whales **must surface regularly** to breathe, evacuating their lungs <u>more completely than</u> most mammals in an <u>almost</u> explosive breath known as a blow. *Blows* **are visible** because water vapour in the whale's hot breath **condenses** when the blow **is released**.

(INF_W_22)

NPs are often generic, as it is often question of classes or sub-classes of entities (objects, persons, events or states), which entails a frequent use of quantifiers and comparatives (underlined). The progression is not temporal but thematic, as the text moves forward through changes of what Smith (ibid.: 123) calls the primary referent (note the switch from *whale* to *blow* in italics).

The pragmatic function of the **instructional** mode is to communicate to the reader/hearer the procedure to achieve a specific purpose (procedural genres), as in (6), or to impose constraints upon the reader/hearer (injunctive genres), as in (7).

(6)   *Heat* oven to 180C/160C fan/gas 4. *Sit* a fluted 20cm round loose-bottomed tin (about 5cm deep, or a slightly shallower 22cm tin) on a baking sheet. *Break* the biscuits into a big bowl, or double-bag them in food bags, and *bash* to big crumbs with the end of a rolling pin or small saucepan. *Add* the cornflakes and *bash* a bit more to crumbs. *Mix* with the melted butter and sugar and *press* into the base and sides of the tin. *Bake* for 15 mins, then *remove* and *reduce* oven temperature to 160C/140C fan/gas 3.   (INS_W_09)

(7)   A Professional League **shall** *adopt* the following rule pertaining to the use of helmets: (a) All players **shall** *use* some type of protective helmet while at bat and while running the bases. (b) All players in National Association Leagues **shall** *wear* a double ear-flap helmet while at bat. (c) All Major League players **must** *wear* a single ear-flap helmet (or at the player's option, a double ear-flap helmet).   (INS_W_23)

In both cases, the aim is to directly incite towards action (Adam 1992: 95), hence the dominant use of dynamic verbs (in italics) and directives (in bold). According to the genre, directives may take the form of imperatives, as in (5), deontic modals, as in (6), or lexicalised forms such as *it is important that, X are asked to* or *it is compulsory to…*

Second-person subjects are frequent given that in instructional texts the hearer/reader usually coincides with the potential agent. Procedural genres differ from injunctive genres in that in the former, the events correspond to the various steps of the procedure and are therefore presented chronologically. Conversely, in non-procedural genres, the progression is more thematic than temporal.

Report is a mode forged by Smith (ibid.). It is illustrated by (8).

(8)   A: Contempt writs **have been served** against the Home Secretary and his predecessor Kenneth Clarke for trying to deport the legal guardian of six Nottingham children who were prohibited from leaving the country. X **has been looking** after her younger brothers and sisters *since they were made wards of court* when their parents were sent back to India.

Jeremy X **reports**.

B: The family came to Britain from Assam when their home was burnt down during Hindu Sikh riots *nine years ago*. But after losing a protracted fight for asylum both parents were deported. *Now* their eldest daughter **has been told** to leave too, but her supporters **believe** the decision is a clear breach of the children's wardship order. Lawyers **are expected to argue** that Michael Howard and Mr Clarke are both in contempt of the court's decision by pursuing X's deportation. Her eldest brother **says** she should be allowed to stay.   (REP_S_04)

Like narration, report is a temporal mode. Events and states are usually specific and are also presented in chronological order, but unlike narration, the speaker/writer

constantly makes reference to the time of utterance. Past events and states are there-
fore reported because of their current relevance and this is reflected in the frequent
use of the Present Perfect, the Present Simple and the Present Progressive. Deictic
adverbials (in italics) are also widely used.

Viewing **dialogue** as a discourse mode is even less consensual. In that, we
follow Adam (1992) and base our grammatical characterisation of the mode on
Biber et al. (1999)'s and Leech (2000)'s descriptions of the grammatical features of
conversation.

In fact, a distinction must be made between dialogue, which we regard as a
discourse mode, and conversation, which should be considered as a genre. We
take dialogue to be the discourse mode that is prototypically used in the most
basic instances of ordinary conversation, that is, interactions with relatively short
interventions and regular turn-taking. This type of conversation, where the dialo-
gal mode is used, can be exemplified by (9).

(9) A1: Have you been busy?

   B1: Yes

   A: Yes, oh. Jim's been for a, this afternoon at the Hart and Straw Club

   B: <unclear >

   A: oh, not very well, we erm, we stopped going after Christmas because we
        had bad chests both of us

   B: Oh

   A: both cold and it's hard going that three hours in the morning, you know

   B: Yes

   A: but we'll go back again.

   B: Well I've had to stop my classes

   A: Yeah

   B: because I'm, I'm so busy

   A: Yes

   B: er, among other things I'm writing a commentary on Romans in Sutwana

   A: Oh very good, yes, aha, so er Jim's been very busy with his talks
        and different things and er <pause> we packed in, you know, after
        Christmas cos we both worked and we thought we'd have it, you know,
        and we caught this flu bug and…

   B: Mm

   A: er, anyway we're alright now so, you know

   B: Good

   A: we shall go back, erm after Easter

B:	Yes
A:	hoping, permitting, you know, if it's not too expensive, it got very dear you know
B:	Yes, that is also a thing to
A:	Yeah. (DIAL_S_23)

Of course, not all conversations look like (9). Longer turns will often resort to other modes (narration, argumentation, etc.). We therefore consider that the dialogal mode is at work when each turn is in direct interaction with the interlocutor's previous turn and could not function independently.

Leech (2000), following Biber et al. (1999), attributes the following characteristics to ordinary conversation. We consider these to be the defining features of the dialogal mode.

First, in dialogues, speakers share a certain amount of **context**, which implies shorter, simpler (and even incomplete) sentences with frequent use of pronouns and ellipses (Leech 2000: 694). As noted by Leech, conversation is ruled by the *add-on principle*, which is reflected in the fact that "[s]poken utterances often attain considerable complexity, but on further observation, they are generally decomposable into short clause-like chunks, chained together in a simple incremental way for ease of processing" (2000: 699).

Second, the **interactive** nature of ordinary conversation is reflected in the extensive use of questions, imperatives, vocatives, discourse-markers and first- and second-person pronouns (ibid.: 696).

Thirdly, conversation is the genre where people most readily talk about their **feelings and opinions**, hence the frequent use of stance-markers.

Fourthly, probably because of its spontaneity, ordinary conversation makes use of only a **limited set of lexical and grammatical expressions**. As Leech (ibid.: 697–698) points out, the genre is characterised by "heavy reliance on a small list of "favourite"items to fill particular grammatical slots, e.g., favorite subordinators: *if, because*, and *when*; favorite modals: *can, will, would, could*; favorite adverbs: *there, just, so, then, anyway, though, now*".

Finally, the **real-time processing** of ordinary conversation also leads to "*dysfluencies* […] such as hesitation pauses, hesitation fillers, repeats, retrace-and-repair sequences, incompletions, and syntactic blends (anacolutha)" (Leech 2000: 698) as well as to reduction and contraction.

It is clearly beyond the scope of this paper to extensively describe the properties of each discourse mode. However, we have tried to show that discourse modes do have highly distinct grammatical features that allow us to treat them as specific ways of using the grammatical resources of the language. This, we have argued, is not true of genres, although, as we shall see, genres may have an impact on grammatical usage.

3.   Modality: Basic concepts

Before embarking on the analysis of the modal forms under scrutiny, it is necessary to define the concepts that will be used.

Modality will be defined here as the semantic category subsuming the concepts of necessity and possibility. We adopt the traditional division between root modality and epistemic modality. The former has to do with the forces exerted (with more or less strength) towards the realisation or non-realisation of real-world states of affairs. The latter concerns the strength with which a cognizer considers a proposition to be true or false.[2] In this paper, we shall be concerned with the root meaning of the modal forms. Epistemic modality will therefore only be mentioned marginally.

Root modality is often subdivided into two sub-kinds: deontic modality and dynamic modality, to which we add, following Huddleston & Pullum (2002), a third sub-category, circumstantial modality. The distinction between deontic modality and the other two sub-types equates to the volitional/non-volitional dichotomy. Deontic modality implies the existence of an authority who has power over the agent and who wants the agent (not) to act in the way described by the VP. There is no such authority in dynamic and circumstantial modality. With dynamic modality, the enabling/constraining force or the barrier originates within the agent. This category includes capacity, compulsion, inability, etc. Circumstantial modality concerns cases where the enabling/constraining force or the barrier originates outside the agent, generally in the physical environment (as in *The rain forced me to stay home today*). We consider that existential modality (Palmer 1990: 107) is related to circumstantial modality. It corresponds to a temporal or statistical conception of modality (cf. Becker 1952) where possibility is defined as what is sometimes the case (as in *It can rain in Paris*), necessity as what is always the case (as in *A door must be open or closed*) and impossibility as what is never the case (as in *People can't live forever*).

Of course, the above distinctions are theoretical. They are needed to make the analysis possible, but it is not rare for individual occurrences to express meanings that overlap them. When this was the case, we chose to categorise the form in question as indeterminate, just as we did with indeterminate modal values. These were classified as follows. The different meanings are exemplified by occurrences of *must*, because the modal covers the full range of meanings pertaining to root necessity. It must be clear however that these meanings can be expressed by the other modal forms that will be studied in this paper.

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2.   These definitions are roughly based on Talmy (2000) and Sweetser (1990).

–   **Obligation**, as in (10).

>   (10)   Most say they're driven by the desire to do right by the environment. Some also say they **must** listen to their customers' concerns or risk a consumer backlash.   (REP_W_33)

Some pressure is exerted upon the subject-referent so that s/he act in the way decribed by the VP.

–   **Demoted obligation** (cf. Talmy 2000: 242), as in (11).

>   (11)   These cards are the official form of identification at school and (11a) **must** be in your possession at all times. You will not be able to use the school library or go on school trips without them. (10b) They **must** be presented when you enter the building and to staff members upon request.
>   (INS_W_31)

This meaning is not fundamentally different from the previous one, except that the agent upon whom the pressure is exerted is not explicit. This typically includes cases of passivisation, as in (11b), but also sentences with a state verb indicating that an implicit agent is under an obligation to cause the described state to hold (as in (11a).

–   **Necessary condition**, as in (12).

>   (12)   In order to be placed on the honor roll a student **must** have an 85 average with no failures in either major or minor subjects.   (INS_W_31)

Here, no pressure or causation is implied, as no agent is involved. The modalised proposition is presented as the necessary condition for the situation described by the purpose-clause to be true.

Finally, we consider the meaning we call **inevitability** (cf. Furmaniak 2010) to pertain to root modality. (13) illustrates.

>   (13)   If you know how far away you are from satellite A, then you know you **must** be located somewhere on the red circle.   (INF_W_07)

Like the meaning of probability, the modal is here used inferentially. However, unlike the epistemic meaning, there is no uncertainty involved. The modal in (13) states that the circumstances described by the *if*-clause make the situation denoted by the modalised clause inevitable. To take up Sweetser's (1990) distinction between root and epistemic meanings, we could say that the modal here is about the socio-physical world and not about the mental world.

4.   Method

To conduct this research, a 350,000-word corpus was compiled. It is stratified into seven discourse modes (narration, description, information, report, instruction,

argumentation and dialogue). Each section has the same size and is equally balanced between spoken and written texts and between American and British English. Although we shall focus here only on three modal forms (*must, shall* and *have to*), the analysis was conducted on the most frequent expressions of necessity, namely, *must, shall, have to, will, should, need (to), certainly, probably* and *likely.*

All occurrences of the modal expressions were analysed according to 32 formal and functional variables. The qualitative analysis was completed by a quantitative analysis via statistical software *Trideux* (Cibois 2013) which enabled us to draw the different *profiles* of each modal form, a profile being defined as a recurrent combination of values (of the different variables).

The variables that have been used are given in Table 1. Some are quite straightforward, some will require some explaining.

Table 1. Set of variables used in the analysis[3]

Types of variable	Variables
Formal variables	grammatical category {auxiliary, adverb, semi-modal}, polarity {affirmation, negation}, sentence-type {declarative, interrogative, exclamative}, clause-type {independent, main, *if-*clause, relative, nominal, etc.}, diathesis {active, passive}, aspectual marker {ø, *be +* *-ing, have +* past participle*, have been –ing*}, subject-type {1st person, 2nd person, 3rd person}, position {initial, median, final}.
Semantic variables	time-reference of the state of affairs {past, present, future}, situation-type {specific, generic}, semantic role of the subject {[+Actor], [−Actor]}, verb-type {material, behavioural, verbal, mental, relational}, factual status of the proposition {virtual, factual, counterfactual}, modality-type {deontic, dynamic/circumstantial, epistemic, existential}.
Pragmatic variables	illocutionary function {constative, directive, hedged assertion}, modal meaning {obligation, demoted obligation, necessity, necessary condition, strong probability, temporal value, hedge, characteristic}.
Textual variables	variety {British English, American English}, channel {spoken, written}, discourse-type {narration, description, information, argumentation, instruction, report, dialogue}, coherence link {enumeration, (dis) agreement, addition/continuity, background, goal, cause/justification, consequence/conclusion, comparison, concession, condition, caused/ justified by, contrast/objection, reformulation, offer/question, temporal, reported, equivalence/summary, determination/description, particularisation/generalisation, means, response/answer, specification, substitution}

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3. Only the coherence links that are relevant to our study will be explained as they are used. We lack the space to describe and illustrate all of them.

