Particles in German, English, and Beyond

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JOHN BENJAMINS PUBLISHING COMPANY

Particles in German, English, and Beyond

Studies in Language Companion Series (SLCS)

ISSN 0165-7763

This series has been established as a companion series to the periodical *Studies in Language*.

For an overview of all books published in this series, please see *benjamins.com/catalog/slcs*

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Volume 224

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Amsterdam / Philadelphia

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Particles

A brief synchronic, diachronic
and contrastive introduction

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This chapter provides a general background to the field of particles by introducing major classifications and considerations from synchronic, diachronic, and contrastive perspectives. It builds on earlier literature from the respective fields. In doing so, it also prepares the ground for the individual chapters, which it previews and puts into perspective with the general theme of the volume.

Keywords: Classifications of particles, Synchronic diagnostics for particles, Diachrony of modal particles, Contrasting studies of particles

1. Delimiting current scope

The goal of this introduction is to offer (A) a short selection of major issues from a vast field that go beyond the articles included in the present volume, but those we consider to be relevant or helpful for some readers in the conceptual area of the present volume, and (B) the standard preview function regarding the papers ahead. The structure navigated is as follows: after introducing the major terrain of the volume in this first section, we will turn to a discussion of the synchronic background of particles in section two. This will be followed by a diachronic one in section three, before concluding with a brief discussion of the contrasting stance and an outlook on the individual papers in section four.

The volume itself grew out of the inquisitive desire to capture as much contemporary research as possible in an area that has been both exciting and hard to grasp in the multifaceted research on particles. Our primary focus has been set on contrastive considerations – hence the title of the volume itself – as well as on pertinent analytical observations in terms of meaning and form. The papers included in the work have mostly been presented, in original form, at a workshop organized by the English and German departments at Saarland University in 2019, or

were invited with the specific scope to elucidate certain contrastive points of view. These chapters have undergone a standard peer-review process for such occasions based on internal and external reviewing. We are indebted to our entire dedicated group of reviewers who have critically increased the value of the contributions found in this final product, the shape and orientation of which we will contextualize further below. Special thanks are due to the external reviewers including Josef Bayer, Andrea Beltrama, Marco Coniglio, Marcel den Dikken, Rita Finkbeiner, Elly van Gelderen, Jutta Hartmann, Vera Hohaus, Lukasz Jedrzejowski, Martin Kopf-Giammanco, Edgar Onea, Svetlana Petrova, Fabian Renz-Gabriel, Manfred Sailer, Richard Waltereit and Sarah Zobel for their extremely helpful involvement.

A first key question when it comes to the conceptual background: an analysis of which types of particles can a reader expect from the current volume? The brief answer: modal, focus, and intensifying particles, as we illustrate further in section two. Particles with well-known discourse functions of the type that are known as 'modal' (and sometimes called 'mood') particles from languages like German and which, to some extent, are also available across several of the Germanic languages (cf. e.g. van Gelderen 2001, Gast this volume, Grosz this volume, Trotzke & Haegeman this volume, van Kemenade this volume, as well as the references in these contributions) have been at the center of the enterprise from the very beginning. Crucially, several issues arise already in this area. For instance, English is standardly considered to lack particles of the same kind (Abraham 2010; Lenker 2010; Zimmermann 2011, among several others), but pragmatic and developmental-diachronic considerations also make it clear that the line drawn between English and German is not as firm as standardly assumed (cf. e.g. Haselow 2012, Gast this volume, Puhl & Gergel this volume, for different considerations of the debate).

At the same time, it was both the explicit intention of the original workshop and the papers eventually included to incorporate insights from related types of particles as well as languages, even if at first glance they did not seem directly connected to the long-standing 'modal' contrastive stance between English and German. That is, we wanted to capture as much as possible of the currently available expertise and thinking; including those cases in which the types of particles addressed in the respective contributions were not necessarily deemed modal. For readers less familiar with the terminology used in German linguistics, we must emphasize that (out of convenience) we use the most widely established term 'modal' for discourse particles such as German *ja, doch*, etc., even though only a small subset of the approximately seventeen typically recognized German particles (Thurmair 1989) has been seriously entertained to also have a semantics that mimics the classical semantics of modality (see section two for more context on the pertinent German tradition). In fact, even those particles that *are* more straightforwardly recognizable as, say, in part inferential markers, have key additional discourse-managing functions of

various types.[1] Hence, we will stick to the traditional and widely used terminology despite its limitations. The central German type of modal particles hinges on a mixture of syntactic and grammaticalized discourse-managing functions (cf. sections two and three below for relevant specifics regarding the constitution of the class).

One of the emergent themes of the volume is that not only is the distinction between English and German more nuanced than standardly assumed, but that other languages often also fall within a similar grey area if the standard German-English dichotomy is maintained. This is especially illustrated by the insights provided in this collection by Cognola et al, Erlewine, Gyuris, and Modicom on Italian, Mandarin, Hungarian, and French, respectively, for items that show both similarities and differences from German particles of different types. Moreover, if the limited syntactic options of the English middle field are factored in, as done by van Gelderen (2001) or van Kemenade (cf. the article in this volume and the references cited there), then even some of the utterance-final types of particles utilized by English may stand a chance of fulfilling similar, if certainly not identical Common Ground managing functions, as Puhl & Gergel's chapter also discusses.

There is further disappointing or murky news for a traditional take on particles: not only are the distinctions between languages more nuanced than previously thought. The borderlines between the different classes of particles have also increasingly been argued to be relatively flexible, especially based on the historical processes of reinterpretation available more generally in natural language (cf. e.g. Traugott & Dasher 2002; Detges & Waltereit 2009; Eckardt 2012; Eckardt & Speyer 2014; Beck & Gergel 2015; Deo 2015 for suggestions going far beyond the issues of particles). For example, it would seem ad-hoc to draw an absolute and irreversible line between, say, modal particles and other items such as particularizers (words with meanings such as *just* or *exactly*) or the class of focus particles. (See Beaver & Clark 2002 for a systematic semantic inquiry of focus and particularizer particles, as well as Nevalainen 1991 and Traugott 2006 for diachronic connections in this area). The latter connections are notably between particularizer meanings and scalar focus particles like *even*. Following the Human Diachronic Simulation Paradigm (Gergel 2020), Gergel, Kopf-Giammanco & Puhl (2021) have also extended this line of thought to argue on an experimental basis for a connection between German

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1.   Cf. e.g. Zimmermann (2011, 2018) for analyses of epistemic particles like *wohl* and arguably *schon*. To be clear: the German particle class is not usually considered on the basis of standard modalizing syntactic or semantic notions, but rather on syntactic and semantic grounds on which we elaborate in section two below. Conversely, cf. Kratzer (1991, 2012), Reis (2001), Portner (2009); Axel-Tober & Gergel (2016); Kaufmann & Kaufmann (2016) for the disjoint conceptualization of the usual types of modality and mood in languages like German and English. But see especially Abraham (2010) for an interesting tête-à-tête of modal particles and epistemic modality cast against the background of theory-of-mind approaches (Papafragou 2002).

eben (which, in addition to being a modal particle, functions as a particularizer) and the scalar focus-particle meaning available in its English cognate *even* via a bias in reinterpretation. Eberhardt's contribution in this volume goes one step further and stresses the viability of yet another connection between different types of particles diachronically. This time, one that is originally discernible on the route leading from intensifying particles to scalar focus particles. Finally, and more generally, it is especially the directly contrastive micro-aspects contained in several papers of the current volume that led editors and contributors of this volume alike to conclude that, rather than following a particular terminological self- or otherwise imposed restriction, a reasonable understanding of the deeper nature of apparently idiosyncratic and language-specific types of particles can only be gained by including not only analytical tools that are as sharp as possible in each individual case, but also a number of comparative considerations on multiple dimensions. This, i.e. the broader comparative take, is the general orientation that the vast majority of the papers follow. We next turn to building up a minimal scaffolding of some general synchronic considerations for readers less familiars with the field. Readers who do not need the background, and are only interested in reading the short previews of the articles ahead, are invited to go directly to section four and, even more directly, to the real action of the contributing papers.

2. Particles from a synchronic point of view

From a synchronic point of view, the class of particles is like a sack of fleas – they are difficult to get a grip on. This starts with the fact that it is, at least in some languages, not fully clear how to define the class of particles. In this respect, German is a nice exception. And yet there are also two major different uses of the term 'particle' in German. The more general use defines the class of particles exclusively in terms of inflection: any expression that cannot be inflected is taken to be a particle. This apparently includes adverbs, prepositions and conjunctions. This is not the use, however, that we refer to in this volume. The use we and the contributors to this volume have in mind is more restrictive: only expressions that (i) cannot be inflected *and* (ii) are excluded from the German prefield (the position immediately preceding the finite verb in German V2-clauses), are particles. This still leaves us with a very heterogeneous class that is usually subdivided in different types according to further syntactic, semantic and prosodic characteristics. Disregarding the negation *nicht* ('not'), interjections like *Aua!* ('Ouch!'), and discourse particles like *ähm* ('well') – which are with a probability bordering on certainty not part of the sentence proper – we can distinguish at least three central subtypes:

1. **Intensifying particles** like *sehr* ('very') modify scalable properties like *nett* ('nice') and narrow the denotation by shifting the boundary on the scale of niceness from *nett* ('nice') to *sehr nett* ('very nice'): *Hans ist sehr nett* ('John is very nice').

2. **Focus particles** like *auch* ('also') modify constituents that are contrastively focused or contain a contrastive focus (indicated by pitch accent) that triggers alternatives to that constituent. The focus particle operates on those alternatives by excluding ('only') or including ('also') them: *HANS ist AUCH sehr nett* ('JOHN is also very nice').

3. **Modal particles** like *doch* ('after all') operate on the sentence-level and communicate the speaker's attitude towards the proposition, for example by reminding the addressee of this very proposition: *HANS ist doch auch sehr nett*. (This may be translated, for instance, as a tag: 'JOHN is also very nice, isn't he?', but on a practical level, see e.g. König & Gast (2012: 307–309) or Gast (this volume) for some of the difficulties in finding appropriate translational equivalents for particles).

Beyond that, classifying particles is complicated by two factors. First, particles are typically recruited from other syntactic categories like adverbs, adjectives or nouns. Diachronically this is also true of focus and modal particles, but synchronically this is arguably most obvious with intensifiers: While the intensifier *sehr* ('very') in (1a) is traditionally an adverb, it is clear that *fürchterlich* ('terrible') in (1b) stems from an adjective, cf. *der fürchterliche Vater* ('the terrible father' – notice that German does not have designated adverbial derivational affixes with a same productivity as e.g. English *-ly*), and that the only plausible source for *sau* in (1c) is the noun *Sau* ('pig'). As a consequence, intensifiers cannot be identified by their morphosyntactic category alone. One needs to rely on other properties like their syntactic distribution, their semantics, and their pragmatic function.

(1)   a.   Der Kuchen ist **sehr** lecker. ('The cake is very delicious.')
      b.   Der Kuchen ist **fürchterlich** lecker. ('The cake is terribly delicious.')
      c.   Der Kuchen ist **sau** lecker. ('The cake is PART delicious.')

The relevant counterparts in other syntactic categories are, however, quite often rather close in meaning or pragmatic function. This is best illustrated with modal particles. Consider, for example, the modal particle *doch*:

(2)   a.   Xaver wollte nach Harvard, doch er hat sich anders entschieden.
          ('Xaver wanted to go to Harvard, but he changed his mind.')
      b.   Xaver wollte nach Harvard, und doch hat er sich anders entschieden.
          ('Xaver wanted to go to Harvard and yet he changed his mind.')

     c.   Du wirst doch nicht wirklich nicht nach Harvard gehen?
        ('You're not really not going to Harvard, are you?')
     d.   Und Harvard wäre DOCH die bessere Entscheidung gewesen!
        ('And Harvard would have been the better decision, EVERYWHERE')
     e.   A: Du gehst (doch) nicht wirklich nach Harvard oder? B: Doch.
        ('A: You're not really going to Harvard, are you? B: Yes.')

In (2a), *doch* functions like a coordinating conjunction since it links two full sentences. In this use, *doch* can be paraphrased with *aber* ('but'). In (2b), *doch* is in the prefield of the second clause, and thus an integral part of it. In this use, *doch* can be paraphrased with *trotzdem* ('yet') and is a connective adverb. The version of *doch* in (2c) is the modal particle one. This is evidenced by the prefield test (cf. the status of the rewording of (2c) as **Doch wirst du nicht wirklich nach Harvard gehen wollen?*). What *doch* contributes to the meaning in (2a)–(2c), however, is intuitively rather similar: In each case the linguistic context raises some expectations, and *doch* expresses that these very expectations are (to the surprise of the speaker) not met. This is also true of stressed *doch* in (2d), which is an adverb according to Thurmair (1989: 110), and of the use as a contradicting answer particle in (2e) to biased negative polar questions.