A manual analysis of all the examples was conducted and, for each occurrence, each of the above variables was attributed a value. The data thus obtained was then fed into *Trideux* (Cibois 2013), which enabled us to identify the specificities of the forms under scrutiny. *Specificity* is here taken in a technical –statistical – acceptation. A value (e.g. a discourse mode, a semantic interpretation, a coherence link, etc.) is said to be specific to a form (which happens to be also treated as a value) in cases of deviation from independence. The PMD (Percentage of Maximum Deviation) is an indicator that measures the strength of the liaison (attraction or repulsion) between two values. For example, a +100% PMD signals a maximal positive deviation from independence. A −100% PMD indicates a maximal positive deviation from independence. A 0% PMD is to be interpreted as a situation of independence. A +50% PMD should be read as a strong (positive) deviation from independence.

Beside measuring the strength of the deviation (thanks to the PMD indicator), *Trideux* also indicates whether the deviation is statistically significant (based on a Chi-squared test).

In this study, we chose to compare the uses of three modal expressions: *must, have to* and *shall.* Needless to say, the comparison is especially interesting when the forms express a similar meaning. Given that the epistemic sense of *have to* is rare (and quite distinct from that of *must*) and that *shall* has no epistemic meaning at all, we have focused on the root interpretations of these forms. In the following section, we describe and discuss the specificities of each of these expressions.

5.   Results and discussion

5.1   Root *must*

First of all, let us point out that our data does not confirm the commonly held view (see for instance Collins [2009: 163]) that *must* is losing ground in American English. Although it is slightly more frequent in British English (94 vs 80 occurrences), what we have, statistically, is a situation of independence. As far as the channel is concerned, however, our data confirms Biber et al. (1999)'s and Collins (ibid.)'s observation that *must* is not only more frequent in, but also highly specific to, the written medium (110 occurrences vs 64 in spoken texts; PMD = +54%; significant at the 5% level). This does not mean that *must* is only found in written texts, but that it is attracted to the written channel. This is confirmed by Table 2, which shows that the modal is not only rare in dialogue (the only discourse mode that is exclusively oral) but surprisingly so (the PMD indicates a high negative deviation from independence).

Table 2. Distribution of *must* according to discourse mode[4]

	Raw frequency	Relative frequency	PMD
Argumentation	23	13%	0%
Description	5	3%	−24%
Dialogue	**16**	**9%**	**−54%** ***
Information	13	7%	−30%
Instruction	**80**	**46%**	**+20%** ***
Narration	24	14%	+6% ***
Report	13	7%	−33%
Total	**174**	**100%**	

Even though, as can be observed in Table 2, *must* is strongly attracted to the instructional mode, it appears to be used in all discourse modes. The qualitative analysis, however, reveals that its profile varies greatly according to the discourse mode in which it is employed.

In dialogue, *must* is essentially epistemic (81% of the occurrences; PMD = +77%; significant at the 1% level). This use will therefore not be discussed here.

In the instructional mode, *must* is never epistemic and the deontic interpretation is unsurprisingly dominant (79% of the occurrences) and highly specific (PMD = +60%; significant at the 0.5% level). (14) illustrates.

(14)   The corpus developers should be informed of all presentations and
        publications arising from analysis of the corpus. Researchers **must**
        acknowledge their use of the BASE corpus project using the following form
        of words   (INS_W_14)

The modality conveyed by deontic *must* is subjective and is used performatively (cf. Nuyts 2001). As can be observed in (14), the obligation is created by the utterance itself and originates in the writer. This is coherent with the fact that 89% of the occurrences of deontic *must* in this mode were found in written texts that actually "make" the rule.

At the informational level, the obligation thus created is therefore presented as new information, or at least as the salient (or foregrounded) information.

At the inter-propositional level, the modalised proposition typically expresses the consequence or conclusion of another proposition. This is illustrated by (15)

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4.   The stars indicate the statistical significance of the PMD. One star means 'significant at the 10 percent level'; two stars means 'significant at the 5 percent level'; three stars means 'significant at the 1 percent level'.

where the clause containing *must* (the apodosis) refers to the consequence of the apodosis (in italics).

(15)   *If you think you are (or might become) pregnant*, you **must** tell your doctor.
(INS_W_25)

Another frequent inter-propositional link involving deontic *must* is the '(P) is caused/justified by (Q)' relation, where the modality expressed in P is presented, this time, as the consequence of Q. This is exemplified by (16) where the underlined clause justifies the instruction expressed by the modal.

(16)   If any of the following statements applies to you, and you have not already discussed the matter with your doctor, you **must** contact your doctor *before taking ACCUPRO*, <u>as this medicine may not be suitable for you</u>: […]
(INS_W_25)

The syntactic counterpart of this is that *must* generally appears within a matrix clause containing an adverbial subordinate clause of condition, as in (15), of cause, as in (16), but also of time, as in (16) (in italics), where the time-adverbial restricts the time-period for which the obligation holds.

In argumentation, *must* is never epistemic either. However, this use differs from the previous one in that, here, the deontic value of the modal is significantly less frequent. Indeed, most of the occurrences (78%) were tagged as dynamic/circumstantial. This use is exemplified by (17).

(17)   A 'use-theory of meaning' does not sound like a thesis that cannot be 'debated' or with which everyone agrees (contra PI § 128); it does, however, sound like something that if it is to be a valid "theory of meaning" **must** apply to all classes of cases in which we employ the word "meaning" (contra PI § 43).   (ARG_W_06)

Here, the modal expresses a necessary condition which is reported (and not issued) by the writer. The modality is therefore used descriptively and should be regarded as more objective.

Similarly, in information, illustrated by (18), the modality is typically non-deontic and used descriptively. However, it differs from the previous case in that the state of affairs is generally factual.

(18)   They are mammals, and they share the defining traits of that group […]. All are entirely aquatic, with specialized adaptations such as flippers and tail flukes for living in water. Whales **must** surface regularly to breathe, evacuating their lungs more completely than most mammals in an almost explosive breath known as a blow.   (INF_W_22)

The modalised proposition refers to a generic situation that occurs regularly and that is presented as necessary by the modal. In other words, the modal bears on a proposition that is declared true (or false).

5.2   Deontic *shall*

Overall, *shall* is rare as an expression of obligation. But when one considers the distribution of grammatical forms according to text-types, overall frequencies make little sense. In certain genres, deontic *shall* is not only frequent, it is recurrent. For example, in (19), which is an excerpt from the rules of the Baseball International Federation, the modal occurs in clusters, as it does in other formal regulatory texts.

(19)   The webbing **shall** be made to control the size of the crotch opening. The crotch opening **shall** measure not more than 4½ inches at the top, not more than 5¾ inches deep, and **shall** be 3½ inches wide at its bottom. The opening of the crotch **shall** not be more than 4½ inches at any point below its top. The webbing **shall** be secured at each side, and at top and bottom of crotch. The attachment is to be made with leather lacing, these connections to be secured.   (INS_W_23)

All the occurrences of deontic *shall* appear in the instructional mode. However, although we have argued that genre is not a grammatical level, the distribution of *shall* suggests that genre cannot be utterly discarded from a grammatical analysis. It does exert an influence on the distribution of grammatical forms. This point deserves further investigation, but we can make the following temporary claim. While, unlike discourse modes, genres are *not* defined grammatically, they are endowed with socio-pragmatic features, which lead to the selection of the most appropriate discourse modes to achieve their pragmatic goals.[5] However, even when a discourse mode is deemed fitting to serve the pragmatic purposes of a genre, it does not entail that the genre will use all the resources of the mode. A recipe, for instance, which makes extensive use of the instructional mode, only activates a small portion of the mode (e.g. many imperatives but few modals). In the present case, although deontic *shall* is specific – and even exclusive – to the instructional mode, it is clearly restricted to a number of (instructional) genres with certain specific socio-pragmatic features (such as [+formal], [+written], [+legal]). How these generic features interact with the features of a discourse mode and of the grammatical forms specific to the mode is beyond the scope of this paper and will be the object of some future research.

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5.   In that respect, discourse modes can be regarded as the building blocks of genres (cf. Adam 1992; Pic & Furmaniak 2012).

At face-value, *shall* expresses deontic necessity, like *must*, but this meaning results from a different conceptualisation. We believe that *shall* here primarily denotes what could be called a *binding assertion*. In other words, the modal makes such a strong assertion that the proposition will be true at all times, that alternative worlds are not even envisaged. The meaning of obligation derives from this particular conceptualisation where the agent (typically, the reader) is presented as having no other option. In that respect, deontic *shall* is stronger than deontic *must*, since the latter at least leaves open the possibility that the agent might not abide. This is coherent with the fact that deontic *shall* is predominantly used in instances of demoted obligation,[6] the easiest way to downplay the role of the potential agent being not to mention him/her.[7]

The difference between the two modals appears clearly with respect to interrogation. As can be observed in (19a), deontic *must* is perfectly acceptable in a question, where the speaker wonders about the existence of an obligation.

(19) a. Must the webbing be made to control the size of the crotch opening?

However, the use of *shall* is cumbersome in questions, as suggested by (19b).

    b. ?Shall the webbing be made to control the size of the crotch opening?

In our view, (19b) would be weird because the function of a yes/no question is to leave room for two alternative answers, whereas the function of *shall* is to restrict the possibilities to the denoted state of affairs.[8]

Thus, where some latitude is left to the agent, as in (20), or when the obligation is presented as the consequence of another situation, as in (21), *must* seems to be preferred to *shall*.

(20) A Professional League **shall** adopt the following rule pertaining to the use of helmets: (a) All players **shall** use some type of protective helmet while at bat and while running the bases. (b) All players in National Association Leagues **shall** wear a double ear-flap helmet while at bat. (c) All Major League players **must** wear a single ear-flap helmet *(or at the player's option, a double ear-flap helmet)*. (d) All catchers **shall** wear a catcher's protective

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6. In 56% of the occurrences (PMD = +48%; significant at the 1% level).

7. Interestingly, *you* never occurs as the subject of *shall.*

8. Deontic *shall* is of course possible in questions such as *Shall I close the window?* The assertive/predictive meaning disappears utterly (This is not a question about whether the event will take place). It might be seen as a case of coercion (cf. Michealis 2005). The use of a construction which enters into a semantic conflict with a grammatical expression is resolved by the suppression of one of the conflictual semantic components.

helmet and face mask while receiving a pitch. (e) All base coaches **shall** wear a protective helmet while performing their duties. (f) All bat/ball boys or girls **shall** wear a double ear-flap protective helmet while performing their duties. (INS_W_23)

(21)   *If adopted*, all uniforms for a team **must** have the names of its players.
(INS_W_23)

In (20), *must* occurs in the middle of a paragraph where *shall* is used in every sentence. It is all the more surprising as the subject and the predicate are virtually the same as in the previous sentence (*players* and *wear*). But this is in line with what we have said about the difference between the two modals. In (c), the constraint imposed on the agent is weaker, as the players are left with some option, as evidenced by the use of the conjunction *or* and of the PP *at the player's option* (underlined). No such choice is given to the players in the other sentences, where *shall* is used.

In (21), which is an excerpt from the same text, where *shall* is used pervasively, it is, we argue, the strong attraction of *must* to the *if Q, the P must* pattern noted earlier that triggers the use of *must* over *shall*.

Conversely, when the demotion of the agent is maximal, as in (22), that is, when the agent is not only implicit but difficult to recover, the substitution of *shall* by *must* is not felicitous. Compare:

(22)   The provisions of this Rule 3.09 **shall** apply to professional leagues only.
(INS_W_23)

(22′)   ?The provisions of this Rule 3.09 **must** apply to professional leagues only.

In (22), it is not clear who is responsible for making the provisions apply to professional leagues. Because deontic *must* necessarily involves an identifiable agent, even when it is not explicit, its use is problematic in examples like (22').

Finally, deontic *shall* differs from deontic *must* with respect to the kinds of semantic relations it is involved in. As we have seen, the obligation expressed by deontic *must* is typically presented as a consequence or is justified by another proposition or is described as restricted to a set of limited circumstances. This is not true of *shall*. Example (19), repeated as (23), is representative of the behaviour of *shall* in that respect.

(23)   The webbing **shall** be made to control the size of the crotch opening. The crotch opening **shall** measure not more than 4½ inches at the top, not more than 5¾ inches deep, and **shall** be 3½ inches wide at its bottom. The opening of the crotch **shall** not be more than 4½ inches at any point below its top. The webbing **shall** be secured at each side, and at top and bottom of crotch. The attachment is to be made with leather lacing, these connections to be secured. (INS_W_23)

Here, we have an *enumeration* of instructions expressed by *shall*, which are only related to one another by a thematic link. The writer provides no justification for the instructions given; they are absolute and unconditional. In 80% of the occurrences, the relation between the proposition modalised by *shall* and the previous one has been identified as enumeration (41%; PMD = +40%; significant at the 1% level) or as simple addition (39%; PMD = +54%; significant at the 1% level). This behaviour is naturally reflected in the syntax as, unlike *must, shall* is typically used in independent clauses with no embedded clauses (92% of the occurrences; PMD = 14,7%; significant at the 1% level).

5.3 Root *have to*

Following Biber et al. (1999), we do not distinguish between *have to, have got to* and *gotta*,[9] considering that these are three allomorphs of an abstract form we shall refer to as *have to* for the sake of clarity.