    Thus, the first crucial task in investigating particles is the limitation and the delimitation of the relevant cases. For example, which occurrences of *doch* are in fact to be classified as modal particles? And how do they relate to or derive from other uses of *doch*? That the question of delimiting different classes is non-trivial is already clear from the above discussion and, for example, the fact that Weydt (1986) classifies accented *doch* in (1d) as a modal particle, while Thurmair (1989) argues that *doch* is an affirmative adverb. Cognola et al. (this volume) discuss different types of German *auch* and Italian *anche* (additive particle, connective adverb, modal particle), and relate these types to different projections in syntax. The motivated relation between different meanings of expressions is, above all, at the heart of diachronic investigations as in Eckardt (2006), Deo (2009), Beck & Gergel (2015), Gergel & Beck (2015), Gergel (2011, 2016), Gergel & Kopf-Giammanco (2021), and we will return to that from the perspective of particles in section three.

    However, even if we restrict ourselves to one and the same adverb or particle at one and the same stage of a language, we are still frequently faced with different senses. This raises the question whether those senses can be captured with one lexical entry or whether we have to deal with a network of different, but systematically related, senses. A recent case study in this respect is Zwarts (2019) on Dutch *terug* ('back'). Zwarts (2019) identifies a total of 6 different senses, which he arranges in a semantic map according to their semantic relationships. In a seminal paper, von Stechow (1996) argues (compare Dowty 1979) that the repetitive and restitutive

readings of the adverb *wieder* ('again') can be modeled as a syntactic scope ambiguity (rather than a lexical ambiguity), given a decomposition analysis of the modified predicate. On its restitutive reading, (3) essentially presupposes that the door was open before and asserts that Xaver opened it. On its repetitive reading, (3) presupposes that Xaver opened the door before, and asserts that he opened the door. The basic idea then is that in the restitutive reading the adverb *again* only modifies the result state (*again* (*door open*)), while it modifies the complete representation, including the subject, in the repetitive reading (*again* (*Xaver causes* (*door open*))).

(3)   Xaver has opened the door again.

Pedersen (2015) in turn argues on the basis of sentences like *the river widened again* explicitly for a scalar approach (but cf. e.g. Yu 2020 for a recent summary and discussion). Another case in point is the German adverb *noch* ('*still*'), which shows, amongst others, temporal (4a) and marginal (4b) readings (see Beck 2020a: 1ff):

(4)   a.   Es regnet noch. ('It is still raining.')
       b.   Durham liegt noch in England. ('Durham is still in England.')

While for example Ippolito (2007) assumes different – though on a more abstract level related – lexical entries, Beck (2020a) argues for a uniform analysis. Here, the crucial idea is that *noch* is a scalar particle in the sense that it always relates to some contextually given scale, which can be temporal or local in nature. Scalar analyses of particles and adverbs become more and more popular and have been proposed, for instance, for *noch* ('still') in Beck (2016, 2020a) and Kopf-Giammanco (2020), *again* in Pedersen (2015), the modal particle *schon* in Zimmermann (2018) and *wohl* in Grosz (this volume).

   This development relates to another core question in the research on particles: What is the meaning or function of particles? And how do we model those meanings? There is a long tradition in German linguistics that investigates particles, especially modal particles, see amongst others Weydt (1977), Thurmair (1979), Meibauer (1994); Ormelius-Sandblom (1997); Authenrieth (2002); Coniglio (2012) and Müller (2018). Many observations, generalizations and fine-grained descriptions of different uses go back to this tradition and form the empirical basis of current research. More formally oriented approaches have initially concentrated on focus particles and their interaction with focus (see Rooth 1985, 1992), and shifted their focus to modal particles only with the work by Kaplan (2004) and Kratzer (1999). And this for good reasons. First, the semantic contribution of focus particles like *nur* ('only') is intuitively quite accessible. Second, the semantic contribution of focus particles like *nur* ('only') has an impact on the truth-conditions of sentences, and thus affects the descriptive meaning.

(5)   Only XAVER was invited to the party.
   a.   Presupposition: Xaver was invited to the party.
   b.   Assertion: No salient alternative to Xaver was invited to the party.

This is different with modal particles. Consider the modal particle *halt* in (6). Descriptively, (6) tells us that Xaver is always a bit difficult. What *halt* communicates is that the speaker thinks, e.g. with some resignation, that there is really nothing we can do about it. However, what the speaker thinks about Xaver being always a bit difficult does not affect the fact that Xaver is always a bit difficult. If it is true that Xaver is always a bit difficult, then (6) is true, too. And if it is false, then (6) is false, too. To put it differently, (6) has exactly the same truth-conditions as the sentence *Xaver ist immer etwas schwierig* without the modal particle *halt*.

(6)   Xaver ist halt immer etwas schwierig. ('Xaver is PART always a bit difficult')

Conventional meaning, that does not contribute to the truth-conditions of a sentence, is called a conventional implicature in Grice (1975). In the more recent literature, the term *expressive meaning* is frequently used (essentially following Kaplan 2004). This term contrasts with the term *descriptive meaning*, which refers to aspects of conventional meaning that *do* contribute to the truth-conditions of a sentence. It is in no way obvious how to deal with expressive meanings in a model-theoretic semantics. This is where Kaplan (2004) comes in. Kaplan (2004) generalizes the notion of truth to the notion of correctness and distinguishes *descriptive correctness* (what is described is the case) from *expressive correctness* (what is expressed is correct), a distinction that presupposes two different *modes of presentation* of information, namely a descriptive mode and an expressive mode. The information presented, be it descriptive or expressive, is identified with the set of contexts in which the relevant expression is used descriptively or expressively correct. This way, Kaplan (2004) paves the way for a formal use-conditional semantics of expressive meanings as spelled-out in Potts (2005, 2007), McCready (2012), Gutzmann (2015, 2019). In the spirit of Kaplan (2004), Kratzer (1999) describes the expressive information conveyed by the German modal particle *ja* in a situation-based semantics. This line of research focuses on specific properties of expressives, in particular the fact that expressive meanings typically operate on descriptive meanings, but not the other way round (which is why, as already Kaplan 2004 observed, expressive meanings cannot be negated or conditionalized). Another focus is on the way modal particles operate on and change the context of an utterance in terms of Common Ground management (see Krifka 2008 for the term, and Repp 2013 for discussion). For example, in a sentence like Xaver *ist doch zurückgetreten* ('Xaver has resigned') the modal particle *doch* can be described as reminding the addressee of the fact that the proposition that Xaver has resigned is already part of their Common Ground (CG) in the sense of Stalnaker (2002), see Schmerse et al. (2014). Similarly for the

modal particles *ja*, see Fischer (2007); Zeevat & Karagjosova (2009) and *schon*, see Zimmermann (2018). This shift in perspective also justifies the current use of the term *discourse particle* for expressions that are traditionally called modal particles, see also the discussion in Diewald (2006). It should be noted that while this perspective does not easily generalize to all modal particles in German, Zimmermann (2004), for example, argues that the particle *wohl* is better treated as weakening the proposition it operates on. This suggests that one needs to distinguish two kinds of modal particles, modal particles like *doch* which relate the proposition they operate on in one way or another to the Common Ground, and modal particles like *wohl* whose primary function is to modify the proposition or the illocutionary force of the utterance and to (more directly) express a speaker's attitude, see e.g. Zimmermann (2004); Repp (2013); Gutzmann (2015) and Gutzmann & Turgay (2015) for relevant discussion.

3.   Diachronic aspects

In this section, we offer a brief background discussion of certain essential facts in the diachrony of particles, by focusing on German in exemplary fashion. We take this to be the appropriate counterfoil against which other discussions can be conducted in an informed fashion due to the strong focus in the particles literature on German modal particles and because we do not want to assume that the historical facts are always well-known in this area outside of the German literature. (For the history of particles in English, cf. van Gelderen 2001; Lenker 2010, van Kemenade, this volume, and references cited there.)

The different classes of particles in German, such as e.g. modal particles, focus particles etc. in their current form were not part of the German language system to begin with. Rather, we can observe their development over the history of German from its very (attested) beginning. The earliest stage of German had only few particles in the sense in which we use the term in Modern German, and it is questionable whether they were particles or rather some sort of adverbials. This is hard to distinguish in historical texts, as one important characteristic many classes of particles (such as modal particles) share, the impossibility to stress them, is not visible in the texts. Another feature that distinguishes particles from adverbs, the phrasal status of adverbs versus the non-phrasal status of particles, is not conclusively discernible, because the only secure hint to phrasal status, the lone positioning of the element in question in the prefield, potentially fails for older stages of German, as the verb-second constraint was not as rigid as it is in Modern German (e. g. Axel 2007; Axel-Tober 2018). Therefore, the evidence is notoriously inconclusive. Keeping this in mind, we can still assume that Old High German featured two modal particles, the predecessors of *denn* and *doch*, in Middle High German

halt was added, and the development of modal particles gained momentum only after the 16th century (Abraham 1991; Molnár 2002).

The particles, as we observe them today, are mostly the outcome of grammaticalization processes (Abraham 1991; Molnár 2002). Grammaticalization is here understood (s. Eckardt 2012) as a conspiracy of changes, a semantic change ("bleaching") that slightly precedes or goes hand in hand with a syntactic change; either the recategorization of (head) elements into a more functional category, or the reanalysis of a phrase to a functional head. The syntactic change is often accompanied by a phonological reduction process of the grammaticalised element. Zeevat & Karagjosova (2009) describe the process in more detail. The conditions under which the grammaticalization process can take place are (a.) that the source word weakly entails the target use, (b.) that non-recognition of the target use leads to communicative failure, (c.) that not expressing the target meaning is overwhelmingly interpreted as excluding the target use.

The source words for the grammaticalization processes are manifold (see e.g. Hentschel 1986; Molnár 2002; Diewald 2011), it is, however, to be noted that particles *stricto sensu* tend to be recruited from words whose meaning is already mostly functional and are, only to a slight degree, conceptual. In the case of *doch* (see Hentschel 1986; Zeevat & Karagjosova 2009), for instance, the etymology is a combination of the demonstrative stem *to-*, a question marker *–u* and an emphatic marker *–h*, giving an original meaning something like '(Really) *that*?'. Note that all of these components are of a functional, non-conceptual nature to begin with and in themselves the product of grammaticalization, which occurred so long ago in the Proto-Indoeuropean prehistory that the source words are totally opaque. But sometimes we find examples whose source word is conceptual and whose grammaticalization history is transparent, e.g. the modal particle *eben* (e.g. Das ist eben so – 'that's how it is') via the temporal adverb *eben* (*Sie ist eben angekommen* – 'she arrived just now') from the adjective *eben* 'flat' (e.g. Molnár 2002).

Characteristically, particles are first grammaticalized for one special function (in the case of e.g. *doch* the corrective use) and spread to other usages as well (in the case of *doch* e.g. the proconcessive use, see Zeevat & Karagjosova 2009). This accounts for the startling polysemy of particles. The particle *ja*, for instance, functions, among others, as an answer particle (*Hast du das verstanden? – Ja*. 'Did you understand this? – Yes.'), as a discourse particle (*Ich habe das gelesen, ja sogar verstanden.* – 'I read this, even understood it.') and as a modal particle indicating that the proposition is assumed to be in the Common Ground (*Wir haben das ja alle schon gelesen* – 'We all have read this already, for sure.'). This particle underwent grammaticalization long ago, and had enough time to develop this abundance of usages (s. e.g. Hentschel 1986), which display different fossilised stages of its grammaticalization (Diewald 2011). In cases in which the whole development history

is observable, we see a gradual loss of conceptual meaning and, at the same time, a permeation from lexical, open-class parts of speech such as noun, adjective via more functional parts of speech such as adverbs to particles. This pathway is typical of grammaticalization, which renders the development of particles a textbook example of grammaticalization processes (e.g. Ferraresi 2014). It is, however, to be asked, in what ways the advent of modal particles in particular and of other classes of particles in general is really a prototypical process of grammaticalization. What distinguishes the grammaticalization process of e.g. modal particles is that the semantic change involved could not be mere "bleaching", but arguably rather a subjectification process, i.e. the development of meanings "that encode or externalize their perspectives and attitudes as constrained by the communicative world of the speech event" (Traugott & Dasher 2002: 30, more detailed on subjectivization Smirnova 2012). As in the case of e.g. particles the outcome of the grammaticalization process induced by subjectification is not an exponent of a grammatical-functional feature such as e.g. tense, but rather (a) an exponent of the speaker's attitude and (b) an element with a clearly pragmatic function, it was suggested to term this development pragmaticalization instead (see e.g. the discussion in Diewald 2011, who argues against this distinction).