A useful distinction due to Myhill (1995) differentiates between syntactic and non-syntactic *have to*. Syntactic *have to* cannot be replaced by *must*, being used in syntactic contexts where a modal auxiliary is not acceptable (*e.g. He had to go* vs **He musted go*; *He may have to go* vs **He may must go*; *He doesn't have to go* vs *#He mustn't go*).[10]

The epistemic use of *have to* is rare (2% of the occurrences) and will not be discussed here. The most striking result concerning *have to* is its very strong attraction to the spoken channel (91% of the occurrences; PMD = +74%; significant at the 1% level). Collins (2009: 167) has found similar results, although the difference he has observed is much less striking (a 1:3 ratio in his corpus).

In our corpus, 60% of the occurrences of *have to* are instances of syntactic *have to*, as in (24).

(24)　He had a little goat, one of those little sort of miniature goats, and the goat would just, uh every time he'd bend over to start stretching a wire, the goat

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9. Of course, we are not denying that these forms display minor semantic, pragmatic and textual differences. Simply, they will not be explored here as they have been found to be negligible. In short, all three forms occur in the same discourse modes (dialogue and spoken instruction) and behave similarly in terms of semantics, syntax and discourse relations. *Have got to* and *gotta* are generally considered informal variants of *have to* (cf. for example Krug 2000: 110 and Larreya & Rivière 2010: 132). The only significant difference is that *have got to* seems more specific to British English, while *gotta* is attracted to American English. The allomorph *have to* is indifferent to the variety of English.

10. In the negative form, the substitution is not impossible for syntactic reasons, but because *not have to* and *must not* do not have the same meaning.

> would get down on all fours like it was going to charge him. And he'd look over his shoulder and he'd keep doing it. And then the goat would charge him and he'd **have to** sort of get over the fence and the goat would, you know, turn around and try to act casual. (NAR_S_52)

One way of seeing this result would be to say that in the majority of cases, the semantic comparison between *have to* and the modal auxiliary is not relevant. We believe otherwise. In our view, the semantics of *have to* is intricately connected with its syntax. The necessity expressed by *have to* is known to be both objective and descriptive (cf. Coates 1983: 53–57). In other words, the speaker is presented as not responsible for the existence of the obligation and is just seen as reporting it, as in (24), expressing his/her attitude towards it, as in (25), or modalising it, as in (26).

(25)   It would break her heart **to have to** go away, even to be wife to a king.
(NAR_S_56)

(26)   A lot of people got it wrong. So, we'll **have** to wait and see if she changes it. I ['d] have a very low A but it'd still be an A. (DIAL_S_14)

Our data confirms previous studies, since in 67% of the occurrences in our corpus, *have to* has been found to be used descriptively. Furthermore, the very strong attraction of this modal form to the descriptive use (PMD = +50; significant at the 1% level) suggests that this is a distinctive feature that helps to distinguish *have to* from other expressions of necessity. This is coherent with the fact that *have to* is attracted to dynamic and circumstantial modalities (PMD = +47%; significant at the 1% level), which, by definition, are always objective and descriptive.

At the semantic level, modalising or evaluating a modality implies that it has become an object of discourse, that it has been objectified. Syntactically, this objectification is reflected in the fact that *have to* falls under the scope of another modal expression, as in (24) and (26), or belongs to a subordinate clause that is commented upon, as in (25).

At the informational level, this is compatible with the fact that the modality expressed by *have to* is backgrounded and presented as non-salient and, sometimes, as old information. It is what is said about the obligation and its consequences that matters, not the obligation itself, which, at the interpersonal level, is taken for granted.

But this is also apparent in contexts where *have to* is not the target of a judgement, as in (27).

(27)   The label for all three sculptures reads: These sculptures were made to accompany an antique statue of the shepherd Paris. *According to the myth of the Judgment of Paris*, the shepherd **had to** declare one of three goddesses to be the most beautiful. Each figure is shown in a different state of undress:

> Minerva (goddess of wisdom and warfare) removes her helmet; Juno (goddess of marriage) unfastens her dress; while Venus (goddess of beauty and winner of the contest) is nude except for the one sandal that she is removing. (DESC_S_22)

Clearly, here, the GP (*according to…*) presents the obligation as objective (it does not emanate from the speaker) and as old information.

As far as discourse relations are concerned, the 'caused by/justified by' link is the most frequent one (19% of the occurrences) and one of the most specific ones (PMD = +35%; significant at the 1% level). It is exemplified by (28).

(28)   Yeah and uhm I guess he said to Alison 'cause Alison uhm – he asked her, Alison, if she could stay a little later and she said, "no *'cause I **have to** go to Dubuque to get some things and I **have to** run some errands*", you know? (DIAL_S_15)

The parallel with *must* is striking. While it has been observed that *must* is attracted to the patterns 'Q therefore P must be' and 'P must be because Q', *have to* appears to be attracted to the pattern 'Q because P has to be'. Again, this is coherent with the semantic and discourse functions of the two modal forms. If a situation, here an obligation, is presented as the cause of another event, it means that it is somehow taken for granted and that is not the current topic of the conversation.

In that respect, that *have to* should also be attracted to the means/goal relation (11% of the occurrences; PMD = +30%; significant at the 1% level) comes as no surprise either. In (29), for example, it is obvious that the speaker is not responsible for the necessity and that it is the action (*multiply*), not the obligation, that is salient.

(29)   M–m. Since you have the square root of two on the bottom, to make that a square, you **have to** multiply by the square root of two. And then you get two, and you multiply the top by the square root of two, and you get, square root of two. (INS_S_11)

When it comes to discourse modes, Table 3 shows that *have to* is used in all modes. Its repulsion for the instructional mode is by no means an indication that it is not used in this mode. It can be explained by the fact that given that *have to* is the most frequent modal forms of those considered and that instruction is the mode containing the most modal forms, *have to* could have been expected to be more frequent there. As it is, the negative PDM means that the instructional mode does not boost the use of *have to*, but that, on the contrary, it hinders it. One possible explanation is that a lot of instructional texts (or at least the injunctive ones) are produced by a deontic source actually giving instructions to the hearer/writer. If, as we have suggested, *have to* simply reports an objective non-deontic necessity

Table 3. Distribution of *have to* in the discourse modes

	Raw frequency	Relative frequency	PMD
Argumentation	36	8%	−39%***
Description	18	4%	+2%
Dialogue	138	30%	+24%***
Information	63	14%	+14%***
Instruction	77	17%	−47%***
Narration	65	14%	+22%***
Report	57	13%	+6%
Total	454	100%	

and presents it as non-salient, it is ill-suited to the communicative purposes of many genres using the instructional mode.

In some instructional genres, however, the procedural ones, *have to* is preferred to the other expressions of necessity. (30) illustrates.

(30)   *Returning in an offshore wind* is slightly more complicated as you **have to** beat back towards the beach. <pause> Look ahead to choose where you want to land and try to judge the depth of water, raising the daggerboard as you come into shallower water. (INS_S_21)

It is obviously in these texts that the means/goal relation is the most frequent, as an example such as (30) is about the necessary course of action to take (i.e. the procedure) in order to achieve the goal specified at the beginning of the utterance (underlined). The necessity is not deontic, which makes the use of *have to* a fitting choice.

In dialogue (which, as we have seen, attracts this form), the profile of *have to* is slightly different. (31) is a good example of the way *have to* is used in this mode.

(31)   AMY: They have it so they… you can get like the health insurance, you can live in the residence house, all that kind of stuff. They have it built in so that student teaching is worth seven but if you need extra it can be worth (one or five).

MARY: Okay

AMY: It's another class they just call it. [31a] It's really nice of them, I mean, seriously, *'cause otherwise I **would have to** pick another screwy gym class this semester* because... what they're doing is they are offsetting the fact that you can't take any other classes when you student teach yes you can <stage whisper> [31b] I mean if I was student teaching like in Yorkville and the class didn't get out till four school didn't get out till four I**'d have to** stay

> to four thirty. You wouldn't get back here any dinner until in time for the night class, really. And there is such a limited number of classes offered at night?   (DIAL_S_14)

The most distinctive feature of *have to* in dialogue is its attraction for future-time reference and for the conditional, hence its frequent association with *will* (15% of the occurrences; PMD = +19%; significant at the 5% level) and *would* (9% of the occurrences; significant at the 10% level).

However, as exemplified by (31a), *have to* in dialogue does not fundamentally diverge from its general behaviour in terms of semantic and discursive functions. It displays the same attraction for the 'caused by/justified by' link, which is reflected in the syntax (it is often used in causal clauses) and which is coherent with the non-subjective and non-salient status of the modality. Even in cases such as (31b) where the semi-modal does not appear in a subordinate clause, the obligation is clearly presented as taken for granted.

In information, while everything we have said remains true (in terms of objectivity, descriptivity and non-salience), *have to* displays a specific feature in that it is mainly used in factual generic contexts (79% of the occurrences). This is exemplified by (32).

(32)   Previously, in the eighteenth and seventeenth centuries, a man himself could dress and show how wealthy he was, and when man started going to work he **had to** wear a respectable, responsible suit; he **had to** put across the image of honesty, of, you know, I'm, I'm a respectable man, I'm decent, I'm down to earth.   (INF_S_08)

Both features, which "colour" the profile of *have to*, are of course inherited from the mode itself, information being the mode of general factual assertions. It is also the mode of non-controversial information, which makes *have to* the most appropriate expression of necessity.

We call the context factual because in an example like (32) the modalised proposition is true (a man *did* wear a respectable, responsible suit), and this, in fact, constitutes the foregrounded information, while the modality seems backgrounded.

In argumentation, the uses of *have to* fall into two different profiles. First, in examples like (33), the propositions modalised by *have to* serve as the starting-point of the argumentation, as the contextual background against which the main (salient) argument (in italics) is set.

(33)   The other problem – and note that I put ah large animals up here – is that we have a real issue with trying to work on large animals. *Not only* is it the cadre of forms that you **have to** fill out if you're at a major university and the IACUC committees you **have to** get through to work on these animals

> which is becoming so challenging that most of us are thinking about other ways to do our research, *but it's the handling of big animals and the attaching of instruments to these animals involving anesthesia, involving working at sea under technically difficult conditions, that has made it impossible to get the knowledge that we require.*   (ARG_S_05)

Example (33) could indeed be paraphrased as:

(33′)   Of course we have to go all through all kinds of problems (of which you are probably aware), but the biggest problem is this: the handling of big animals.

The same discursive mechanism is at work in (34).

(34)   Now clearly Germany cannot go on paying the price for a war which is more and more distant and more and more remote for er… for ever. The French cannot expect in the same way to dominate an organization which now has a great many more members in it er and as the circumstances of the nineteen-fifties faded away, *clearly, new motives, new mechanisms, **had to** be er established in order to continue to make a regional association as attractive in new circumstances as it had been er in the circumstances of its birth in the nineteen-fifties.* <u>And therefore er I turn our attention now to the nineteen-nineties and I say look what we've seen in the in the nineteen-nineties has been an acceleration of European integration</u>. The European Union ticked along in the nineteen-seventies and nineteen-eighties without changing in any very radical ways, and the integration which had been achieved remained largely in the economic sphere and consisted very much of the promotion of free trade, the free movement of capital and the free movement of labour within the boundaries of the newly created European Union.   (ARG_S_01)

The modalised proposition (in italics) is introduced by the evidential marker *clearly*, which explicitly presents the necessity as obvious and undeniable. As in (33), the modalised proposition sets the background against which – and explains why – the following events took place.

The second use of *have to* that seems specific to the argumentation mode is its use in hedged performatives (see Fraser 1975). (35) illustrates.

(35)   The er… the er… it **has to** be said on this side I suspect that the brevity of that speech was quite welcome, only because er I think er a number of us weren't altogether sure how how much time we would, we would get in this er debate after the front bench speaks, speeches. *But the <pause> I want to make essentially er two points.*   (ARG_S_07)

Here the semi-modal bears on a verb used performatively to make the assertion more tentative. Note, however, that, from the perspective of argumentation, *have*

to functions in exactly the same way as in examples (33) and (34). The proposition modalised by *have to* here also serves as a starting-point, or even as a preamble, to the important points the speaker wants to make (introduced by the sentence in italics).

6. Conclusion

In this paper, based on a quantitative and fine-grained qualitative analysis of several expressions of necessity, we have focused on the root meanings of *must, shall* and *have to.* Our account of these forms has been integrative in two senses. First, we have tried to show that each of the forms under scrutiny displays a number of generalizable (con)textual properties that need to be taken into consideration in order to provide an exhaustive characterisation of their semantics and conditions of use. Thus, we have identified for each form (or for some of their uses) (i) a number of attractions and/or repulsions with some discourse modes, (ii) different profiles according to the discourse mode in which it is used, (iii) a number of attractions with certain coherence links. But our approach has been integrative in another sense, inasmuch as we have endeavoured to show that these (con)textual properties and their more "traditional" semantic, pragmatic and even syntactic features are all inter-connected.

This kind of integrative account, we believe, opens the way for more comprehensive descriptions of modal forms, and more generally, grammatical forms, and contributes to the on-going breaking down of barriers between sentence-grammar and discourse grammar and even between the Saussurean *langue/parole* dichotomy.

–   *The British National Corpus (BNC)*, version 2 (BNC World). 2001. Distributed by Oxford University Computing Services on behalf of the BNC Consortium. <http://www.nat-corp.ox.ac.uk/>. Examples of usage taken from the British National Corpus (BNC) were obtained under the terms of the BNC End User Licence. Copyright in the individual texts cited resides with the original IPR holders. For information and licensing conditions relating to the BNC, please see the web site at http://www.natcorp.ox.ac.uk/

–   *The Saarbrücken* Corpus *of Spoken English (*SCoSE*).* Available at <https://www.uni-saarland.de/lehrstuhl/engling/scose.html>

–   *The Santa Barbara Corpus of Spoken American English, Parts 1–4*. Du Bois, John W., Chafe, Wallace L., Meyer, Charles, Thompson, Sandra A., Englebretson, Robert & Martey, Nii. 2000–2005. Philadelphia: Linguistic Data Consortium.

–   *The American National Corpus (ANC)*. Reppen, Randi, Nancy Ide, and Keith Suderman. American National Corpus (ANC) Second Release LDC2005T35. DVD. Philadelphia: Linguistic Data Consortium, 2005.

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Appendix

File name	Source	Original file name
ARG_S_01	BASE corpus	nm1172
ARG_S_05	EIIDA corpus	BLOCK
ARG_S_07	BNC	JSG
ARG_W_03	Aunger, Robert. 2010. What's Special about Human Technology? *Cambridge Journal of Economics* 34(1).	
ARG_W_06	<http://www.telegraph.co.uk/culture/film/filmreviews/11167645/Whiplash-review-genius.html>	
DESC_S_22	<http://www.artbeyondsight.org/mei/verbal-description-training/samples-of-verbal-description/>	
DESC_W_17	<http://www.nationalgallery.org.uk/paintings/explore-the-paintings/30-highlight-paintings/?gclid=CjwKEAiAw56lBRCs29jB9uOvkygSJADnD3-6ZejbiZQdKpdDz_0TafTxtF6Dfuv6_yPifUD0U1IfaxoCNbzw_wcB>	
DIAL_S_14	SCOSE	1: classes
DIAL_S_15	SCOSE	2.Addie and Brianne Aa & Ab
DIAL_S_23	BNC	KB0
INF_S_08	BNC	KRJ
INF_W_07	<http://www.physics.org/article-questions.asp?id=55>	
INF_W_22	<https://www.britannica.com/>	Whales
INS_S_11	Santa Barbara Corpus	SBC009
INS_S_21	BNC	J3X
INS_W_09	<bbcgoodfood.com>	
INS_W_14	<http://www2.warwick.ac.uk/fac/soc/al/research/collect/base/history>	
INS_W_23	<http://mlb.mlb.com/mlb/downloads/y2015/official_baseball_rules.pdf>	
INS_W_25	<www.medecines.ie>	
INS_W_31	<http://schools.nyc.gov/SchoolPortals/15/k519/aboutus/policies/rulesregulations.htm>	
NAR_S_52	SCOSE	Part 6: Goat
NAR_S_56	BNC	F72
NAR_W_14	Jones, J. V. 2010. *Watcher Of The Dead: Book 4 of the Sword of Shadows*. Hachette Digital.	
REP_S_04	BNC	KN2
REP_W_33	ANC	NYTnewswire7

"The future elected government should fully represent the interests of Hongkong people"

Diachronic change in the use of modalising expressions in Hong Kong English between 1928 and 2018

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The modal system of English in its development provides an ideal perspective on language variation and change. Since the sociocultural and socio-historical situation in specific postcolonial communities promotes diversity among New Englishes, it is likely to also affect their modal systems. In this paper, we seek to identify patterns in the use of modalising expressions in Hong Kong English in relation to topic, genre and the larger socio-historical context. Our diachronic study of the frequency and function of selected modal verbs in press news reports from the DC-HKE reveals a peak in the use of back-shifted *will* and deontic *should* between 1988–1992 that seems to be closely linked to developments of the genre and socio-political changes in Hong Kong.

Keywords: Hong Kong English (HKE), diachronic, corpus linguistics, newspaper discourse, socio-political context

1. Introduction

A number of studies have been conducted on diachronic change in the modal system in written British and American English, most notably, Leech (2003), Leech et al. (2009), Leech & Smith (2009), Leech (2013), Smith (2003), Smith & Leech (2012). Taking the FLOB/LOB corpus family as a basis for their studies, Leech et al. (2009: 74) showed that all core modals apart from *can* and *could* decreased in frequency between the 1960s and 1990s. In fact, core modals of low frequency, such as *shall, ought to* and *need(n't)*, were further marginalised and are likely to fall out of active language use soon. *Must* also showed a considerable decline, a

circumstance which is often explained with the rise of a more democratic world-view in the Western world that favours *have to* and *should* when it comes to the expression of deontic meaning (Leech 2003: 237).

Synchronic studies have drawn further attention to expressions of modality in second-language varieties of English (ESL) over the past ten years with studies covering varieties all around the world, such as African Englishes (Nkemeleke 2007), Asian Englishes (Bautista 2004; Collins 2009a; Hansen 2018), South Pacific Englishes (Biewer 2009), English and English-based creoles in the Caribbean (Deuber 2010). In addition, numerous studies compare varieties of different continents with each other (Collins 2009c; Deuber et al. 2012; Hackert et al. 2012, to just name a few). In second-language varieties, grammar is influenced by common strategies of L2 acquisition, the local substrate languages, just as well as by local cultural motivations of language use. These factors together can lead to (subtle) diversions from patterns in first-language varieties of English (ENL), which make ESL recognisable and help to develop a variety that serves local needs and gives its speakers the means to identify with the language.

Overall findings for modal verbs in ESL are that members of the modal system which are already marginalized in ENL tend to be further marginalized in ESL (Biewer 2011: 22–23). In addition, modal verbs can be more restricted in terms of frequency and semantic diversity than in ENL since learners avoid plurifunctionality (Biewer 2011: 28). Further, transfer from the local mother tongue(s) leads to great variability among ESL with an overuse of different modals in different varieties (Biewer 2011: 27). Wald (1993: 78), for instance, found a preference of *have to* over *must* (to express deontic meaning) in Mexican immigrant English in Los Angeles since *have to* in its structure is reminiscent of Spanish *tener que*. The relation between culture and grammar still remains under-researched despite Enfield's (2004: 3) emphasis that "connections [exist] between the cultural knowledge, attitudes and practices of speakers, and the morphosyntactic resources they employ." In the case of modal expressions in ESL, Biewer (2011: 25) could show that a high usage of *must* in Samoan English and Fiji English correlates with a strong hierarchical organisation of the respective communities. The extralinguistic environment shapes the grammatical structures. Contact situations of English with non-Western cultures and languages make this particularly obvious to Western scholars.

In the present study, the focus lies on the diachronic development of modal expressions in Hong Kong English (HKE). Diachronic studies on modal verbs in non-native varieties of English are still overall scarce. For Hong Kong English, Noël and van der Auwera (2015) compared the use of modals in Hong Kong, British and American printed press from 1990 to 2010, and found that the *South China Morning Post* (SCMP) rather displays a British pattern of change than an American.

They also perceived a decline in the dispersion rate of *will, would, should* and *might* (Noël & van der Auwera 2015: 459). Our interest for a diachronic analysis of modal verbs in Hong Kong English was sparked by a previous synchronic study by Collins (2009c) on core modals in various ICE corpora, which revealed an unusual amount of *will, would* and *should* in ICE-HK in comparison to data from ICE-GB, a finding left uncommented by Collins (2009c: 286). When we investigated the text categories individually, it became apparent that the frequency of these modals can be attributed to their accumulated occurrence in the ICE-HK reportage section. Noël and van der Auwera (2015), too, claim that text category is a factor in the evolution of modalisation. In their study, they find a "lack of linearity" in Hong Kong, which cannot be interpreted on the basis of the time span they cover (2015: 460). However, so far, no study has dealt with data from before the 1990s. While these results may to some extent be linked to differing sampling techniques in the compilation of ICE-HK in the case of Collins (2009c), cultural concepts, such as that of Chinese face (see, for instance, Gao 1996: 94–96), may also have triggered these results. Collins (2009a: 44) suspects that extended functions of *would*, which are "widely accepted in […] HKE" are "most likely motivated by the desire that speakers have to exploit the capacity of this form to convey a high level of polite and tactful unassuredness". In the colonial history of Hong Kong in particular, though, the 1990s are an unusual period in which events of wide-reaching consequences for the Hong Kong society took place. While the future political system was negotiated, people debated what <u>should</u> be done or <u>would</u> be a good outcome – with obvious consequences for the frequency and usage patterns of modal expressions. The special use of individual core modals in Hong Kong English of the 1990s may be linked to Hong Kong citizens coming to terms with the political situation unfolding in their society. The research questions for us, therefore, are:

a. What kind of diachronic changes can we trace in the modal system of English in Hong Kong from the late 1920s to today?
b. To what extent do we find a peculiar difference between modal usage before, around and after the 1990s?
c. How may these results be related to sociocultural changes in Hong Kong, or to a change in the genre[1] 'press news reports'?

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1.   Noting that there is considerable terminological confusion with regard to *genre, text type*, and *register* – to name the most common terms (Lee 2001; Smitterberg & Kytö 2015; Melissourgou & Frantzi 2017), we use *genre* to refer to "a culturally recognised artifact, a grouping of texts according to some conventionally recognised criteria, a grouping according to purposive goals, culturally defined" (Lee 2001: 46). We will briefly elaborate on the concept in 2.2.

While this genre has changed over the centuries in Great Britain from an assumedly objective to a more personal coverage (Bös 2015b; Landert 2014; Partington 2010; Temple 2008), press news reports in Hong Kong since the 1920s have followed these genre-related developments in Great Britain only to some extent, as we will later show. Even on that level, the socio-political changes may have been of some influence.

In our study, we integrate the long called-for diachronic perspective (Mukherjee & Schilk 2012: 190) on New Englishes and investigate press news reports from the DC-HKE, a diachronic corpus of Hong Kong English currently compiled at the University of Würzburg in Germany, which contains texts from 1928 to 2018. We will look at normalised frequencies per 10,000 words of all core modals in data of the 1930s, 1960s, 1990s and 2020s and at the semantics of selected modal verbs, namely *would* and *should*. We discuss developments of the genre by looking at different themes in press news reports in Hong Kong and focusing on power struggles both between the governments and the press, and between the owners, the editors and the columnists of the SCMP, the newspaper from which the articles have been picked. We will also discuss the unique socio-historical changes in Hong Kong society over the last 90 years and show that these had a visible impact on the use of modalising expressions in Hong Kong English. With this, we will also critically reflect on the representativeness of synchronic corpora and provide further explanations for linguistic particularities found in ICE-HK.

2.   The socio-historical background: History, politics and genre development

2.1   History and politics in Hong Kong: The last 90 years

Hong Kong became a Special Administrative Region (SAR) of China on 30 June 1997 when the colony was "handed over" or "returned" to China by the British colonial administration. Founded in 1842 after the first Opium War, the colony witnessed a Japanese occupation during the Second World War, which disrupted the economy and fundamentally changed identity constructions of Hongkongers. Hongkongers – called *Hongkongites* at the time – were then defined as those citizens who had stayed during the occupation or had returned to Hong Kong soon after (Schulz et al. 2020). The 1960s were characterised by an unprecedented "economic transformation from a relatively poor refugee community to a wealthy entrepreneurial powerhouse (Bolton 2000: 268). In 1984, the Sino-British Joint Declaration marked a political turning point at which the British government agreed to return all of Hong Kong to China in 1997. Already then, politicians started to

discuss the political future of Hong Kong and Deng Xiaoping formulated the constitutional principle of "one country – two systems": Hong Kong was to become part of China but would retain its own economic and administrative system (The Government of the Hong Kong Special Administrative Region 2005). According to the Joint Declaration, Hong Kong would be guaranteed the retention of "laws and a high degree of autonomy for at least fifty years" (Setter et al. 2012: 4). The 80s and 90s, therefore, were marked by a debate about Hong Kong legislation and how the political future of Hong Kong might be shaped. After the handover, that debate evolved further – with the year 2014, in which the Umbrella Movement emerged, standing out. Among young Hongkongers – famously using umbrellas to protect themselves against pepper spray used by the police during their confrontations – concerns had increased that China would disregard the Basic Law or reinterpret it in a way that would render China's interference in Hong Kong politics legitimate. Alleged attempts by China to tamper with the election of Hong Kong's chief executive in 2014 were seen as foreshadowing a more repressive political situation in Hong Kong from 2047 onwards when the 50-year-quasi-guarantee of administrative autonomy would expire. The protests in 2019 were sparked by the plans of the Hong Kong government to introduce a bill which would allow for the extradition of people from Hong Kong to China; this was similarly viewed as a major interference in the supposed autonomy of Hong Kong (Chan 2019; Siu et al. 2019). The discussion about the best political system and the political future of Hong Kong had reached the streets and the citizens.

What we find throughout the history of Hong Kong are changes in the societal structure and demography leading to some rather complex dynamics of Hong Kong identity (re)constructions that are now closely related to the struggle of the younger generation for a more democratic system. The question is how far these changes have influenced the use of language, in particular, the use of modalising expressions in English. "[T]he notion of social identity and its construction and reconstruction by symbolic linguistic means" is a precursor of the nativisation of a variety and central to Schneider's model of developmental cycles in the emergence of postcolonial Englishes (Schneider 2007: 27). Connections between political developments of power shifts and democratisation and the frequency and meaning of modals have been shown for the South African context (Kotze & van Rooy 2020). For Hong Kong, the structure and role of English is similarly changing while history is being written. On the one hand, a special use of modalising expressions may serve the construction of a local identity, e.g., to follow a Chinese system of preserving face in English. On the other hand, modalising expressions may be at the heart of a changing press coverage in Hong Kong, with journalists opting for an open or less open expression of their stance on purpose depending on the political climate in the different decades. This is where genre-related

developments and changing themes in the Hong Kong press need to be considered, since they may provide explanations for the frequency and semantic use of modals. As for the press news reports of different decades analysed here, it is, for instance, vital to understand whose viewpoint is expressed in the media when deontic meanings are evoked.