4.   Contrasting and comparing towards explanatory building blocks

4.1   A contrasting paradigm

Semantic comparative work which considers the interfaces of meaning is usually faced with a dilemma: both universality and points of serious divergence in meaning are hard to show. There is a strong view, for instance, that semantic concepts are universal and there should be no place for significant semantic variation between languages at all (cf. e.g. Chomsky & Lasnik 1993, among many others). In this view, variation can be relegated to the structural or morphosyntactic component (whether as parameters, features, or completely otherwise – this need not concern us further right now). Interestingly, the view from the pragmatic angle of meaning is not considerably different. The standard assumption, here too across many frameworks, is that general pragmatic principles on a fundamental level are universal, including on a diachronic dimension (cf. e. g. Traugott 2019). At the same time, there have been several empirical and theoretically anchored attempts in recent decades that have pointed to the conclusion that some aspects of fine-grained but not-trivial variation may exist (cf. Chierchia 1998; Matthewson 2001; Beck et al. 2004, 2009, Kennedy 2008, among others). In fact, some of the work searching for deeper semantic *universals* ends up with listing interesting points of *variation*

(see von Fintel & Matthewson 2008; Beck 2020b for recent discussions and several additional pointers). Where the point of variation is exactly located depends still to a large degree on the specifics of each phenomenon and sometimes the approach chosen. But the very possibility of some non-trivial divergences in the meaning component is significant. This currently seems to go beyond the meaningful and equally interesting distinctions that can be tied to the way the languages of the world may split the cake when it comes to the negotiation of meaning-form correspondences. Thus, meaning components that have to do with the notion of Common Ground and presuppositions have also been claimed to be subject to cross-linguistic variation; see Matthewson (2006).

If we try to apply the dichotomy just sketched to particles, we can observe that both points of fine-grained differentiation and the quest towards generalizations (up to universal ones) must have a certain appeal, in that certain types of particles appear to be quite idiosyncratic (as the modal ones found in German(ic)), while others are frequently found well beyond German(ic) (such as e.g. the focusing type). The papers of the volume reflect this two-pronged general space of possibilities. If one then further wonders, as for instance Deo (2015) or Grosz (this volume) do, about a possible universal functional repertoire, and then tries to reconcile it with the presence of sometimes highly idiosyncratic features in modal particles, then an interesting balancing act towards the description of new facts and ideally the broader explanation thereof may ensue. We, therefore, turn directly to the papers of the volume.

4.2   The contributions of this volume

In this section, we offer brief previews of the individual articles of the volume. We decided not to group the papers according to the grammatical aspect discussed (syntax, semantics, usage etc.), but rather into a threefold division according to the representative languages that have been at their center, i.e. German, English, and – crucially: others. We wish to stress that the category 'others' (or 'beyond' in the title of the volume) is not a residual one and much less a dustbin, but rather where we see that much of the action takes place in terms of current revealing particles research. Here, too, we must note that the overwhelming majority of the papers do not stay within the confines of analyzing one language, but that they compare languages (or stages of languages) directly or indirectly.

4.2.1   *Papers with their main focus on German*
Within the articles that focus exclusively on German, Eberhardt's and Schmidt's are corpus studies that include diachrony at different stages of the language, while Butschety's is a synchronic one.

Eberhardt's contribution is concerned with German focus particles, specifically of the scalar type and in a diachronic process crystalizing around 1600. She claims to uncover a new developmental path originating from an intensifying particle. The syntax-semantics interface turns out to play a major role, which is buttressed with interested corpus findings. While the starting research question is semantic in nature, Eberhardt finds critical contexts of change of two types, specifically with a syntactically motivated one figuring prominently alongside a perhaps more expected semantic type. As already mentioned in the first section of our introduction, the contribution could be particularly relevant for researchers on language change because it points out several connections and diachronic possibilities beyond the classically established ones. Intriguing questions arise as to how one could derive smaller building blocks that can be observed at work cross-linguistically. Eberhardt shows, for instance, that the two classes of particles she discusses share a reference to scalarity. In the case of intensifying particles, they denote that the entity in their scope is in a high position on a salient scale, while focus particles include focus alternatives and order them on a scale. This semantic bridge then makes the classes involved prone to reanalysis.

The contribution by Schmidt is concerned with the development of intensifying particles in German in the last 70 years. The hypothesis by e.g. Biedermann (1969) that a rise in frequency of intensifiers leads to loss of expressivity (an inflationary process) and consequently to a declining usage of a given intensifier, since it lost its expressive function, are scrutinized using a German newspaper corpus spanning seven decades. The principal distinction between descriptive and expressive meaning is matched by two classes of intensifiers, purely descriptive ones such as Modern German *sehr* ('very') and expressive ones such as e.g. *wahnsinnig, derb, krass* (literally 'crazy', 'bawdy', 'gross', in function like 'awfully' and the like). The semantic development is to be seen from the expressive to the descriptive class, with only *sehr* having completed the developmental process. She distinguishes four classes of expressive intensifiers that are distinguished by their change in frequency, among which are also some (e.g. *hammer*) that originated only in the investigated time period. A hierarchical cluster analysis that took the frequencies as basis led to semantically rather homogenous groups. The study finds no support for Biedermann's hypothesis.

The German particle *auch*, 'too', on its non-scalar additive reading is at the center of Butschety's paper. Her testing stone are sentences with a quantified nominal phrase and an additive particle together with a non-quantified nominal in apposition to it. The suggestion of the author is that the nominal argument should be a subset of the intersection of the quantifier's restrictor set and its nuclear scope, where significant assumptions at the syntax-semantics interface must be made. While Butschety does not address other languages or other stages of the language, this raises interesting comparative considerations regarding an otherwise often

studied item. Should the modeling turn out to be interesting for readings of the German additive, then the question arises: to what extent and alongside which criteria is such a (putative) generalization subject to cross-linguistic variation? In which other languages could similar effects occur, i.e. so that the appositive nominal must be understood inclusively (or not)? The question is a primary one, as additive particles are particularly widely attested cross-linguistically. But follow-up comparative questions could include, for instance, whether the modeling of the modal particle readings (in German or in those languages in which such readings exist) could also profit from such views as the one proposed in her article (cf. e.g. Cognola et al, this volume, for an illustration how a relevant Italian particle also allows different and partially similar readings).

4.2.2   *Papers with their main focus on English*

The three papers that have a major focus on English in terms of their empirical coverage are all corpus-based and all share a contrastive orientation. This is most clearly visible in Gast's contribution that is originally based on a translation corpus and investigates the English counterparts of the German particle *ja*. Van Kemenade's as well as Puhl & Gergel's study the English particles *then* and *though*, respectively and are both to be viewed against the old-standing debate to what extent English at various stages has (or does not have) particles such as those found in languages like German.

Gast's article takes a prima facie classic approach as far as the English-German dichotomy is concerned, but it offers a data-rich scrutiny of possible English correlate expressions for the German modal particle *ja*. The key point is that functional equivalence is specifically searched for. Under this strong premise, none of the expressions studied are found to be equivalent to *ja*, even if their communicative effects are claimed to be similar under specific circumstances. The main generalization proposed is that there is a categorical difference in the use conditions of *ja* and the English expressions under study. It is proposed that *ja* does not establish a speaker's commitment to the truth of a proposition, but it presents a proposition as uncontroversial (ratified) information from the Common Ground. By contrast, all the English expressions studied are claimed to establish some type of epistemic commitment.

Van Kemenade studies the course of the discourse particle Modern English *then*, Old English *þonne*, spanning the whole attested time period of English. This development is related to the development of the English clause structure, which underwent a change from a special version of the Germanic verb-second-syntax to its Modern strict SVO-structure. Notably, the position of *then* changed during that time from a position after the finite verb, with pronominal subjects potentially intervening (quite comparable to the position of modal particles in Modern German

or Dutch), to a clause-peripheral position. The adverb *þonne* in Old English is in complementary distribution with *þa*, the former being used in questions, imperatives and conditionals, that is: environments in which truth conditions are unrealized, suggesting that it indicates non-factuality. Its position after the finite verb is seen as head of a Particle Phrase. In the further course of the history of English, with the loss of V-to-C and V-to-T-movement, and the subsequent loss of PartP, other positional variants of the particle (that is: clause-peripheral) were resorted to keeping the pragmatic value of the particle stable.

Puhl & Gergel follow a similar line of thought while studying the final particle *though*, primarily (but not exclusively) from a synchronic perspective. The proposal of this contribution is that English has items that can be identified syntactically and pragmatically as particle-like, but English lacks the middle-field syntax available in German. Capitalizing on the final position is a way in which certain use-conditional functions can be produced in a systematic fashion. An experimental study is conducted indicating that *though* is permissive outside of concessive contexts. The focus of the study is placed on corpus examples, which have remained unaccounted for in previous approaches. A descriptive generalization is proposed in terms of noteworthiness and an initial modelling in terms of a split notion of Common Ground following a suggestion made in Bar-Asher Siegal & Boneh (2016) in a different domain.

4.2.3 *Further contrastive studies and papers primarily concerned with particles in other languages*

While in fact all of the papers of this section are contrastive to some degree, the first four we will discuss have contrastivity as a main defining feature on their agenda. The latter two are focused more specifically on interesting and controversial items from different languages without carrying out larger cross-linguistic investigations; crucially, however, important and, we believe quite revealing, cross-linguistic comparisons are drawn in the latter two contributions as well. The first group consists of the articles by Cognola, Moroni & Bidese, by Grosz, by Modicom, and the one by Trotzke & Haegeman. The second one of the articles by Erlewine and Gyuris, respectively.

The paper by Cognola, Moroni & Bidese compares the two lexical items German *auch* and Italian *anche* ('also'), which show startling similarities. They both share a common basic semantics connected with the notion of addition on different levels, and consequently exhibit three functions, that of an additive particle, a connective adverb, and a modal particle, which is the more striking as the fact that modal particles exist as a class in Italian has only become known quite recently. As the German modal particle *auch* is much less restricted with respect to illocutionary forces it is compatible with its Italian counterpart *anche*, the authors see this as

an indication that these particles differ in their respective structure, Italian *anche* being a polarity item (implemented as being a functional head in the scope of an operator in PolarityP, a functional projection in the C-domain), whereas German *auch* is not a polarity item.

Grosz starts out from the observation that German *wohl* 'well', Norwegian *vel* 'well' and French *bien* 'well' have been claimed to have a modal particle reading that roughly amounts to 'surely, probably, I guess' (Zimmermann 2008, Fretheim 1991, Detges & Waltereit 2009). While the investigation is carried out mostly synchronically, the key question raised by Grosz is a genuinely diachronic one; namely, how such a reading could have arisen from the source meaning of these elements. An analysis of *wohl*-type (i.e. 'well'-type) modal particles as scalar operators is proposed, which is based on the observation that each of them appears to have diachronically gone through an intermediate stage in which it was a scalar modifier (namely *wohl* 'approximately', *vel* 'approximately, more than', and *bien* 'very'). The core idea is that while the modal particle variant is still a scalar operator, it has evolved through a shift in the type of scale that the particle operates on. This leads Grosz to propose that *scalarity* is a common meaning atom when it comes to the construction of meaning in *wohl*-type particles.

The role of scales also turns out to be eventually instrumental in Modicom's contribution. The empirical ground covered in this case is the behavior of modal particles in non-standard questions such as rhetorical and surprise-disapproval questions in French in comparison with German. The overarching background is the hypothesis that modal particles are illocutionary type modifiers. Specifically, the behavior of the French candidates *bien, diable and donc* is interpreted in the light of Bayer & Obenauer's (2011) proposal for German non-standard questions with some extra attention being paid to the "Small PrtP construction" where the particle combines with a *wh*-item. Out of the three candidates, *bien* is considered closest to modal particles. And diachrony looms in this contrastive contribution as well: Modicom looks at a specific path of pragmaticalization for particles in non-standard *wh*-questions, i.e. a potential case of poly-grammaticalization and pragmaticalization is discussed. He claims that the three items have other uses outside of interrogatives where they either interact preferably with items denoting sets of alternatives, or where they are used to mark the high degree of a quality or the atypicality of an entity. From these usages, he proposes to derive the semantic value associated with each particle in non-standard questions. The conclusion drawn: sensitivity to scales and sets of alternatives is seen as a major player in the rise of illocution-modifying particles in *wh*-questions in this contrastive account as well (recall e. g. Grosz's point).