2.2   Press coverage in Great Britain and Hong Kong from a historical perspective

The history of the newspaper in Great Britain basically starts with the 1620s when newssheets and pamphlets became frequent and almost regular publications (Brownlees 2015: 5). These very first forms of news writing were "factual" and "unadorned" (Brownlees 2015: 7), but with Thomas Gainsford, one of the first editors and news writers, who guides the reader through the news story with his own comments, we already find a voice of a journalist that becomes recognisable (Brownlees 2015: 8). Different editors at that point seem to have had different philosophies as to whether the news should remain unmediated and disclosed in an impersonal style, or whether some form of editorial intervention was permissible in periodical news coverage. However, news writers in the 17th century clearly preferred the plain news report, which may have had a political dimension: "unmediated news was least likely to offend the ever watchful government authorities of the day" (Brownlees 2015: 9).

A true turning point in journalistic practices could be witnessed at the end of the 19th century with the dawn of the so-called "Age of New Journalism" (Bös 2015a: 48) when the "presentation, selection and editing of news" changed fundamentally (Temple 2008: 22). Popular newspapers emerged beside quality papers, press coverage included more human interest stories, and journalists started to cultivate their own personal styles with individuals even achieving some kind of stardom (Temple 2008: 24). This form of news writing was more personal and subjective, it "contrasted with the sober and largely anonymous correspondents of the upmarket press" (Temple 2008: 24). A more openly evaluative news coverage became presentable and socially acceptable. The 1960s saw an alteration in the relationship between politics and the press. The previously adopted "deference towards authority figures" declined (Temple 2008: 61), mild reporting about politicians was abandoned for delicious political scandals (Temple 2008: 71), and the press reasserted their power to initiate social and political change (Temple 2008: 71).

In her study on personalisation in mass media communication in Great Britain since the 1980s, Landert (2014) contrasts British online news from 2010 with print editions of *The Times* from 1985. She verifies that the press news reports

in Great Britain since 1985 have become more personalised, containing "more emotions, experiences, opinions and commitment expressed by official actors" (Landert 2014: 247), while private individuals are "prominently" featured (Landert 2014: 247) in the popular press. Some online sites provide links to the profile of the journalist and make the text producer even more visible to the readership (Landert 2014: 247). Personalisation "as the foregrounding of persons who are part of any of the three entities of mass communication" (news actors, readers, journalists) (Landert 2014: 9) is now a typical characteristic trait of British mass media (Landert 2014: 255). As Morley (2004) points out, 'press reports' are altogether differently perceived nowadays: "the difference between reporting and commenting is not as neat as most journalists in the Anglo-American tradition would claim it" (Morley 2004: 69).

While news coverage has changed over the centuries in Great Britain from an assumedly objective to a more personal coverage (Bös 2015b; Landert 2014; Partington 2010; Temple 2008), the history of press coverage in Hong Kong reads a little different corresponding to an altogether different relationship of political agents and institutions with the press. In the 1960s, Hong Kong was still a British colony and the British colonial government is said to have discouraged any negative coverage of their administration by the press (Nimbark & Agrawal n.d.). In 1984, when it became clear that Hong Kong would be handed over to China, right up to the actual handover in 1997, the situation of the press was even less enviable since now "the press had to cope with the dualistic power structure of the colonial regime and the Chinese authorities" (Nimbark & Agrawal n.d.). One could easily displease the political authorities, and the press is very likely to have been at pains to neither offend the one nor the other. Refraining from any form of evaluative distancing from political authorities, therefore, may not come as a surprise. Jullian (2011: 767) points out that news reports in China in general differ extensively from Western coverage:

> […] news reports in the Western world are deeply influenced by the editorial line of the medium in which they appear. Conversely, the media in China are heavily controlled by the State. So it may be said that most journalists are somehow restrained in presenting their views on the issues absolutely freely.

With the handover looming, the Hong Kong journalists of 1984 may have anticipated that China would watch their press coverage closely from now on despite the fact that freedom of the press was to be officially ascertained in the Basic Law (The Government of the Hong Kong Special Administrative Region 1990).

In 2001, the Hong Kong Journalists Association warned about a tendency of self-censorship they claimed to have found in the Hong Kong press. Topics that were considered 'sensitive' as far as the relationship with China was concerned

would be marginalised in the press if the owner of the respective newspaper had "close ties to Beijing, or … financial interests over the border" (Hong Kong Journalists Association 2001). This issue of self-censorship seems to have been at the heart of a power struggle at the SCMP in the 1990s between Robert Kuok, the owner at the time, and his editor, Robert Keatley, who opposed such measures. Similarly, several journalists of the SCMP apparently felt pressured to leave the newspaper after voicing opinions in their articles and cartoons that had not been popular with China (Halpin 2015). For journalists in Hong Kong much may be at stake if their press coverage becomes more personal and their stance more explicit. While the struggle in the Hong Kong press as to what may and may not be openly stated continues to the day, it also needs to be pointed out that the SCMP has reported on issues that do not sit well with China, e.g. any coverage referring to the Tiananmen square massacre and its commemoration. In addition, the readership of today is changing. Young and politically very active customers appreciate a more openly evaluative press coverage and may turn to other media if they feel dissatisfied.

In sum, while we find a form of bold and more subjective journalism in Great Britain from the 1960s onwards, the Hong Kong of the 1980s/1990s was a non-democratic environment in which self-censorship and vagueness of opinion seem to have become a form of self-protection. In terms of personalisation and the display of a more open stance, the Hong Kong press seems to have been temporally lagging behind. Comparing the expression of stance in the Hong Kong press with the British press means that we need to take into account that these socio-political differences may be of some influence. Our focus will be on news reports that have an overall informational communicative purpose and give an account of current events or facts.[2] For our analysis, it is important to define them, as far as possible, independently of the linguistic features that typically achieve the informational purpose, such as a frequent use of nouns, time adverbials, and incidentally, a low frequency of modals (Biber & Conrad 2019: 118–119). Otherwise, the argumentation would become circular and we would not be able to explore the relationship between the socio-political context and changes in the language of reporting, i.e., the use of modals, in Hong Kong news.

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2.   These aspects correspond to the *situational characteristics* of news writing in Biber & Conrad's (2019: 114) taxonomy of *registers*, which are defined on the basis of clusters of co-occurring linguistic features (Biber & Conrad 2019: 6).

3.   Methodology

3.1   The DC-HKE and its press news reports section

For the current study on modalising expressions in Hong Kong English from 1928 to 2018, a corpus-based study was undertaken. The research team at Würzburg University has been compiling a corpus of diachronic Hong Kong English, called the DC-HKE, which is planned to be comparable to the FLOB/LOB family in its composition and yet representative of text production in Hong Kong over the last 90 years. Therefore, it will contain various text categories, such as press coverage (reports, editorials, reviews), academic writing, fiction and correspondence, of roughly the same number of words per category as FLOB/LOB. Moreover, the same decades as in the LOB-family were chosen, as far as feasible: the time spans of 1928–32, 1958–62, 1988–92. For newer data, the time span of 2018–22 is envisaged of which only data from 2018 has been processed so far. For each time span a target value of 120,000 words for the category 'press news reports' has been set. The amount of data for this study per decade is summarized in Table 1.

Table 1. Size of the press report categories in DC-HKE

DC-HKE press news reports	# of words
1928–32	128,153
1958–62	125,249
1988–92	115,018
2018	26,210
Total	**394,630**

The data for the press news reports stem from the SCMP. To retrieve this data, one issue for each month in each time span was chosen with all days of the week[3] represented in a balanced way. The resulting 60 issues were then searched for news reports referring to people, places or incidents in Hong Kong to ensure that the writing represents a local form of English. Authors' names have been available since the 1990s and were used as further indication of localness. As described above, news reports were defined on the basis of purely extra-linguistic factors, mostly relating to the newspaper section in which they appear, to ensure that they represent the genre

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3.   Sunday issues are only included in the 2018 subcorpus because they are not (consistently) available for earlier periods.

conventions of news report writing in the SCMP. The articles were downloaded as scans, then transformed into machine-readable text files with OCR software and manually corrected. For the mark-up, codes for headers, headings and direct quotations were manually added according to the conventions of the LOB and ICE corpora. Headers and direct quotations were further marked as extra-corpus text. To create 60 text files per period with 2,000 words each, articles from the same issue were combined. When the word count did not reach 2,000 words, surplus articles from the previous or following issue were added, or articles from a second issue of the respective month were selected and digitised as described above.

WordSmith Tools was used to retrieve modals and semi-modals for the linguistic analysis. In a first step, the overall frequency per 10,000 words of the core modals *will, would, can, could, may, might, must, should, shall, ought to, need* in the DC-HKE were compared to normalised frequencies per 10,000 words of these modals in the corresponding subcorpora of the LOB family. Further, the results for the DC-HKE subcorpus of the 90s were compared with the frequency of modals in the press news reports of ICE corpora representing Hong Kong English and other Asian L2 varieties. Next, a semantic categorisation for the different uses of *would* and *should* was undertaken to gain insight into which functions in particular may have increased over the decades. 3.2 discusses which functions of *would* and *should* were distinguished. To determine the significance of these differences, pairwise chi-squared tests were conducted. This statistical test was chosen because the frequency and function of modals cannot be expected to be normally distributed. Furthermore, the pairwise comparison allows for determining the salience of the respective contrast.

Press news reports revealed themselves as highly suitable for the study since sufficient data for all four decades was available and since this genre played an important role in the above-mentioned studies by Collins (2009c) and Noël & van der Auwera (2015). When further investigating the peculiar frequencies mentioned in their papers, we noticed a direct relation to the genre 'press news report', a connection that demanded further research. In addition, it is a genre that has greatly evolved over the decades in Great Britain (Facchinetti et al. 2015), which leads to the question to what extent changes in the use of modalising expressions in Hong Kong press are owed to genre-related changes rather than varietal developments. In particular, the expression of stance in reportage, even if not as salient as in editorials, has changed over time in its explicitness.

3.2   Functionality of the core modals *would* and *should*

3.2.1   *The functionality of* would

From previous studies on *would* in ESL/English as a second dialect (ESD), a rather diverse number of uses and meanings may be expected for Hong Kong English.

Deuber et al. (2012: 88), for instance, found non-past, non-hypothetical uses of *would* in spoken Asian, Caribbean and Pacific Englishes to denote habitual or epistemic meaning, or to refer to the future. In ENL, *will* is required for that. No such uses were found in HKE press coverage as a written and edited medium, though. The other categories distinguished by Deuber et al. (2012: 86), however, also hold for this study. On the whole, we distinguished ten categories illustrated in the following by one example each.

In the press reports, *would* is often used as a past tense form of *will* as in (1). As Coates (1983: 206) states, this case is most prominent in indirect speech, which is found "more commonly in written than in spoken language" (Coates 1983: 205). The journalists use backshift to report what politicians, judges, lawyers etc. said on a previous occasion. *Would* is then used to describe the willingness or intention of the speaker to perform an action but also his or her prediction of an outcome at a moment in the past. That is to say, a back-shifted form of epistemic *will* is included in this category.

(1)   Mr. Cheong last night declined to reveal details of the letter, but said a press conference <u>would</u> be held today.

[DC-HKE/1990-002.txt]; past time/backshift;

Separated from that were cases of *would* describing a habitual action or state in the past as in (2). Another very pronounced use of *would* in the data is its operation as a hypothetical marker. *Would*, in that case, is not a back-shifted form of *will* but expresses a hypothetical condition both in direct and indirect speech. A typical example from our data is (3).

(2)   Mr. Loseby further said it was conceivable that now and then, in one case out of ten for instance, constables <u>would</u> bring up a victim who had disappointed them and charge him with offering a bribe to save their faces.

[DC-HKE/1929-004.txt]; habitual;

(3)   HONGKONG'S three largest liberal pressure groups could merge in a bid to strengthen their power base and push for more democratic political reforms… The move <u>would</u> bring them closer towards becoming Hongkong's first political party and rekindle the debate on whether party politics should be allowed in the territory.

[DC-HKE/1988-003.txt]; conditional;

We further distinguished between a present/future reference at the past moment of speaking expressed by *would* + Vb and a past reference at the past moment of speaking expressed by *would* + *have* + Vb-ed as in (4). Instances, in which a backshift towards pre-past may have been anticipated but the form *would* + *have* + Vb-ed was not used, were coded as 'hypothetical' and not as 'past hypothetical'. Open conditions at the past moment of speaking in which *would* only replaces *will* in reported speech were categorized as a separate group, see example (5).