Finally, in the group of explicitly contrastive papers, Trozke & Haegeman's shows the value of careful – this time primarily syntactic – inquiry on the properties of a

language specific item that can be revealing when contrasted with a better-known candidate (such as German *denn*). The overall claim of the paper, substantiated on the basis of Dutch, is that discourse particles can not only appear at the structurally high sentential level of the CP, but also inside prepositional phrases. The item this is exercised on is Dutch *dan*, which can receive a non-temporal interpretation, and in this reading is claimed to appear as a functional head inside a complex PP constituent. The direct comparison drawn is with the German cognate *denn* and the role the latter plays at the level of the CP. The proposal made is that both cases can be analyzed along the same lines because they express the same abstract discourse function. In the authors' view, both PP-internal *dan* and German *denn* are discourse-navigating devices that link 'a ground' to 'a figure'. The cross-linguistic difference is here relegated to their semantic domains of application.

Turning to the contributions focusing on specific languages, Erlewine's is one of the good examples of illustrating how the contrastive turn can also impact language-specific analyses. The focus here is decidedly set on the focus marker *shì* in Mandarin Chinese, for which three constraints are proposed. First, that the particle adjoins as low as possible; second, that it requires a congruent Question under Discussion (cf. e.g. Roberts 1996 and Reich 2002 for further discussions); and third, that reference to a Question under Discussion is mediated by a functional head in the clausal periphery. The latter constraint is suggested to account for the incompatibility of *shì* with certain reduced clauses even though 'only' can occur in them. Interestingly, Erlewine indicates how the paper relates to exhaustivity markers of different types in English, German, and Vietnamese.

Gyuris's contribution makes a very similar point – that is, on a general level of observing the combination of language-specific investigation with implication for contrastive studies – but with an item that is much closer to modal adverbs and particles rather than a focus particle, namely Hungarian *talán*, 'perhaps'. While the item had previously been treated as an evidential marker, the current paper proposes a unified account of its denotation in declaratives and polar interrogatives encoding assertions and questions. In addition to its inferential properties, the item is thus claimed to refer to the current Question under Discussion, which in turn is suggested to be derivable from the information structure of the declarative or interrogative in which it surfaces. Careful readers may remember that German *wohl*, 'perhaps', also has components of meaning that are inferential and modal-particle-like properties at the same time. An interesting difference, however, between Hungarian *talán* and German *wohl*: the former (unlike the latter) does not appear to participate in the so-called 'interrogative flip'.

Overall, the gist of the mostly contrastive and comparatively oriented work presented in the volume – whether the most direct comparison available in each case is with other languages or stages of a language – consists in finding, or refining,

relevant building blocks and mappings between form and meaning when it comes to the characterization of particles. A key generalization that emerges is that in most of the papers it has proven particularly fruitful to consider both morphosyntax and the semantico-pragmatic component, no matter how the individual weighting and technical implementation has been proposed in each case. We take it to be a real advantage when experts on morphosyntax consider conditions of actual use and, vice-versa, when e.g. semanticists (even if this should not be too surprising in the compositional paradigm either) scan the structural environment of particles rather closely.

The close observation of the partition between German, English (as a diametrically different representative of Germanic in some of the pertinent respects), and other languages has turned out to be particularly beneficial as well. Building on mountains of earlier literature on particles (only a fraction of which we have been able to briefly review above), the papers of the volume also show a simple but important point: that the field has been making some good progress. Notice, for instance, that nobody needs to still show today that German has a class of grammaticalized modal particles with clear meaning and especially with its structural correlates. Thus, given that important structural facts are already in the scientific Common Ground, a further generalization is that it has become an increasingly productive enterprise to consider different aspects for instance of the Robertsian Question under Discussion and precise conditions of use for each particle/adverb under scrutiny. Time will have to tell, whether this also leads to further and higher-level generalizations, but a diversification and precisification, including of the tools used in the field, can already be observed today.

Furthermore, while the contributions that are specifically focusing on German happen not to be concerned with modal particles in a narrow sense (but rather with interesting phenomena concerning additive, scalar, and intensifying uses of particles), the clear delimitation of the class available from German has proven to be very fruitful in multiple ways in our volume, too. For example, both the Anglicist and the more widely comparative camp operating in it have been able to capitalize on the class(es) of particles known from German in order to show interesting contrastive points. And, as, for example, Grosz's contribution shows, the final word on the pragmatic-semantic atoms of modal particles – even in the case of German and partially similar languages – still remain a worthy scientific goal; reasonably a step closer, but also quite reasonably not having yet been fully attained.

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From up-toning intensifying particle to scalar focus particle

A new developmental path

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The paper proposes a new developmental path from *up-toning intensifying particle to additive scalar focus particle* based on a diachronic corpus analysis of the German focus particles *zumal* 'especially', *gar* 'even', and *sogar* 'even'. The meaning shift took place about 1600 and was facilitated by shared morpho-syntactic and semantic properties of the source and target meanings. Critical (ambiguous) and isolating contexts play a crucial role in the study. The data indicate the occurrence of two types of critical contexts, a syntactically motivated one and a semantically motivated one. Furthermore, the new developmental path is argued to follow a general cross-linguistic tendency of additive scalar focus particles to develop from scalar expressions in a broader sense.

Keywords: diachrony, intensifying particle, focus particle, German, critical contexts, isolating contexts, degree semantics, scalarity, gradability

1. Introduction

As part of this general volume on particles, this diachronic paper is concerned with two types of particles. It presents a new developmental path from an up-toning intensifying particle as the source meaning to an inclusive (additive) scalar focus particle as the target meaning. The path is based on the historically relevant semantic ambiguity of the two particle types (i.e. scalarity and alternatives), and on the overlapping of their morpho-syntactic properties. The investigation considers three German cases, *zumal* 'in particular', *gar* 'even', and *sogar* 'even', which developed the focus particle meaning from the original intensifying meaning 'very', 'completely' around 1600. To my knowledge, there is as yet no description of this developmental path from up-toning intensifying particle to scalar focus particle, although it is in accordance with a general diachronic tendency in the formation of additive scalar focus particles, as will be seen in Section 5.

The path as postulated in this paper differs from the reanalysis of intensifier *selbst* 'N-self' to focus particle *selbst* 'even' described in Eckardt (2001, 2006). The crucial difference is that intensifying *selbst* associates with non-scalar DPs. Furthermore, it is obligatorily stressed, always appears right-adjacent to its associated phrase, has centrality effects in its semantics, and involves "no-surprise" cases – (1). In contrast, the path described here involves intensifying particles or degree adverbs such as *very* or *pretty* which refer to scalar AdjPs, AdvPs, or VPs. Confusingly, both word classes are sometimes referred to as intensifiers.

(1) Der König selbst   trug eine Krone.   (Eckardt 2001: 376)
     the king   himself wore a   crown

The diachronic and synchronic data used here come mainly from the DTA-Corpus (1500–1970), but also from the MHDBDB (Middle High German (MHG) texts, 1050–1350), the Bonner Frühneuhochdeutschkorpus (Early New High German (ENHG), 1350–1650), and COSMAS (New High German to Present-Day German, mostly newspaper articles), as well as from dictionaries such as the DWB or the DWDS.

In the following, I will first describe the stages of meaning change in general. Here I borrow the terminology of critical and isolating contexts from Diewald's (2002) model of stages in grammaticalization processes. In Section 3, I will then discuss the overlapping morpho-syntactic and semantic properties of intensifying particles and additive scalar focus particles, which were necessary for the reanalysis of the three cases discussed in this paper. In Section 4, I will deal with the development of German *zumal* 'in particular', *gar* 'even', and *sogar* 'even' under the aspect of critical and isolating contexts. Section 5 will show cross-linguistically that the described development fits into a more general diachronic tendency of inclusive scalar focus particles to develop from elements which are connected to some form of scalarity.

2.   Stages of meaning change

A meaning change takes place in several stages. In this paper, I use the terminology from Diewald (2002), who distinguishes three main stages of meaning change. These are the stages of *untypical contexts*, in which the use of the sign first expands (a precondition for the change), *critical contexts*, which show structural and semantic ambiguity (triggering of the change), and *isolating contexts*, in which the original meaning is no longer available (the change has been completed).

In contrast to the present paper, Diewald (2002, 2009) hypothesizes that conversational implicatures function as a triggering factor for untypical and critical

contexts. The diachronic scenario we put forward here is not implicature-based. As will be seen later, the proposed change is rather driven by overlapping meaning components as well as overlapping morpho-syntactic properties. In this respect, the new meaning here is a co-meaning product of the original intensifying meaning in untypical and critical contexts.

In the present analysis, a prerequisite for the critical contexts is that the sign in its exact position is semantically, morpho-syntactically, and prosodically ambiguous.[1] Semantic, morpho-syntactic, and prosodic ambiguity is only possible when the source and the target meaning overlap in their respective properties.

One can briefly demonstrate this with the development of the adjective *pretty* 'good-looking' into an intensifying particle 'fairly', 'very'. The atypical context for the adjective meaning is in (2). It shows here "a clear weakening of the 'aesthetic' meaning of the adjective" (Nevalainen & Rissanen 2002: 368). In critical contexts, it can be expected that *pretty* is interpreted both as an adjective and as an intensifying particle on the basis of its semantic and morpho-syntactic properties. Example (3) therefore meets the requirements for the critical context, while (4) does not.

(2) Caste in your colours that   schalbe rede afore   a *prety*   whyle, and…
    throw in your colours so that shall be red   before a pretty while and
    let hem   boyle togedyris.
    let them boil   together   (OED *pretty* adj. 4a Halliwell a1475.
                                            From: Nevalainen & Rissanen 2002: 368)

(3) He cast for to make Withyn his hous   a *praty*   litel cage.
    he planned to make within   his house a pretty little cage
                                            (OED *pretty* adj. Lydgate 1500)

(4) I sende a lytell *praty*   boxe herwith.
    I send a little pretty box herewith
                                            (OED *pretty* adj. Paston 1473)

A clear indication that the new meaning is established is its occurrence in an *isolating context* in which the original meaning is no longer available for semantic or syntactic reasons. An isolating syntactic context for the intensifying particle *pretty* is for example in front of an adverb. Morpho-syntactically, an adjective is excluded in this position, i.e. before the adverb *equally* in (5) or *soon* in (6). Semantic isolating contexts for the intensifying *pretty* are those in which it scopes over elements which semantically contradict the original adjectival meaning 'nice looking', i.e. *pretty hard* in (7) and *pretty ugly* in (8).

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1. Prosodic evidence is, however, not directly accessible in historical sources.

(5)   Parties in Congress are generally *pretty* equally balanced.

(OED *pretty* adv. Bryce 1888)

(6)   *Pretty* soon there will be no updates for this smart phone.

(7)   Boccace is *prettie* hard, yet understood: Petrarche harder but explaned.

(OED *pretty* adv. Florio 1598)

(8)   Miss Trunchbull was terrifying and also *pretty* ugly.

3.   The developmental path *up-toning intensifying particle > additive scalar focus particle*

Intensifying and focus particles overlap in their morpho-syntactic and semantic properties. It is therefore not surprising that we find various examples which can have both meanings. Eng. *particularly* and *especially*, Germ. *besonders*, It. *specialmente*, and Rus. *osobenno* (among others) can have either an intensifying meaning 'to a special degree' or 'very' – (9) or a focus-sensitive meaning 'in particular' – (10).[2] Based on this data, I refer to word classes for which overlapping semantic and morpho-syntactic properties can potentially lead to a reanalysis of one class to another as *word classes prone to reanalysis*.[3]

(9)   In matters of Commerce, he is *particularly* intelligent.   (OED *particularly*)

(10) I shall have occasion to shew more at large, where I come to consider Propositions, and *particularly* those Propositions, which are called Maxims.

(ibid.)

In the following, I refer to a scalar expression in the scope of an intensifying particle, such as *intelligent* in (9), as an *intensified element*. For focus particles, two relevant terms have to be explained here. The *focus phrase* is the part of the sentence which bears the sentence accent and which is "'semantically affected' by a focus particle" (Sudhoff 2010a: 35).[4] Examples (11) and (12) only differ in the respective focus phrases, which result in two different readings. In (11), Maja only hugged Felix

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2.   See also Section 5.