(4)   Mr. Jorge was not on speaking terms with Dr. Ozorio and he <u>would</u> never
      <u>have</u> agreed to his employment had he been told by his wife.
      [DC-HKE/1929-003.txt]; past hypothetical;

(5)   THE Labour Party <u>would</u> honour all British passports offered to Hongkong
      people under the nationality package should it come to power, visiting
      shadow Home Office spokesman Mr Alistair Darling said yesterday.
      [DC-HKE/1990-008.txt]; present conditional with backshift;

What renders the distinction of various uses of *would* in press news reports par-
ticularly difficult is that, next to clear cases of *would* as a back-shifted *will* in
reported speech expressing either open conditions or no condition, there are cases
in-between, in which back-shifted *will* in combination with expressions, such as
to hope that, to fear that, lends itself to a rather tentative reading of the speaker's
prediction of a future action or state. While *will* as referring to predictions for the
future always includes a level of doubt and uncertainty (Coates 1983: 169), we felt
that in certain constructions, as in (6), there is more of an emphasis on this ten-
tativeness than in other constructions, and we attempted to make this visible as a
recurring use of *would* in the data set.

(6)   Chan also hoped the boy <u>would</u> make "a contribution to society", on top of
      being a loving son.
      [DC-HKE/2018-001.txt]; backshift with tentative meaning;

A number of cases still remain ambiguous. As Coates (1983: 218) states for her
own study on modal verbs in the Lancaster Corpus and LOB:

> In both corpuses [sic!] I have found a not inconsiderable number of examples
> where it is not possible to decide whether WOULD (usually in reported speech)
> is a past tense form of WILL or whether it has hypothetical meaning. […] [T]he
> contextual clues which usually distinguish between past and hypothetical inter-
> pretations are not always present, and after verbs of thinking or speaking in the
> past we find genuinely ambiguous examples […].

Such cases in our data were coded as 'ambiguous', an example is given in (7).

(7)   The proposed regulations <u>would</u> broaden the scope of protection so that
      workers exposed to noise between 85 and 90 decibels may ask for ear
      protectors.   [DC-HKE/1990-007.txt]; ambiguous (unclear from context
                                whether back-shifted *will* or hypothetical);

Three special cases remain to be discussed. In some instances, it could not be dis-
cerned whether *would* or *will* had been used by the quoted speaker to describe a
hypothesis he/she him/herself had put forward, or whether the journalist writing
about the statement of the quoted speaker had chosen *would* to distance him/her-
self from the original statement. If all three options were possible, i.e., as soon as

there was a true possibility that the journalist wanted to cast doubt on the reported claim, we considered it a hypothetical of two perspectives, either the speaker's or the journalist's. One such instance is illustrated in (8).

> (8) Martin was employed by the company in connection with the accident, and he submitted a report saying that the car appeared to be extensively damaged, and the repairs <u>would</u> cost $5,200.
> [DC-HKE/1962-002.txt]; hypothetical (2 perspectives) (the journalist already knows that this claim was false and may want to distance himself from this statement);

Moreover, there are conventionalized constructions such as *would like to, would rather, would seem*, which are generally used to mitigate the force of a proposition. They are often found in spoken communication and resurface in the data in reported speech as in (9). They were coded as 'pragmatically specialized.'

> (9) Mrs. Shann thanked the workers and donors and said that she <u>would</u> like to congratulate Miss W. Robinson on the able way she had carried on the club during Mrs. Rogers' absence.
>   [DC-HKE/1929-012.txt]; pragmatically specialized;

Finally, the data rendered one example in which *would* was used as part of a special narrative technique. The journalist, who at the time of writing already knew about the outcome of the story he was going to report, used *would* in retrospect – referring at the beginning of his report to the later outcome. This instance was only found in the 2018 data. We named this instance an 'authorial comment' (see example 10).

> (10) Six months earlier, several members of the group had agreed to pay HK$40.2 billion to buy The Center from businessman Li Ka-shing, a purchase that <u>would</u> go down as the world's most expensive real estate transaction.   [DC-HKE/2018-005.txt]; authorial comment;

In summary, we distinguished the following 10 categories:

1. past time/backshift
2. habitual
3. hypothetical
4. past hypothetical
5. open condition (present conditional with backshift)
6. backshift with tentative meaning
7. ambiguous cases
8. hypothetical (2 perspectives)
9. pragmatically specialised
10. authorial comment

1,289 tokens of *would* were sorted into these categories.[4]

3.2.2   *The functionality of* should

In ENL and ESL, *should* is often used in its deontic meaning to express a form of mild obligation. Biewer (2011: 24) for instance found that in newspaper articles published between 2004 and 2008 in *The Guardian, The New York Times, The New Zealand Herald, The Fiji Times, The Samoa Observer, The Cook Islands Herald, The Singapore Straits Times* and *The Ghanaian Times*, a deontic use of *should* lay at between 75.4% and 91.9% of all possible cases – with varietal distinctions as to how obligation was upgraded or downgraded. In its deontic meaning, *should* can take on "the meaning of moral obligation or duty (defined in moral or legal terms)" (Coates 1983: 59) and is then considered to display a stronger obligation. As a weak obligation, it can simply be used to "offer advice" (Coates 1983: 59). Less frequently, *should* can have an epistemic meaning, a tentative "assessment of probability" (Coates 1983: 64). Examples (11) and (12) represent deontic and epistemic *should*, respectively, as found in our data set.

(11)   They agreed the future elected government <u>should</u> fully represent the interests of Hongkong people and the first chief executive <u>should</u> not be selected through consultation.   [DC-HKE/1988-011.txt]; deontic;

(12)   Mr. A. Anderson, engineer in charge of the Port Development Department, said that on the morning in question, at the hour when the deceased was presumed to have fallen into the water, the difference in the rise and fall of the tide would be 4 1/2 feet at Murray Pier. He did not think there was any current, and the water <u>should</u> be slack thereabouts.
                    [DC-HKE/1929-010.txt]; epistemic;

Apart from a deontic reading of weak obligation or an epistemic reading of weak inference, *should* also occurred in our data set, in the terms of Leech et al. (2009),

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4.   The data set contained 1,302 instances of *would*, of which 13 were excluded from the semantic categorisation since they appeared in direct quotations. According to common ICE conventions, direct quotations are coded as extra-corpus material only if they go beyond a subordinate clause, which means that, theoretically, snippets of direct quotations can still exist in the data set even if extra-corpus material is excluded from the analysis. These snippets have been retained for the overall frequencies of *would* and *should* per 10,000 words in the first part of the analysis since these were compared to other modals in DC-HKE and other corpora, for which these snippets have also been included. All instances of *would* were coded twice by two different scholars. In case of differing interpretations, the context of use in the corpus was looked at thoroughly, and in all cases a consensus could be found. Of the 630 instances of *would* for the 1990s, every second instance was categorised and the results extrapolated. All other instances were looked at individually.

as a putative or quasi-subjunctive. These are "certain (mainly subordinate) constructions with low-degree modality (that is, with *should* contributing little discernible modal meaning to the construction" (Collins 2009b: 48). The deontic meaning is rather expressed by the verb, adjectives etc. in the main clause. The subordinate construction is often embedded in the main clause with *that* as a subordinating conjunction. Mandative constructions as in (13) are included here since such constructions with *should* have been grammaticalised in combination "with a predicative item of strong modality in the matrix clause" (Collins 2009b: 49; he mentions *insistent* or *important*). We equally included *should* in "a *that* clause after a predicate conveying surprise, its opposite, or some other emotion" (Leech et al. 2009: 86). Again, it is the predicate of the main clause that carries the weight of the modal meaning. Included as well are implicit conditionals as in (14). For these constructions Huddleston and Pullum (2002: 188) suggested that *should* "expresses slightly greater doubt than the non-modal counterpart" (see also Collins 2009b: 50 and Leech et al. 2009: 86). Questions of the type *whether X should* are still coded as deontic, however, since *should* is not semantically empty.

(13)   Six manufacturers' representatives insisted that future quotas <u>should</u> be distributed equally between exporters and manufacturers.
                     [DC-HKE/1962-012.txt]; mandative construction/putative;

(14)   Mrs. Tam said the commission could be set up within months, <u>should</u> the Government agree to it.
                     [DC-HKE/1989-004.txt]; implicit conditional/putative;

In the data set 360 instances of *should* were coded according to the semantic categorisation described above.[5]

4.   Results

4.1   Overall frequencies

Figure 1 visualises the frequency of the core modals per 10,000 words in press news reports of the SCMP for each period. As in other ESL varieties, marginal members were further marginalised over time. The frequencies of *need* and *ought to* were below 0.2 per 10,000 words, and therefore are not listed here nor further regarded in this study. One can see that the use of *will* and *would* is substantial and that the use of *can* and *could* has been increasing over the century. This seems to

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5.   Six instances were excluded in the semantic categorisation since they occurred in direct quotations (see previous footnote on *would* for a more detailed explanation).

recall similar results of Leech et al. (2009) on BrE of the 60s and 90s, although it has to be pointed out that Leech's results are referring to a normalised frequency across all text categories in the LOB family (Leech et al. 2009: 74). It is particular remarkable that the core modals *would, might* and *should* reach a peak in their frequencies in the 1990s in the DC-HKE.
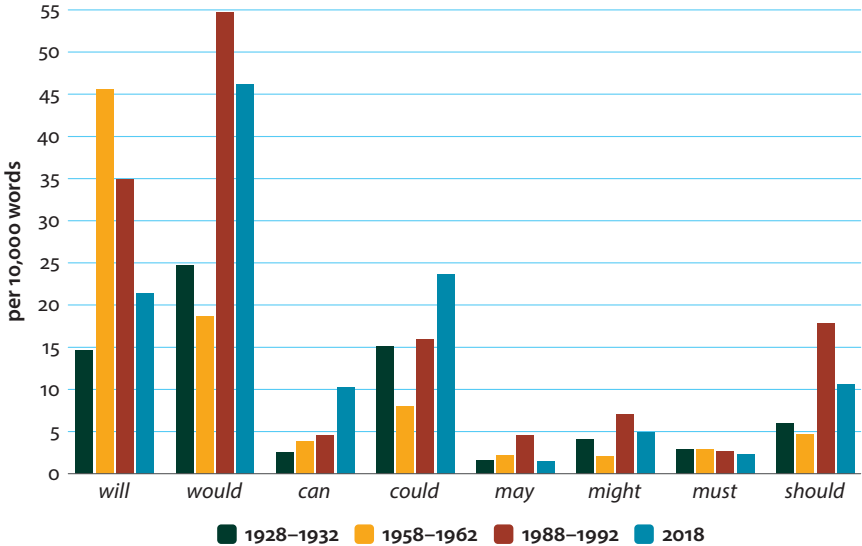
Figure 1. Modal verbs in the DC-HKE press news reports per 10,000 words

To obtain a clearer picture, a direct comparison of the normalised frequencies of modals in press news reports from the 30s, 60s and 90s in both DC-HKE and the LOB family was drawn. Figure 2 reveals that while *would* and *should* increase considerably in the Hong Kong data from the 60s to the 90s, *would* is stable in the LOB family over the century and *should* decreases from the 60s to the 90s. *Might* decreases in the BrE data in the same period as *should*, albeit more slightly. *Will* is much more frequent in the BrE data in the 30s than in the HKE data. In the 60s, this pattern is reversed. In the 90s, the frequencies of *will* are quite similar in the two data sets. For *would,* the frequencies are comparable in the 30s and the 60s but diverge hugely in the 90s. The frequencies for *might* are generally low but the tendencies in the two data sets are directly opposite: a decrease-increase development in the HKE data contrasts with an increase-decrease development in the BrE data from the 60s. For *should*, the BrE data displays twice the amount per 10,000 words as the HKE data in the 30s and 60s. Again, the pattern is reversed in the 90s with more than three times as many instances of *should* in the HKE data as in the BrE data. It is in particular in the 90s that differences between the two

varieties are most pronounced, and they become most salient in the use of *would* and *should* and *might*.[6] The relatively high frequencies of *would, should* and *might* for Hong Kong in the 90s are not at all mirrored in the British data, and indeed highly peculiar.
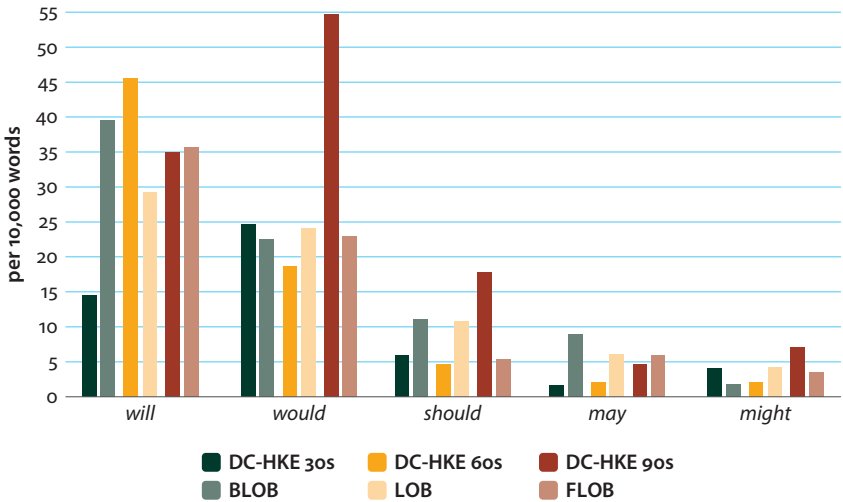
Figure 2. Modal verbs in the DC-HKE and the LOB family per 10,000 words

Next, the press news reports from DC-HKE were compared with the press news reports in ICE corpora from the 90s representing Hong Kong English and other Asian L2 varieties. Figure 3 reveals equally interesting tendencies. The DC-HKE displays a significantly higher frequency of *would, should* and *might* in Hong Kong English in comparison to Indian English, Philippine English and Singapore English.[7] Equally, differences between ICE-HK and the other three Asian ICE corpora in the frequencies of *would* and *should* are statistically significant.[8] For *might*, the difference between ICE-HK and ICE-India is statistically significant

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6. The differences are very highly significant at $p \le .001$ for all three modal verbs.