3.   Further examples include 'demonstrative pronoun > relative pronoun', 'adjectives > intensifying particles', or 'adverbs > conjunctions'. This idea is different to the grammaticalization paths described in the extensive work of Heine & Kuteva (2002) which is based on semantic-functional concepts (such as 'ablative > agent' or 'conditional > concessive'). In contrast, the term *word classes prone to reanalysis* mainly refers to morpho-syntactic features of certain word classes pairs in a language.

4.   For *focus phrase* as used here Sudhoff (2010a) uses the term *focus*.

and no other alternative person. In (12), she only hugged him: alternative actions such as kissing him are excluded. The second term concerning focus particles is the *focus domain*, i.e. the syntactic scope of the focus particle which includes "the base positions of all arguments and adverbials except for the sentence adverbials" (Sudhoff 2010a: 21, cf. Drubig 2003: 23).

(11)   Maja only hugged [Felix] F.   (Sudhoff 2010a: 37)

(12)   Maja only [hugged Felix] F.   (ibid.)

The developmental path from an up-toning intensifying particle to a scalar focus particle is easy to demonstrate if we consider the morpho-syntactic and semantic properties of these two particle types. In the following, I will discuss these in more detail.

3.1   Structural properties of intensifying and focus particles

From a morpho-syntactic point of view, both particle types have overlapping properties which favour the reanalysis from an intensifying to a focus particle. They are non-inflectable, can be accented, can co-occur with particles of the same type, can both be omitted without the sentence becoming ungrammatical, and they are both marginally possible in the SpecC position.[5]

The difference between the two particle types concerns their syntactic restriction with respect to the phrasal type of the intensified element and the focus phrase.

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5.   Although relatively rare, both intensifying particles (i) and focus particles (iii) can occur in the SpecC position of the clause. In this position, intensifying particles have to be stressed and cannot take an AdjP or an AdvP as the intensified element – (ii).

(i)   SEHR würde ich mich über   deine Einladung freuen!
       very   would I   REFL about your invitation be.happy

(ii)   *SEHR sind die Häuser hier groß.
       very   are the houses here big

(iii) Der Gemeinderat hat sich über   die aktuellsten Ereignisse im   Streitfall
       the local.council has REFL about the current   events   in the dispute
       um   die Quelle im   Oberhard unterhalten. *Insbesondere* ist [der ganzseitige
       about the spring in.the Oberhard discussed   In.particular is the whole-page
       Zeitungsbericht von   Anfang   Juni] zur   Sprache gekommen.
       article   from beginning June to.the speech come
       'The local council discussed the current events in the dispute about the spring in the Oberhard. *In particular* there was talk about [the whole-page article from the beginning of June].'   (COSMAS, *St. Galler Tagblatt* 1998)

Intensifying particles scope over AdjPs, AdvPs, and VPs.[6] In addition, focus particles scope over DPs, PPs, and CPs (cf. Bayer 1996).[7] Accordingly, DPs, PPs, and CPs are systematically ruled out in the critical contexts. Typically, ambiguous contexts include AdjPs, AdvPs, and VPs.

Furthermore, intensifying and focus particles show differences in the size of their intensified element and of their focus phrase, as well as in regard to their position relative to these elements. As to the size, the intensified element of an intensifying particle is either the VP or the minimal AdjP or AdvP, while the focus phrase of a focus particle is subject to the rules of alternative semantics (see Section 3.2). In the critical contexts, the intensified element and the focus phrase are not necessarily of the same size. It is for example possible for the focus phrase to include the whole VP, while the intensified element is an AdjP or an AdvP contained in this VP.

As far as position is concerned, intensifying particles normally occur left-adjacent to their intensified element (e.g. directly before the AdjP or AdvP and within the DP) – (13). The position of a focus particle relative to its focus phrase is more variable. It can precede or follow it (cf. Reis & Rosengren 1997; Krifka 1999; Jäger 2017) – (14); a position discontinuous with the focus phrase is also possible with some focus particles (cf. Sudhoff 2010a: 60–67) – (15).

(13)   ein *sehr* altes Haus/ **sehr* ein altes Haus
        a   very old   house very an   old   house

(14)   *auch* ein altes Haus/ ein altes Haus   *auch*
        also an   old   house an   old   house too

(15)   [Karotten]_F wachsen hier *auch*.
        carrots   grow   here too

In the case of DPs, focus particles generally precede the determiner, with the exception of cases where they are associated with an adjective or with another AP-internal element (Sudhoff 2010b: 172) – (16) and (17). This (albeit extremely limited) position corresponds to a regular position of an intensifying particle and is

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6.   DPs, PPs, and CPs cannot be in the scope of intensifying particles (cf. de Vries 2010: 47) – (i). Sant (2019) and Beltrama (2016: 230) show examples of intensifying particles in English that modify proper nouns – (ii). Note that *very* can have a focus sensitive reading (cf. particulizer meaning of *even* in Traugott (2006: 346–9)) – (iii).

(i)   sehr heiß vs. *sehr Hitze
       very hot   very heat

(ii)   This bar is {so/very/completely} San Francisco.   (Beltrama 2016: 230)

(iii)   in its very position/its very nature/the very idea

7.   For exclusively adverbial analyses of German focus particles, see Jacobs (1983, 1986), Büring & Hartmann (2001).

therefore one of the possible critical contexts for the reanalysis from an intensifying particle to a focus particle.[8]

(16) Das nur [LAUwarme]$_F$ Wasser   (Sudhoff 2010a: 65, Sudhoff 2010b: 172)
     the   only tepid   water

(17) Schon in Norditalien   ist es der Mafia nicht gelungen, sich   [$_{DP}$
     even in northern.Italy is it the mafia not   succeeded themselves
     einen auch nur   annähernd vergleichbaren Einfluss] wie in Süditalien
     an   even only nearly   comparable   influence as in southern.Italy
     zu verschaffen.
     to acquire
     'The mafia has not succeeded even in northern Italy in obtaining for themselves
     an even nearly comparable influence as in southern Italy.'
                                              (COSMAS, *St. Galler Tagblatt* 1997)

In the case of PPs, the position of the two particle types differs in a similar way: intensifying particles occur within the PP – (18), while focus particles generally occur in front of the PP – (19). The position of a focus particle within the PP is restricted (cf. Bouma, Hendriks & Hoeksema 2007) – (20).[9]

(18) in sehr geringem Grade/ *sehr in geringem Grade
     in very minor   degree very in minor   degree

(19) nur   in geringem Grade
     only in minor   degree

(20) Nach   einem Patent von Prött & Seelhoff bauen Breuer, Schumacher
     according.to a   patent of   Prött & Seelhoff build Breuer, Schumacher
     & Co in Kalk bei   Köln Druckwasserspeicher   mit   Luftbelastung, bei
     & Co in Kalk near Köln pressurized.water.tanks with air.loading   with
     denen die erwähnten Massenwirkungen [$_{PP}$ in nur   geringem Grade]
     which the mentioned mass.effects   in only limited   degree
     stattfinden können.
     occur   can
     'Using a patent by Prött & Seelhoff, Breuer, Schumacher & Co. of Kalk near
     Cologne are building pressurized water containers with air loading in which
     the mass effects mentioned above can only occur to a limited extent.'
                                              (DTA, Fischer 1900: 638)

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8. However, this statement may only apply to the exclusive scalar focus particles. According to Bayer (1996: 62–66), they quantify locally and therefore take an internal DP or PP position before a scalar expression.

    (i) John talked to only THREE girls.   (Bayer 1996: 62)

9. See also FN 7.

We now apply these syntactic properties to the diachronic development from an intensifying to a focus particle. In the contexts just discussed, the ambiguous structures are restricted to contexts such as (17) or (20) or to those cases that do not have an element that disambiguates the two readings. The latter include all contexts of DPs with a covert determiner and AdjPs, as well as cases with scope over a VP.

Additionally, critical contexts arise in co-occurrence with other intensifying particles, as in *gar sehr verdrossen* 'PART very annoyed' (DTA, Rollenhagen 1603: 301). In general, the co-occurrence of more than one intensifying particle seems to be typical for the MHG (1050–1350) and ENHG (1350–1650) periods.[10] This co-occurrence may also have been conducive to the development of new focus particle readings of *zumal, gar*, and *sogar* around 1600. As for the syntactic structure of *gar sehr verdrossen*, the intensifying particle *sehr* is in the scope of the intensifying *gar*, while *verdrossen* is in the scope of *gar sehr*: [[gar [sehr]] verdrossen] (Huddleston & Pullum 2002: 572, from Méndez-Naya 2017: 252). Semantically, this is a kind of function iteration. According to Renz-Gabriel (p.c.), the co-occurrence of intensifying particles is associated with their expressive meaning. Non-expressive intensifying particles do not have this function. If this property already existed in MHG and ENHG, then the intensifying particles would have to be expressive in sequences such as *gar sehr*.

At the same time, expressive expressions tend to lose their expressivity (Keller & Kirschbaum 2000). Méndez-Naya (2017: 268) argues that "the co-occurrence of intensifiers can be connected with semantic-pragmatic attrition, and can be regarded as another way to compensate for the loss of expressivity". In this analysis, intensifier co-occurrence is a typical case of the widely attested phenomenon of accretion, in which elements of the same category are used together. Typically accretion takes place during the period of semantic attenuation of the elements (e.g.

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10. The following examples illustrate the broad distribution of these connections. All words in italics have an intensifying particle reading 'very', 'completely'.

(i) der trunken pfaff *gar   sere* lacht
     the drunk   priest PART PART laughed
     'The drunk priest laughed very much'   (MHDBDB, *Die Rache des Ehemannes*)

(ii) Dez wundert *harte ser*   mich.
      that wonders PART PART me
      'It surprises me greatly '   (MHDBDB, *Garel von dem blüenden Tal*)

(iii) wiewol   ich euch *fast   sehr* liebe
       although I   you$_{pl}$ PART PART love
       'although I love you sorely'   (DWB *fast* Adv. 4a)

(iv) ich bin dem manne *recht sehr* gut,   ob er gleich ein jesuit ist.
      I   am to.the man   PART PART good if he even   a   Jesuit is
      'I am very favourable to the man, even if he is a Jesuit.'   (DWB *sehr* 3)

to compensate for the loss of expressivity) and "play[s] an important role in the development of new grammatical structures" (Méndez-Naya 2017: 267). With the loss of expressivity, the intensifying particles in the structural position in which they have scope over another intensifying particle could easily be reanalysed to a focus particle: [gar [sehr [verdrossen]]].

3.2   Semantic closeness of intensifying and scalar focus particles

In this section, I will discuss semantic overlapping properties of intensifying and scalar focus particles, such as scalarity and available alternatives, which facilitated the meaning change.

The intensifying particles associate with gradable phrases. Gradability itself is grounded in systems of human cognition and thus forms a fundamental component of our comprehension, including such concepts as quantity, size, or temperature. Consequently, there are plenty of linguistic instruments for expressing these concepts. Typically, they include gradable adjectives and adverbs, but nouns and verbs or whole verbal phrases can also be gradable (Ghesquière & Davidse 2011; Filippi-Deswelle 2014). Gradability is an inherent property of such expressions. The scalar model analyses gradable adjectives as abstract representations of degrees of a scalar property (cf. Kennedy 1999). In degree semantics, an unmodified gradable adjective has a non-overt positive form morpheme *pos* which relates the degree of the adjective to a contextually salient standard of comparison (Kennedy & McNally 2005; McNally 2016).[11]

(21) $[[pos(\text{tall})]]: \lambda x \, [\textbf{tall}(x) \geq d_{\text{S(tall)}}]$ (McNally 2016: 461)

Intensifying particles such as *zumal, gar*, and *(so)gar* 'very', 'completely' are one of the linguistic means of determining the degree of the scalar property (cf. Beltrama 2016).[12] As ordered degrees correspond to a scale, an intensifying particle

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11.   An appropriate standard of comparison has to be contextually defined. For example, *Trump Tower is tall* is true for a comparison class which includes all buildings in New York. It is however not true in a comparison set which consists only of New York skyscrapers. For their compositional analysis of *pos*, Kennedy & McNally (2005) use C, a variable over properties of individuals whose value is determined contextually. McNally (2016) uses the function S (standard), which is context-sensitive.