7. The differences are very highly significant for *would* in Indian English, Philippine English and Singapore English at $p \le .001$, as well as for *should* in Indian English and Philippine English, and for *might* in Indian English. The differences are very significant at $p \le .01$ for *might* in Philippine English and Singapore English, they are significant at $p \le .025$ for *should* in Singapore English.

8. The differences are very highly significant for *would* in Indian English, Philippine English and Singapore English at $p \le .001$, as well as for *should* in Indian English and Philippine

($p \leq .01$). At the same time, there is no statistically significant difference in the frequencies of *should, may* and *might* between ICE-HK and DC-HKE.
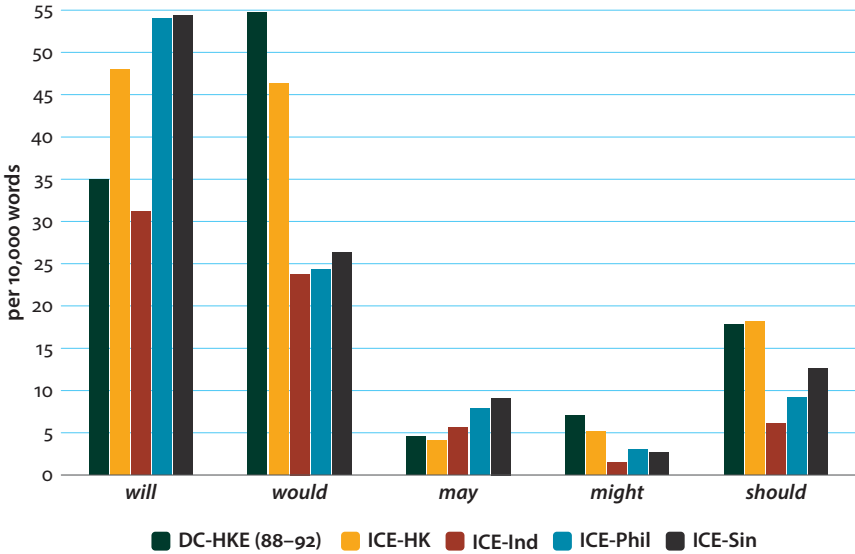
Figure 3. Modal verbs in the DC-HKE and Asian L2 ICE corpora per 10,000 words

Concerning *will* and *would*, the DC-HKE shows a lower usage of the former and, diametrically opposed to that, a higher usage of the latter than the ICE-HK. It is possible that the slightly differing time span from which the data of ICE-HK and DC-HKE 90s was collected is relevant here: the ICE data stem from 1993/94 when the political future of Hong Kong seemed a little clearer than in the late 80s, which may have promoted a preference for *would* in the DC-HKE. Another explanation relates to direct quotations, which are considered extra-corpus material in DC-HKE but not consistently in ICE-HK. If extra-corpus material is included in the DC-HKE, the results even out to some extent. Taking into account that the total amount of words increases as well, the amount of *will* increases from 34.95 to 40.57 per 10,000 words and the frequency for *would* decreases from 54.77 to 51.93 per 10,000 words.[9]

English. The differences are significant at $p \leq .05$ for *should* in Singapore English. The tendencies are similar to the DC-HKE but less pronounced.

9.   In comparison, the normalised frequencies for ICE-HK are 47.93 for *will* and 46.28 for *would*.

These comparisons reveal that HKE shows a special diachronic development with regard to modals, with the period of the 90s being the odd one out. Since ICE-HK shows similar patterns to DC-HKE 90s in a particularly high frequency of *would* and *should*, corpus compilation issues can be largely dismissed. Previous studies only revealed a high amount of specific core modals, namely *will* and *should*, in ICE-HK (Collins 2009c: 286) and a decline of *would, should, might* from the 1990s to 2000s in the Hong Kong press (Noël & van der Auwera 2015: 459) but did not detect the unusual historical trend from the 30s to today with a peak in the 90s . Only a diachronic study enables us to regard the results for the 90s in a larger context, which shows that something extraordinary is going on in this particular period of data collection for Hong Kong. This of course raises an issue concerning the compilation of synchronic corpora of World Englishes, considering that results for ICE-HK stand out in comparison to other ICE corpora in various studies (see for instance Loureiro-Porto 2016; Salles Bernal 2015). It is well possible that this is related to choosing the 90s for the compilation of these synchronic corpora, a period in which the HK data may be highly influenced by the immense changes in the corresponding socio-historical context.

In a second step, we will focus on the functionality of *should* and *would* in the DC-HKE press news reports section to gain some insight into what may have triggered a peak in the usage of these two core modals. Since the numbers for *might* (2.08 to 7.04 per 10,000 words) are on average considerably lower than for *should* (4.63 to 17.82 per 10,000 words) and *would* (18.68 to 54.77 per 10,000 words), this core modal will not be further considered in this paper. It should also be added that this high usage of *should* in the 90s is not in any way related to changing frequencies for *have to* or *must*. Often it is said that *have to* and *should* tend to replace *must* in societies that are becoming more democratic (see for instance Hansen 2018: 242 for *have to*). This argument certainly does not hold here. *Must* in comparison to the other modal and semi-modal of obligation and necessity remains at 2.29 to 2.97 per 10,000 words, *have to* has a peak in the 90s, but only increases from 3.91 to 6.35 per 10,000 words, while the normalised frequency for *should* changes from 4.63 in the 60s to an amazing 17.82 in the 90s.[10] We now turn to the functionality of *would* in the DC-HKE press news report section.

4.2 The functionality of *would* in the DC-HKE

As described in the methodology section, ten different categories of meanings and uses of *would* were distinguished. In a first step, some categories were summarised

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as one: categories (1) and (6), as well as categories (3), (4) and (8), leaving alto-
gether seven categories. That means that various cases of backshift and various
cases of *would* as a hypothetical marker are compared to open conditions, habitual
and special uses.[11] Figure 4 visualises the results in a stacked area chart, using nor-
malised frequencies per 10,000 words.
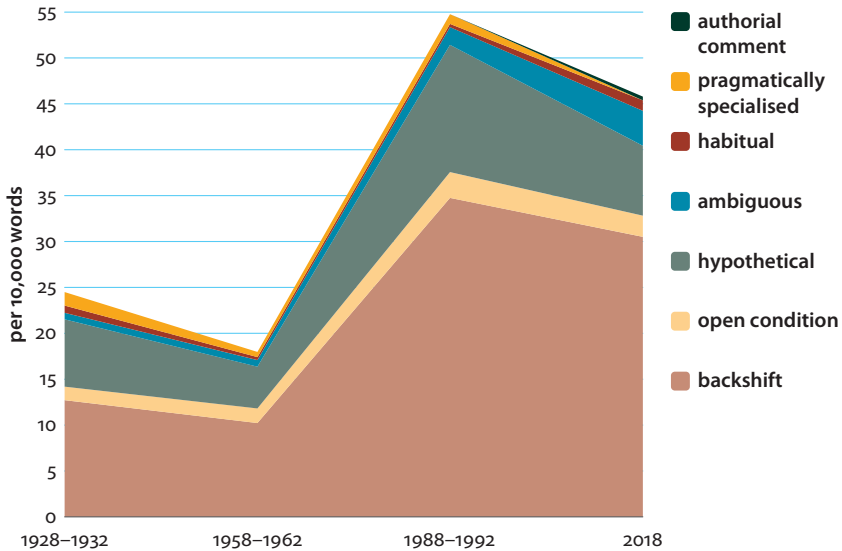
Figure 4. The functionality of *would* in 7 categories per 10,000 words

It can be seen that both back-shifted *will* and hypothetical *would* are the stron-
gest categories in all four periods. These are also the two categories that increase most
considerably from the 60s to the 90s. For both meanings, the difference between the
periods is very highly significant at $p \leq .001$. As for backshift, there is no statisti-
cally significant difference between the 90s and the 2018 data. As for hypothetical
would, the difference from the 90s to today is less pronounced than it is from the
60s to the 90s, but shows as significant decline ($p \leq .025$). Open conditions change
significantly from the 60s to 90s, too, but the difference is not as pronounced as for
back-shifted *will* and hypothetical *would* ($p \leq .05$ for open conditions). The change
over time of the meaning and uses of *would* in the SCMP becomes visible now:

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11. Remember that the data set for 2018 is much smaller than the data set for the other
periods. The results there have to be taken with a pinch of salt as small numbers show a greater
effect in the percentages in a small corpus. That no pragmatically specialised uses were found
in the 2018 data, may be due to low data.

The 90s stand out in a particularly high usage of back-shifted *will* and hypothetical *would*. In comparison to the data from today, a decrease of hypothetical *would* from the 90s to 2018 becomes obvious.

To gain an even better insight into functional changes of *would* in press news reports of the SCMP over the last 90 years, all 10 categories were being looked at separately in a second step. Figure 5 is another stacked area chart with a more fine-grained categorisation. Figure 5 shows that along with back-shifted *will* and hypothetical *would*, also back-shifted *will* with tentative meaning shows a sub-stantial increase from the 60s to the 90s. In these statistics, the increase of all three meanings from the 60s to the 90s is very highly significant with $p \leq .001$. The difference between the 90s and today is not statistically significant for any of the three meanings. The difference between the 30s and the 60s is statistically significant for the three meanings but only for back-shifted *will* with tentative meaning is it very highly significant with $p \leq .001$. We can gather from these results that in the 90s *would* is used significantly more often to report other people's decisions and opinions rather than openly state the personal opinions/hypotheses of the journalist. It is also increasingly used to describe the assumptions, conjectures and suppositions of public news actors. With a chi-square of 114.404, the increase in *would* as back-shifted *will* in reported speech is the strongest increase there is for various uses of *would* up to the 90s.
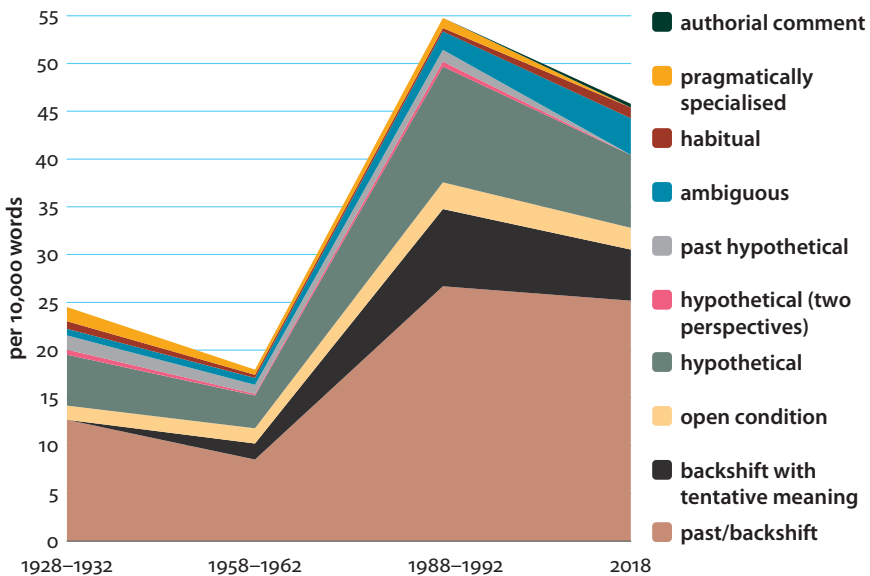
Figure 5. The functionality of *would* in 10 categories per 10,000 words

4.3   The functionality of *should* in the DC-HKE

Figure 6 displays the different meanings and uses of *should* in the different periods per 10,000 words. It can be seen that a particular high use of s*hould* in the 90s corresponds to a high use of deontic and putative *should*. The increase of putative *should* from the 60s to the 90s is significant at $p \leq .01$, so is its decrease after the 90s. The decrease of deontic *should* from the 30s to the 60s is significant at $p \leq .025$, its increase from the 60s to the 90s, however, is very highly significant at $p \leq .001$. With a chi-square of 102.394, this is the most significant change. Differences between the 90s and today in the use of deontic *should* are not significant.

While the use of *must* does not really change, as discussed above, the use of *should* does. There is a tendency to use *should* in constructions with low-degree modality. But even more so, deontic *should* with a clear modal meaning of weak obligation becomes a rather pronounced and popular construction in the SCMP press news reports. Deontic meaning, it seems, is to a great extent expressed by *should* rather than *must, have to* or main verbs in a main clause. The journalists seem to rely on *should* as the expression of rather weak obligation in particular in the 90s. Either the journalists themselves or the quoted persons are very cautious in expressing duties and obligations of a third party.
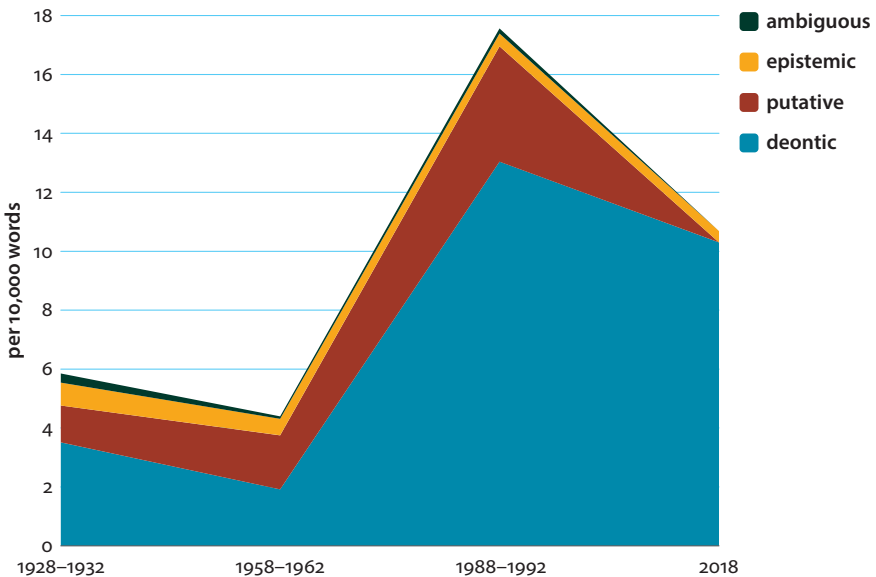
Figure 6. The functionality of *should* per 10,000 words

4.4   Discussion

The analysis has revealed that the increase of *would* and *should* in press news reports of the 1990s in Hong Kong is unprecedented. Looking at the functions of these core modals, it is back-shifted *will*, hypothetical *would* and back-shifted *will* with tentative meaning which show a substantial increase from the 1960s to the 1990s, with back-shifted *will* showing the strongest increase of all. In terms of the functions of *should*, it is, above all, deontic *should* that displays an extraordinary increase from the 60s to the 90s with a chi-square of 102.394 and a significance level of .001. At the same time, the use of *must* in the SCMP does not vary markedly between 1928 and 2018.

A number of factors may have contributed to these results. First of all, the press coverage in Hong Kong has changed since the 1930s. Different topics were focussed on in different decades. Table 2 shows the most frequent content words for DC-HKE press news reports of the years 1928, 1958, 1988, 2018.

Table 2. Most frequent content words in the SCMP of four different years

Rank	1928	1958	1988	2018
1	*defendant*	*defendant*	*Hong Kong*	*Hong Kong*
2	*witness*	*Hong Kong*	*government*	*city*
3	*police*	*accused*	*people*	*public*
4	*evidence*	*road*	*law*	*police*
5	*road*	*witness*	*council*	*people*
6	*Hong Kong*	*police*	*public*	*government*

The focus in the press coverage of the 1930s lay on court cases, which the journalists summarised (the keyword *road* here refers to court cases on road accidents). In the 90s, however, the focus lay on the political future of Hong Kong, which was being negotiated at the time (the keyword *council* often refers to the Legislative Council of Hong Kong, the LegCo, or the Executive Council of Hong Kong). This topic of the 1990s, which is related to a still on-going debate at the time, would leave room for stating pieces of advice, suggestions, and opinions. It becomes obvious, however, that with deontic *should* a rather downgraded form of opinion and advice is given, while *would* is most prominent in phrases in which the suggestions or decisions of a third party are reported. Journalists in Hong Kong of the 1990s express assumptions and suggestions in a down-tuned manner and mostly use indirect quotations to refer not to their own opinions but the conjectures of others. This seems to be a rather cautious way of reporting current events. As stated in 2.1,

the political climate in the 1980s/90s in Hong Kong will have been such that the journalists may have felt more restrained in uttering their opinions freely than the journalists in Great Britain did. Jullian (2011) emphasises that one way for journalists to get across an evaluation without putting themselves into harm's way is to resort to quoting somebody else:

> Comments and judgments made through such sources cannot be attributed to the author him/herself, but they certainly tint the story in such a way that readers get the desired view, without strongly committing the journalist to the content and perspectives conveyed by others. (Jullian 2011: 767)

In this respect, an unprecedented increase of back-shifted *will* may well be an expression of such an indirect display of a journalistic perspective in a climate that discourages a more personal and subjective form of press coverage, and a more explicit stance. A substantial increase in the use of back-shifted *will* with tentative meaning certainly supports that interpretation.

In this context, it is interesting to note that when deontic *should* is used in the press coverage of the 1990s to express weak obligation, often no individual news actor is explicitly named. Rather, a group of people, collectively called *employees* or *secondary school students*, or an institution, such as the *RTHK management* is mentioned. Another strategy is to use a vague number: *one said, one in seven thought, most tended to think*… Equally, passive constructions are employed so that the news actor does not have to be disclosed. One prominent exception to the rule is the naming of the British governor at the time, Sir David Wilson, who is often simply referred to as *Sir David*. But his opinions were widely known, and the colonial government would of course have liked them to be reiterated in the press. On the whole, these strategies of impersonalisation, collectivisation and anonymisation add to the impression of a deliberately vague and rather cautious style in the press coverage that is also expressed by the use of *would* and *should*.

5. Conclusion

In this paper, we discussed the frequency and function of selected modal expressions in press news reports of the SCMP from 1928 to 2018. In the data, an exceptionally high amount of back-shifted *will* and deontic *should* could be found in the DC-HKE press news reports of 1988–92. These results seem to be closely linked to developments of the genre 'press news reports' and socio-political changes in Hong Kong. In the 1990s, *would* and *should* are used to report on other people's decisions and opinions with an increasing focus on the debate about the political future of Hong Kong, which had not been finalised. In the 1930s, in contrast, the

focus was on court cases and the decisions the judges had already made. In general, a change of topics over the decades contributes to a changing role of modal expressions in the press coverage. After focusing on court cases in the 30s and the economic development of Hong Kong in the 1960s, the press in the 90s turned to more political issues. In 2018, journalists also report on global issues and typical problems of a megacity beside local political issues.

It seems to be that the overall trend towards personalisation in press news reports in Great Britain, starting with a more subjective and livelier coverage in the 1960s, cannot be witnessed to the same extent in the Hong Kong press of the 90s. Focussing on press news reports (rather than editorials) diminishes the probability of such strategies, of course. But even in this genre, a contrast between Hong Kong and Great Britain is visible. It is well possible that Hong Kong journalists, torn between the retreating colonial power and entering new "ruler" in the 1980/90s, felt they could not be too careful hiding their personal opinion and style. Overall, it seems that the increase of back-shifted *will* and deontic *should* in the 90s is a reflection of a growing uncertainty and the imminent negotiation of Hong Kong's status.

It cannot be said that these findings on *should* and *would* describe a varietal characteristic of Hong Kong English. They are more aptly interpreted as a passing glance at a historic moment in Hong Kong during which political changes impacted strongly on language use. One has to be careful not to misinterpret findings from the ICE-HK, which was compiled at a very special moment in the history of Hong Kong. While language and socio-historical events can be shown to interact, there is, however, no simple correlation between them.

The study shows that genre developments should not be neglected in varietal studies. In Hong Kong, the developments of the genre have not been entirely the same as in Great Britain. As Temple (2008: 131) points out: "the structures of power act as powerful censorship mechanisms". The political landscapes in Great Britain and Hong Kong differ, and this had and will have an effect on text production and the display of private and public opinion in the respective geographical areas.

Recent changes in the British press towards a more provocative coverage, according to Temple (2008: 186), also come with a more elaborate style and choice of topics that is more relevant for the readership. He concludes that the "newspaper press" of today therefore "serves the 'public sphere' rather better than previous generations of newspapers" (Temple 2008: 186). Recent press coverage in Hong Kong may be developing along similar lines since the readership is changing, while the struggle about the future of Hong Kong, Hong Kong identity and freedom of press is continuing. Within the next twenty years, we will see whether a more explicit stance will emerge in press news reports, or whether journalists will feel even more pressured to remain cautious about stating their personal views. What we can already see

is that a diachronic perspective is needed to understand the complexities involved in the linguistic and political development in Hong Kong and their interrelation.

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Appendix

Table 1. Modal verbs and *have to* in the DC-HKE press news reports per 10,000 words

N	Search term	1928–1932 128,153		1958–1962 125,249		1988–1992 115,018		2018 26,210	
will	will/won't	187	14.59	571	45.59	402	34.95	56	21.37
would	would*	317	24.74	234	18.68	630	54.77	121	46.17
can	can/cannot	32	2.50	48	3.83	52	4.52	27	10.30
could	could*	194	15.14	101	8.06	184	16.00	62	23.66
may	may*	20	1.56	27	2.16	53	4.61	4	1.53
might	might*	53	4.14	26	2.08	81	7.04	13	4.96
must	must*	38	2.97	37	2.95	30	2.61	6	2.29
should	should*	76	5.93	58	4.63	205	17.82	28	10.68
shall	shall/shan't	8	0.62	2	0.16	2	0.17	0	0.00
ought (to)	ought	1	0.08	2	0.16	1	0.09	0	0.00
need	need [NOT need to]	1	0.08	0	0.00	2	0.17	0	0.00
have to	have to/has to/ had to etc.	70	5.46	49	3.91	73	6.35	13	4.96

Table 2. Modal verbs in the DC-HKE and the LOB family per 10,000 words

N (press reportage)	DC-HKE 30s 128,153		BLOB 91,690		DC-HKE 60s 125,249		LOB 107,849		DC-HKE 90s 115,018		FLOB 110,554	
will	187	14.59	362	39.48	571	45.59	315	29.21	402	34.95	395	35.73
would	317	24.74	207	22.58	234	18.68	259	24.02	630	54.77	253	22.88
should	76	5.93	101	11.02	58	4.63	16	10.76	205	17.82	59	5.34
may	20	1.56	82	8.94	27	2.16	65	6.03	53	4.61	66	5.97
might	53	4.14	17	1.85	26	2.08	45	4.17	81	7.04	38	3.44

Table 3. Modal verbs in the DC-HKE and Asian L2 ICE corpora per 10,000 words

N (press reportage)	DC-HKE (88–92)		ICE-HK		ICE-Ind		ICE-Phil		ICE-Sin	
	115,018		48,614		39,505		46,814		40,623	
will	402	34.95	233	47.93	123	31.14	253	54.04	221	54.40
would	630	54.77	225	46.28	94	23.79	114	24.35	107	26.34
may	53	4.61	20	4.11	22	5.57	37	7.90	37	9.11
might	81	7.04	25	5.14	6	1.52	14	2.99	11	2.71
should	205	18.26	88	18.10	24	6.08	43	9.19	51	12.55

Table 4. The functionality of *would* in 7 categories per 10,000 words

	1928–1932		1958–1962		1988–1992		2018	
	128,153		125,249		115,018		26,210	
total *would*	314	24.50	225	17.96	630	54.77	120	45.78
backshift	163	12.72	128	10.22	400	34.76	80	30.52
open condition	19	1.48	20	1.60	32	2.81	6	2.29
hypothetical	94	7.33	57	4.55	160	13.87	20	7.63
ambiguous	9	0.70	9	0.72	22	1.93	10	3.82
habitual	10	0.78	4	0.32	4	0.35	3	1.14
pragmatically specialised	19	1.48	7	0.56	12	1.05	0	0.00
authorial comment	0	0.00	0	0.00	0	0.00	1	0.38

Table 5. The functionality of *would* in 10 categories per 10,000 words

	1928–1932		1958–1962		1988–1992		2018	
	128,153		125,249		115,018		26,210	
total *would*	314	24.50	225	17.96	630	54.77	120	45.78
past/backshift	163	12.72	107	8.54	307	26.68	66	25.18
backshift with tentative meaning	0	0.00	21	1.68	93	8.08	14	5.34
present hypothetical with backshift	19	1.48	20	1.60	32	2.81	6	2.29
hypothetical	68	5.31	43	3.43	139	12.11	20	7.63
hypothetical (two perspectives)	7	0.55	2	0.16	6	0.53	0	0.00
past hypothetical	19	1.48	12	0.96	14	1.23	0	0.00
ambiguous	9	0.70	9	0.72	22	1.93	10	3.82
habitual	10	0.78	4	0.32	4	0.35	3	1.14
pragmatically specialised	19	1.48	7	0.56	12	1.05	0	0.00
authorial comment	0	0.00	0	0.00	0	0.00	1	0.38

Table 6. The functionality of *should* per 10,000 words

	1928–1932		1958–1962		1988–1992		2018	
	128,153		**125,249**		**115,018**		**26,210**	
total *should*	75	**5.85**	55	**4.9**	202	**17.56**	28	**10.68**
deontic	45	3.51	24	1.92	150	13.04	27	10.30
putative	16	1.25	23	1.84	45	3.91	0	0.00
epistemic	10	0.78	7	0.56	5	0.43	1	0.38
ambiguous	4	0.31	1	0.08	2	0.17	0	0.00

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Mood, modality and evidentiality are popular and dynamic areas in linguistics. *Re-Assessing Modalising Expressions – Categories, co-text, and context* focuses on the specific issue of the ways language users express permission, obligation, volition (intention), possibility and ability, necessity and prediction linguistically.

Using a range of evidence and corpus data collected from different sources, the authors of this volume examine the distribution and functions of a range of patterns involving modalising expressions as predominantly found in standard American English, British English or Hong Kong English, but also in Japanese. The authors are particularly interested in addressing (co-)textual manifestations of modalising expressions as well as their distribution across different text-types and thus filling a gap research was unable to plug in the past. Thoughts on categorising or re-categorising modalising expressions initiate and complement a multi-perspectival enterprise that is intended to bring research in this area a step forward.

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