12.   In addition to intensifying particles, there are other ways of linguistic intensification, e.g. affixation (Russian *premudryj* 'very wise' from *mydryj* 'wise'), comparison degrees (Italian *grandissima* 'very big'), or adjective reduplication (Thai *yáak-yâak* 'very complicated' (Iwasaki & Ingkaphirom 2005: 35), Turkish *güzel güzel* 'very nice' (Müller 2004: 37), Russian *bystro-bystro* 'very fast', Italian *bella bella* 'very nice' (Bonacchi 2017: 293)).

determines a certain position on this scale (Kennedy & McNally 2005). Up-toning intensifying particles such as *very* determine a high position on this scale. Formally, *very tall* is the set of all *x* that are tall to at least a degree standard that ensures being salient in terms of height within the group of entities that satisfy the positive form of the adjective *tall* – (22). Accordingly, the intensifying particle *very* in *very tall* determines a salient degree in a set of individuals who already have been contextually defined as being tall and are therefore already salient in respect to the notion of height. Having this in mind, we understand the degree determined by *very* as a second order salience.

(22)   [[very tall]]: $\lambda x\,[\mathbf{tall}(x) \geq d_{\mathrm{S}(\{y:pos\,(\mathbf{tall})\,(y)\})}]$ (McNally 2016: 461)

If we now look at the focus particle meanings of *zumal* 'especially', *gar*, and *sogar* 'even', we see that they also have a scalar meaning. Scalarity here is however of a different nature. Focus particles in general are focus-sensitive and therefore associate with the focus (cf. Jackendoff 1972). According to Rooth (1985), the focused phrase [SUE]$_F$ in (23) not only has its ordinary semantic value [[Sue]]^{o}, but also its focus-semantic value consisting of focus alternatives *Mat, Tom*, or *Anna* of the same semantic type as *Sue*.

(23)   John [VP likes [SUE]$_F$].

Scalar inclusive focus particles like *zumal, gar*, and *sogar* include focus alternatives in the context and order them on a scale.[13] In (24) we understand focus alternatives as a set of salient propositions that include individuals who John likes. Accordingly, the focus particle *especially* gives the proposition *John likes SUE* a special degree of salience in a set of already salient propositions {λxlike(x,sue), λxlike(x,mat), λxlike(x,tom), λxlike(x,anna), …}. We understand therefore the salience through a scalar focus particle as a second order salience.[14]

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13. The origin of the scales is not trivial. What is clear is that scalar focus particles, such as *especially*, associate with a value in a scalar set of focus alternatives. In general, non-scalar focus particles such as *auch* 'too' and *nur* 'only' interact with non-scalar sets (Altmann 2007), which can be pragmatically ordered (Sudhoff 2012; Plank 1979). However, a scalar implicature can also occur without a focus particle – see (iii).

(i)   Diese Frage   ist auch [für ExPERten]$_F$ schwierig zu beantworten.
       this   question is also for   experts   difficult   to answer
                                                                    (Sudhoff 2012: 208)

(ii)   Maria ist Professorin, Peter ist nur   [DoktoRAND]$_F$.   (Sudhoff 2012: 207)
        Maria is professor   Peter is only doctoral.candidate

(iii)   Well, I [passed]$_F$ (Rooth 1992: 82)

14. I am very grateful to Sebastian Bücking for this suggestion.

(24)   John especially [VP likes [SUE]F].

At this point, we come to the relevant semantic overlap of the intensifying and focus particles which led to the developmental path *up-toning intensifying particles > additive scalar focus particles*. As can be seen in Figure 1, both particle types define a smaller set from an already defined (scalar) set. Both particles refer to the upper part of their scales.

x - - - - - - - - - - - - - - - - - - - → y

tall

a.   very tall

p_1 - - - - - - - - - - - - - - - - → p_{10}

salient

b.   especially salient
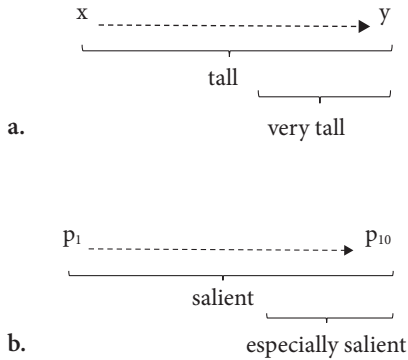
Figure 1.

In a., the scale consists of individuals *x* to *y* who are considered to be tall. The intensifying particle *very* determines an upper part of this scale – a smaller set of individuals whose height is especially salient in the set of tall *x….y*. In b., the scale consists of a set of propositions which are salient for the utterance *John likes SUE*. It consists of a contextually given or pragmatically accessible alternative set. The focus particle *especially* determines a proposition whose truth content is the highest with regard to the phrase *John likes x*. The difference between intensifying and focus particle meaning in Figure 1 is in the source of the scalar meaning. While in a. scalarity is an inherent lexical property of *x…y*, in b., it is not the propositions which are (lexically) scalar but their salience.

Sebastian Bücking suggested the following formal implementation of the idea just sketched: *John especially likes Sue* belongs to the set of propositions that is described by the representation in (25). This set comprises all those propositions that are salient to a degree that ensures outstanding salience within the group of those propositions that are already contextually determined as being salient; plausibly, the relevant set of already salient propositions corresponds to the set of alternatives as determined by focus.

(25) λp ['salience' $(p) \geq d_{S\ (\{p' \,:\, pos\ (salience)\ (p')\})}$]

Notably, (25) is structurally identical to the representation of scalar adjectives with intensifiers as given in (22). The only differences are systematic: the relevant property is not a lexical property such as *tall*, but a functional sentence-level property such as salience; correspondingly, the relevant bearers to be compared are also ontologically different: individuals in the case of *tall* as opposed to propositions in the case of focus alternatives.

From a diachronic viewpoint, we may thus hypothesize that scalarity and the very high position on the relevant scale led to the reanalysis of the intensifying particles *zumal, gar*, and *(so)gar* to the correspondent focus particles. In general, the reanalysis from an intensifying to a scalar focus particle requires less cognitive effort, since intensifying particles are already scalarly evoked.

In this context, the next question concerns the origin of the focus alternatives of the target meaning. The source meaning of an intensifying particle works with a set of ordered degrees which can be seen as alternatives to the contextually given salient degree. Indeed, one can very probably come up with an example in which *in particular tall* has an alternative set consisting of different degrees of *pos* (tall) – with *in particular* representative of a new focus particle reading. However, the more probable scenario includes an alternative set which originates in the activation of related concepts in the conceptual network of the intensified phrase. In psychology, a basic assumption of semantic memory implies that concepts are activated by processing their linguistic counterparts. By processing the word *bus*, the concepts of *car, truck*, or *vehicle* can be activated (cf. Collins & Loftus 1975: 412).

Similarly, in a conversation about real estate, related concepts in the conceptual network of the expression *centrally located* could be concepts which are also related to real estate (e.g. the price, size, ±balcony, ±garden). In (26), some of the concepts related to *centrally located* are already included in the discourse. When an intensifying particle 'very' is interpreted as a focus particle at this position, then the related concepts of the originally intensified element *centrally located* can build the alternatives for its focus semantic value. As in our similar diachronic examples in Section 4, the property *centrally located* is either understood as an especially important property for the speaker in a set of contextually relevant alternative properties – (27) or as an especially surprising property, in the context of surprise – (28). In the first case, the particle can be reanalysed to a focus particle 'in particular' and in the second case, to a focus particle with the meaning 'even'.

(26)   The house is huge, with a nice garden and *very* centrally located.

(27)   The house is huge, with a nice garden and *in particular* centrally located.
{centrally located, not expensive, big, new, with garden, near park, …}

(28)   The house is huge, with a nice garden and *even* centrally located
{centrally located, not expensive, big, new, with garden, near park, …}

The diachronic analysis therefore includes the identification of the intensified element as well as of the focus phrase in critical contexts. However, the focus phrase is normally determined by the prosodic structure of a sentence – a property that is not available in written historical documents. In diachronic language research, the focus structure can be only determined via reconstruction.

3.3   Summary

We just considered the morpho-syntactic and semantic interface of intensifying and scalar focus particles. Morpho-syntactically, both particle types are non-inflectable, they can have partly the same types of syntactic phrases in their scope, and they can appear in the same structural positions relative to their intensified phrase or focus phrase. Semantically, they associate with scales, give a special degree of salience to an already contextually salient set, and share the availability of alternatives.

Table 1 summarizes the data. The overlapping features in the table play a crucial role in the reanalysis of *zumal, gar*, and *sogar* from intensifying to focus particle meaning, as they form the interface required in the ambiguous critical contexts. Differing characteristics (in italics) provide isolating contexts for the new focus particle meaning, which exclude the original intensifying meaning.

Table 1.

		Up-toning intensifying particle	Scalar focus particle
morpho-syntax	inflection	–	–
	phrasal type of associated element	AdjPs, AdvPs, VPs	AdjPs, AdvPs, VPs, *DPs, PPs* and *CPs*
	position	normally preceding their intensified phrase	normally preceding their focus phrase (*post-* and *distance-positioning* are possible)
semantics	association with	gradable elements	with focus phrase (gradable and *non-gradable*)
	alternatives	available alternative degrees	available alternative set
	scale consisting of	scale through ordered degrees of a scalar property	scale through ordered alternative set
	position on the scale	determine a high position on this scale	determine a high position on this scale
	a special degree of salience to already contextually salient set of	individuals	propositions

4.   The development of *zumal, gar*, and *sogar* in German

In modern German, *zumal* 'in particular', *gar* 'even', and *sogar* 'even' function as focus particles.[15] Semantically, they are very similar, as all three of them are inclusive and scalar. The difference though is that the scale of *gar* and *sogar* additionally has a special feature as it marks the focus phrase as less expected. For this reason, their scale is usually referred to as a scale of likelihood or a scale of surprise (cf. Eckardt 2001). As an anonymous reviewer notes, Zeevat (2009) assigns expressions like *even* to the mirative markers. According to him, "a mirative marker indicates that whatever it marks is surprising" (Zeevat 2009: 121). Syntactically, all three particles behave as shown in Table 1. The particles differ however in their distribution. *Zumal* 'in particular' has "a slightly archaic character and tends to be restricted to written language" (Eberhardt 2017: e81). *Gar* 'even' has been largely displaced by its equivalent *sogar* 'even'.

In the following sections, I will discuss in more detail the development of the three particles from their original intensifying meaning 'very', 'completely', which took place around 1600 in all three cases. The change occurs on the basis of the shared characteristics of intensifying and focus particles such as gradability and scalarity, availability of alternatives, and shared morpho-syntactic features.[16]

4.1   The particle *zumal* 'especially'

In the period between 1100 and 1800, *zumal* functions as an intensifying particle: 'very', 'to a great extent' (cf. Eberhardt 2017: e78–9).[17] Its intensified elements are

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15. With the exception of *gar*, which is used in standard German as a negation intensifier and in some regions has retained the original meaning as a universal intensifying particle (see Section 4.2).

16. As an anonymous reviewer has correctly pointed out, the actuation of change in *zumal, gar*, and *sogar* involves more factors than just these shared features (cf. Weinreich, Labov & Herzog 1968 on *actuation*). The main argument is that although plenty of intensifying particles have these features, not all of them develop into a scalar focus particle. Still, the proportion of intensifying particles in German which have developed into focus particles just reflects the proportion of the usually restricted number of focus particles in a language compared to the usually numerous intensifying particles (Gast & van der Auwera 2011 and Schmidt this volume).

17. In Old High German (OHG, 750–1050), *zumal* was a temporal adverbial PP *zu male* 'at this time' – (i). In MHG (1050–1450), it underwent univerbation and developed the temporal meaning 'at once', 'simultaneously' – (ii), before it became an intensifying particle.

(i)   Fóne déro sêlo uernúmiste. íst nû   *ze mâle* gnûge geságet.
       about this soul noblest   is now to time enough said
       'At this point, enough has been said about the most noble soul.'

                                    (Notker 1975: 5; 10th c.) (Eberhardt 2017: e77)

scalar AdjPs – (29) and less frequently AdvPs – (30). VPs as intensified elements are extremely rare – (31).

(29) da es zytt was schlaffen zu gan da   legten sie   vn in ein *zumal*
    as it time was sleep   to go then laid   they him in a   PART
    schön Bett, als ob konig Artus   daroff ligen solt
    nice bed as if king Arthur on.it lie   should
    'As it was time to sleep, they laid him on a very nice bed, as if King Arthur
    should lie on it.'   (MHDBDB, *Lancelot II* 15th c.)
    ~ 'very nice'[18]

(30) Ich wil   uch   *zumal* gern   herbergen
    I   am.willing you.pl PART   willingly accommodate
    'I am very willing to accommodate you.'   (MHDBDB, *Lancelot II* 15th c.)
    ~ 'very willingly'

(31) Zu der zeit seiner gepurdte do   het unart   ir   schanz
    at the time of.his birth   then has discourtesy her game
    zumal verloren.
    PART   lost
    'At the time of his birth, the discourtesy lost the game completely.'
                                  (MHDBDB, *Lannzilet* 15th c.)
    ~ 'completely lost'

From about 1600 on, *zumal* appears in ambiguous *critical contexts* in which the 'old' and the 'new' meanings overlap. In (32)–(36), it can be understood either as an intensifying particle 'very' or as a focus particle 'in particular'.[19] As shown in 3.2, the shared semantic properties motivate the meaning change. Accordingly, the intensifying particle in (32) determines a salient degree of the adjective *gutig* 'kind' within the group of entities that satisfy the positive form of the adjective *gutig*. The focus alternatives of the target meaning 'in particular' result partly from the related concepts of the conceptual network of the word *gutig*: {'conscientious, friendly,

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(ii) do   begunde sie   zv betene. do   vil der tempel dar nyder vn zvsluk   den
    then began   they to pray   then fell the temple down   and destroyed the
    apgot *zvmale*.   (Hermann von Fritzlar 93r; 14th c.)
    idol simultaneously
    'Then they began to pray. The temple fell down and destroyed the idol at the same
    moment.'   (Eberhardt 2017: e77)

18. The interpretations with "~" are intended to allow a better understanding of the historical material and are not claimed to indicate an exact semantic or syntactic value.

19. As expected from *the layering principle* in grammaticalization, the original adverbial meaning 'simultaneously' is also available at this time (cf. Hopper 1991).

faithful, attentive, kind, …'}.[20] The related concepts, being scalarly ordered, satisfy the preconditions for the reanalysis to a scalar focus particle meaning.

(32) Guter gewissen, freuntholt, trewe, gewar   vnd *zumal* gutig was sie gen
      good conscience friendly   loyal attentive and PART kind was she to
      allen lewten.
      all   people
      'She was conscientious, friendly, loyal, attentive and PART kind to all people.'
                                          (MHDBDB, Johannes von Tepl 15th c.)
      ~ 'very kind'
      ~ 'in particular kind'

(33) Vnd den selbigen [= mancherley versuchung] zuo widersteen/ sint
      and the same   diverse   temptations to resist   are
      zuo male nütz die tugend mit dem andechtigen gebet
      PART   useful the virtues with the devout   prayer
      'And to resist the diverse temptations, virtues with devout prayer are PART useful'
                              (DTA, *Der Fußpfad zur ewigen Seligkeit.* 1494: 43)
      ~ 'very useful'
      ~ 'in particular useful'

(34) Vnd war nicht ohne/ weil   er sich   mächtig wohl außgerüstet
      and was not   without because he himself powerfully well equipped
      befand/ auch daß sein Feind noch in der ferne/ vnd *zumahl* schwach
      found also that his enemy still in the distance and PART   weak
      wäre/ Kundschafft hatte/
      were information had
      [Prince Tamaso was absolutely convinced of his victory] 'And it was indeed so,
      because he was mightily well equipped and he had information that his enemy
      was still far off and PART weak'   (DTA, Wartmann 1653: 93)
      ~ 'very weak'
      ~ 'in particular weak'

(35) Und gespilen   nnd och gesellen/ Laut er sich *ze mal* gern
      and feminine.friends and also fellows let he REFL PART   willingly
      fellen/ Und wend   tuon als weltlich herren.
      like   and believe do   as earthly lords
      'And he enjoys his female friends and fellows PART willingly and believes he
      behaves as a temporal lord.'   (*Des Teufels Netz.* 15th c. In Barack 1863)
      ~ 'very willingly'
      ~ 'in particular willingly'

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20. Notably, focus alternatives in the ambiguous structures can be contextually given, as in (32), and/or pragmatically accessible, as in (33); cf. Falaus (2013) and De Kuthy & Riester (2014).

(36) Andre […] brennen *zu mahl* von begihr Sich   bey disem
      others   burn   PART   of   desire themselves by   this
      einzug   zu finden vnd zu frolocken nach   gebihr.[21]
      entry.procession to find   and to frolic   according.to appropriateness
      'Others […] burn PART with desire to find themselves in this entry procession
      and celebrate appropriately.'   (DTA, Weckherlin 1618: 26)
      ~ 'greatly burn with desire'
      ~ 'in particular burn with desire to find themselves in this entry procession
      and celebrate appropriately'

The shared syntactic properties concern the overlap of the phrasal type of the inten-
sified element and the focus phrase. This typically includes AdjPs – (32), AdvPs –
(35), and VPs – (36). Additionally, contexts in which intensifiers co-occur and
zumal takes scope over another intensifying particle, as in (37), as well as struc-
tures in which the particle is located in SpecC, as in (38), also serve as transitional
contexts.

(37) […] daß [die Hunde] den Pfaffen an fielen/ vnd mit jrem bellen   vnd
           that the dogs   the priest   attacked and with their barking and
      beissen den Pfaffen verriethen vnd machten daruber die Königing *zumal*
      biting the priest revealed   and made   about.it the queen   PART
      sehr erschrocken.
      very frightened
      [In the night, the priest secretly visited the queen.] '[…] that the dogs attacked
      the priest, and with their barking and biting, they revealed the priest and made
      the queen PART very frightened about it.'   (DTA, Melander 1605: 120)
      ~ 'very much frightened'
      ~ 'above all very frightened'

(38) *Zumal* hat mich der zweyte theil hingerissen
      PART   has me   the second part snatched.away
      'PART the second part snatched me away.'
                                          (DWB *zumal* Lichtenberg br. 2, 168)
      ~ 'snatched away to a high degree'
      ~ 'in particular the second part'

Around 1600, the focus particle *zumal* occurs in isolating contexts, which exclude
the source meaning due either to syntactic or to semantic restrictions. As certain
phrasal types cannot be in the scope of an intensifying particle, they provide perfect

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21. The original adverbial meaning 'simultaneously' is also available in this context (cf. the *lay-*
ering principle, Hopper 1991).

isolating syntactic contexts for the 'new' reading as a focus particle. These include DPs with an overt determiner/without a scalar modifier – (39), PPs – (40), and CPs – (41), as well as cases with leftward association – (42).[22]

(39) Solches ist *zumal* den Eltern   sehr schmertzlich fürkommen
      such   is PART the parents very painful   occurred
      'This was in particular for the parents very painful.'   (DTA, Muling 1615: 25)
      ~ 'in particular the parents' (*~ 'very the parents')

(40) […] so sicht   es jedoch einem Verbott   nit vngleich/ *zumal* von
          so appears it however a   prohibition not dissimilar PART   of
      einem Prediger/ wann er die Werck verachtet/ verwirfft/ vnd verdampt
      a   preacher when he the work despises   rejects   and damns
      '[…] so it looks like a prohibition, in particular of a preacher, when he despises,
      rejects, and damns the work.'   (Hansonius Soxo 1586: 70)
      ~ 'in particular of a preacher' (*~ 'very of a preacher')

(41) vns   dünket die zeit lang zu sein/ *zumahl* wenn man kranck [ist]
      to.us appears the time long to be   PART   when one sick   is
      'The time seems long to us, particularly when one is sick.'
                                                      (DTA, Winziger 1627: 21)
      ~ 'in particular when one is sick' (*~ 'very when one is sick')

(42) Wird aber   gelehret aus Gottes wort von Gottes Erkentniß/ vnnd
      is   however taught   from God's word from God's knowledge and
      den mancherley Geheimnissen deß Reichs Gottes/ in denen Artickeln
      the various   secrets   of.the kingdom of.God in the   articles
      zumal/ die   wieder die Vernunfft/ lauffen so   geben feine vnnd gute
      PART   which against the reason   run   then give fine and good
      Hertzen achtung drauff/
      hearts attention to.that
      'If, however, God's knowledge and some of the various secrets of the kingdom
      of God from God's word are taught – particularly in the articles which conflict
      with reason, then fine and good hearts pay attention to it.'
                                                      (DTA, Schmuck 1611: 14)
      ~ 'in particular in the articles which conflict with reason' (*~ 'very in the
      articles')

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22. In isolating contexts, the intensifying reading should be completely excluded. Trickily, the position of the particle in front of a DP or a PP can still sometimes allow it to scope over the entire VP, which is possible for an intensifying particle.

Semantically motivated isolating contexts include those with non-gradable phrases with absolute adjectives – (43) or temporal adverbs – (44). In addition, gradable adjectives can be isolating if they already have a comparison form, since "degree words like *very* are incompatible with other overt degree morphology" (Gutzmann & Turgay 2012: 150) due to the non-overt morpheme *pos* (cf. Kennedy & McNally 2005) – (45).

(43) Deren   jenes/   nach   menschlier Art/ dem eckigten/   *zumahl*
      of.which that.one according.to human   way to.the with.corners PART
      vier-eckigten/ […] ähnlich
      four-cornered   similar
      'Of which that one, according to the human way, is similar to the one with
      corners, in particular four-cornered'   (DTA, Weigel 1674: 87)
      ~ 'in particular four-cornered' (*~ 'very four-cornered')

(44) Da   aber   in den Abend-Ländern,   *zumal* heute zu tage, auch
      since however in the occidental.countries PART these.days   also
      schon   vörlängst, die Bedeckung für ein Zeichen der   Herrschaft, das
      already of.yore   the covering for a   sign   of.the lordship   the
      blosse Haupt aber   eine Anzeige der Unterwerfung und schuldigen
      bare   head however a sign   of submission   and dutiful
      Ehrerbietung ist […]
      respect   is
      'But since in the western countries, particularly these days, but also a long
      time ago, covering your head is a sign of lordship but a bare head is a sign of
      submission and due respect […]'   (DTA, Lange 1729: 318)
      ~ 'in particular these days' (*~ 'very these days')

(45) Die spiegel/ die   so klar   Vns ewre schönheit lehren/ Die lehren euch
      the mirrors which so clearly us your beauty   teach   they teach you
      zumahl barmhertziger zu sein.
      PART   more.merciful to be
      'The mirrors which so clearly teach us your beauty, they teach you particularly
      to be more merciful.'   (DTA, Weckherlin 1641: 291)
      ~ 'in particular more merciful' (*~ 'very more merciful')

While in the critical contexts the new meaning arises as a co-meaning of the 'old' one, in isolating contexts, the meaning change has already taken place. The focus particle use has separated from the intensifying one and occurs independently of its syntax and semantics. *Zumal* has a broader polysemy at this point. From about 1600 on, it has the original adverbial meaning 'simultaneously', the intensifying particle meaning 'very', and the focus particle meaning 'in particular'.

4.2   The particle *gar* 'even'

The additive scalar particle *gar* 'even' is also subject to the developmental path *up-toning intensifying particle > additive scalar focus particle*. In MHG (1050–1350) and ENHG (1350–1650), it functions as an intensifying particle with the meaning 'fully', 'completely', 'very' (MWB *gar, gare* 2.2, BMZ *gar, gare* Adv., DWB *gar* III 2), as in (46)–(48).[23] In this function, it modifies AdjPs – (46), AdvPs – (47), or VPs – (48).

> (46) Mit deme hat sie vber Zwanzig Jahr friedlich vnd gantz ruhesam
>   with him has she over twenty   year peacefully and quite harmoniously
>   im Ehestande gelebet/ deme sie auch vier Kinder gebohren/ welche
>   in marriage lived,   whom she also four children bore   which
>   aber   alle *gar* jung gestorben
>   however all   PART young died
>   'She lived with him in wedlock for over twenty years in peace and full harmony;
>   she bore him four children, which however all died very young.'
>
>   (DTA, Wenzel 1591: 28)
>
>   ~ 'very young'

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23. The intensifying meaning goes back to the semantically close adjectival meaning 'full', 'complete', 'ready' (see (i) for OHG (750–1050) data), probably from the original meaning 'cooked' (BMZ *gar, gare* Adj. 2; DWB *gar* 4, Pfeifer et al. 1993 *gar* adv.). As is common in German, the adverbial *gar* 'fully', 'completely' corresponds morphologically to its adjectival form.

>   (i) Ik biun *garo* sinnon   (DDD, *Heliand*)
>   I   am   ready always
>
>   (ii) Sind meine Schuhe schon   *gar*?   (DWB *gar* Heynatz)
>   are   my   shoes   already ready
>
> (iii) also, gutherziger leser, hast du mich *gar*,   mit all meinen werken.
>   well kind-hearted reader have you me   completely with all my   works
>   (DWB *gar* H. Sachs)
>
> (iv) wilt   den becher *gar* oder halb?   (DWB *gar*)
>   want the cup   full or   half-full

At this time, *gar* is also ambiguous between the adjectival/adverbial and the intensifying meaning – (v) and (vi).

>   (v) daß sie nicht *gar* braun werden   (DTA, Wecker 1598: 184)
>   that they NEG   PART brown become
>   'that they do not become completely brown'
>   ~ 'completely/on the whole surface brown'
>   ~ 'completely/very brown'
>
> (vi) eingang dieses Buchs/ welches *gar*   auff den Innern Menschen gerichtet ist
>   beginn of.the book   which   PART on the internal human   focused is
>   ~ 'completely/entirely [the whole book] on the human inside focused'
>   (DTA, Arndt 1610: 28)
>   ~ 'very/to a high degree focused on the human inside'

(47)   so ist kein Bedenken die nasse (mit Kalk gemachte) Maurung zu
       so is not concern the wet (with lime made)   walling to
       verwerfen, weil   das Wasser den Kalk *gar* bald auflösen, und dieß
       reject   because the water the lime PART soon dissolve and this
       Bindungsmittel zerstören würde.
       adhesive   destroy   would
       'So we need have no reservations about rejecting the wet walling made with
       lime, because the water would very soon dissolve the lime and destroy the
       adhesive.'   (DTA, Riemann 1798: 311)
       ~ 'very soon'

(48)   Welches geschicht/ wenn wir wissen vnd gleuben/ das ob   wir schon
       which   story   if we know and believe that even.if we indeed
       solchem elend vnd zeitlichen Tod   vnterworffen sein/ wir dennoch
       such   misery and secular   death subjected   are we nevertheless
       nicht *gar* verzagen sollen
       not   PART despair should
       'If we know and believe this story, then even if we are indeed subject to such
       misery and worldly death, then we should nevertheless not completely despair.'
                                                       (DTA, Beuthelius 1603: 14)

       ~ 'completely despair'

Around 1600, *gar* develops a reading as a focus particle. As shown above, the scalar
component and available alternatives provide the basis for the reanalysis from an in-
tensifying to a focus particle meaning. It differs however from the *zumal* case in that
its contexts become ambiguous when the degree determined by the intensifying
particle is not only salient in a degree standard but *surprisingly salient*. This feature
results in a distinguishing characteristic of the reanalysed focus particle *gar* 'even',
whose focus alternatives are ordered along the so-called surprise or improbability
scale (cf. Eckardt 2001).

    Ambiguous contexts are demonstrated in (49)–(53). Typically, in these contexts
the intensifying particle modifies scalar AdjPs – (49), AdvPs – (50), or VPs – (51).
These also include the contexts in which *gar* scopes over a negative element – (52)
and in which it co-occurs with other intensifying particles – (53).[24]

    In Example (49), a 20-year-old thief, who is sentenced to death, goes grey in one
night. The intensifying *gar* gets the second meaning 'even', which is focus-sensitive.

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24. Negation contexts are still ambiguous in modern German. In spoken language, they are
prosodically disambiguated by a pause after the focus particle meaning.

   (i)   Vor   Corona   wollte die Regierung *gar* keine neuen Schulden machen.
         before corona.virus wanted the government PART NEG new debts   make
         ~ 'no new debts at all'
         ~ 'even wanted to avoid new debts'

It positions the proposition with the focus phrase right at the top of the surprise scale. In (50), it is the discrepancy between the concepts *willingly* and *die* that leads to the new reading, which likewise puts the phrase *wants gar willingly and with joy to die* at the top of the surprise scale. The example in (53) is ambiguous in the same way, although less obviously. The crow is 'PART very annoyed' that other birds have 'nice colourful clothes', which contextually infers the scale of surprise or unlikeliness.

The English focus particle *even* and German *selbst* 'even' have been shown to have undergone a very similar development, which led to their both being interpreted relative to the scale of surprise or unlikeliness (Traugott 2006 and Lühr 2010; cf. Eckardt 2001, 2006: 171–201 for a formal semantic analysis).

(49) Jener junge Dieb/ von etlich zwantzig Jahren/ dessen   Bernhardus
      that young thief of about twenty   years   of.whom Bernhardus
      gedenckt/ erschrack vber dem Nuncio mortis, vnd Blutvrtheil   so
      thought   took.fright about the nuncio mortis and blood.judgement so
      sehr/ daß er für   Furcht des Todes/ in einer eintzigen Nacht *gar*
      much that he out.of fear of death in a   single   night PART
      Graw ward.
      grey became
      'That young thief of about twenty years, of whom Bernhardus tells, took such
      fright over the nuncio mortis and blood judgement that he went PART grey in
      a single night out of fear of death.'   (DTA, Kirsten 1620: 31)
      ~ 'very grey'
      ~ 'even went grey in a single night'

(50) Weil   aber   GOTT jr viel ein bessers ausersehen/ so wolle sie
      because however God her much a better designate so wants she
      auch *gar* gerne vnd mit freuden sterben
      also PART willingly and with joys   die
      'Because God has chosen a much better one for her she wants PART willingly
      and with joy to die.'   (DTA, Heusler 1593: 70)
      ~ 'very willingly'
      ~ 'even wants willingly and with joy to die'

(51) Allien dasselbige ist zu vnserer Zeit *gar* in einen Mißbrauch gerahten:
      alone that.same is at our   time PART in a   misuse   gone
      Also das vber dem vielen hefftigen Disputiren/ Streitpredigten/
      so   that with the many vehement disputes   polemics
      Schreiben Vnnd Widerschreiben des Christlichen Lebens/ der waren
      texts   and counter-texts of.the Christian   life   the true
      Busse   der Gottseligkeit/ vnd Christilichen Liebe *gar* vergessen ist.
      penance of righteousness and Christian   love PART forgotten is

'But that same has fallen in our time PART into misuse: with the many vehement disputes, polemics, texts and counter-texts on Christian life, the true penance of righteousness and Christian love has been PART forgotten.'

(DTA, Arndt 1610: 449)

~ 'has fallen completely into misuse'/ ~ 'has been completely forgotten'
~ 'has even fallen into misuse'/ ~ 'has even been forgotten'

(52) die   es aber   thun/ werden […] *gar*   keine Rewe tragen
      those.who it however do   will   PART no   regret bear
      'Those who do it have PART no regret.'   (DTA, Glauber 1658: 582)
      ~ 'no regret at all'
      ~ 'even have no regret'

(53) Es habe die Krahe *gar*   sehr verdrossen
      it has the crow   PART very annoyed
      'It annoyed the crow PART greatly.'   (DTA, Rollenhagen 1603: 301)
      ~ 'very much annoyed'
      ~ 'even very annoyed'

In addition, the intensifying particle *gar* has a special syntactic feature in ENHG, as it was also possible in the position in front of the entire DP – (54).[25] This provides a further group of critical contexts and favours the development of the focus particle reading all the more. The DWB (*gar* III 1 b, c) explicitly states: "its [*gar* as an intensifying particle] position has a certain freedom, which is otherwise not typical for our language, i.e. separate from the notion to which it directly belongs".[26] Since this position is typical for focus particles, *gar* can easily be interpreted as such here – (55).

(54) eȝ   was in Doringinlande *gar*   ein richer ritter, der hatte *gar*   ein
      there was in Doringinlande PART a   rich   knight who had   PART a
      schôniȝ wîp.
      beautiful wife
      'There was in Doringinlande PART a rich knight who had PART a beautiful wife.'
                                              (DWB *gar* III 1 b, c Ködiz)

      ~ 'a very rich knight' / ~ 'a very beautiful wife'
      ~ 'even a rich knight' / ~ 'even a beautiful wife'

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25. Gutzmann & Turgay (2012: 153) show that in German, this position is available for expressive intensifiers (EI).

(i) Du hast gestern   sau/*sehr die coole Party verpasst.
     you have yesterday EI/very   the cool party missed
     'Yesterday, you missed EI/*very a cool party.'

26. The original citation is "seine stellung hat eine gewisse freiheit, wie sie sonst unserer sprache nicht eigen ist, getrennt von dem begriffe zu dem es unmittelbar gehört" (DWB *gar* III 1 b, c).

(55) Meyde ja   ein jeder alle Lügen/ als den Teufel selbst/ den Lügen
      avoid indeed a   each all lie   as the devil himself for lies
      reden ist *gar* ein Teuf̈lisch stück vud wreck/ als der von Anfang
      telling is PART a   devilish thing and action as he from beginning
      gelogen/ vnd aller lügner Vatter   ist.
      lied   and of.all liars kinsman is
      'Indeed, everyone should avoid lies, as if it were the devil himself, for telling
      lies is PART a devilish thing and action, as he from the beginning lied, and he
      is kinsman to all liars.'   (DTA, Francius 1598: 34)
      ~ 'a very devilish thing and action'
      ~ 'even a devilish thing and action'

The isolating contexts appear for the focus particle *gar* shortly after 1600. In the
following examples, only the new focus particle meaning is available, since it refers
to syntactic phrases that are excluded for an intensifying particle. These are DPs
with an overt determiner/without a scalar modifier – (56), as well as PPs – (57)
and CPs – (58).

(56) was gestalt man mit denen/ so   ohn   verwilligung ausser Lands
      what form   one   with those that without permission outside country
      vnd *gar*   den Feinden dienen/ verfahren sole/
      and PART the enemies serve   deal.with should
      'how one should deal with those who, without permission, serve outside the
      country and even serve enemies.'   (DTA, *Relation* 1609: 220)
      ~ 'even the enemies' (*~ 'very the enemies')

(57) Die Furcht wuchs mit der zeit. Es dachte mancher ſchon *gar* auff
      the fear   grew with the time it thought some   already PART on
      ein Trawerkleidt.
      a   mourning.garment
      [About the ship lost at sea] 'The fear grew with time. Some people even thought
      about the mourning garment.'   (DTA, Olearius 1637: 116)
      ~ 'even about the mourning garment' (*~ 'very about the mourning garment')

(58) daß es an   uns allein fast   lieget,   wenn man sich   nicht zu aller
      that it upon us alone almost depends when one oneself not   at all
      Zeit, An der Geschöpfe Lieblichkeit, Auch *gar* wenn alles naß, und
      times from the creatures' loveliness   also PART when all   wet and
      schlackrig ist, vergnüget:
      slimy   is has.pleasure
      'That it depends almost completely upon ourselves, if we do not, at all times,
      have pleasure from the creatures' loveliness, also even if everything is wet and
      slimy.'   (DTA, Brockes 1736: 330)
      ~ 'even if everything is wet and slimy' (*~ 'very if everything is wet and slimy')

Isolating contexts also include phrases that, although syntactically possible for an intensifying particle, are still excluded for semantic reasons. These are non-scalar AdjPs – (59), AdvPs – (60), and VPs – (61). The isolating contexts also include adjectival and adverbial comparison forms – (62).

(59) Und was Kant vorschwebte, war wohl   als Konzession an die
      and   what Kant had.in.mind was probably as concession to the
      drohenden Franzosen eine Auflösung des   Heiligen römischen Reichs
      threatening French   a   dissolution of.the Holy   Roman   Empire
      in   Adelsrepubliken, niemals aber   eine preussische oder *gar*
      into nobility.republics never   however a   Prussian   or   PART
      deutsche Republik im   heutigen Sinne
      German republic in.the modern sense
      'And what Kant had in mind was probably a concession to the threatening
      French: a dissolution of the Holy Roman Empire into republics led by nobles,
      but never a Prussian or even German republic in the modern sense.'
                                                        (DTA, Ball 1919: 264)
      ~ 'even German' (*~ 'very German')

(60) Er begehrt deßhalb in den Münzen, Maaßen und Gewichten, einen
      he desires therefore in the coins   measures and weights   a
      sichern Maaßstab, der   in dem weitmöglichsten Umkreise, vor allen
      secure benchmark which in the broadest.possible circle   above.all
      Dingen im   Staate, wo möglich aber   *gar* überall   auf der Erde
      things in.the state possibly   however PART everywhere on the Earth
      ein und derselbe sey.
      one and the.same be
      'He therefore wishes there to be a secure benchmark for coins, measures and
      weights with as widespread validity as possible; which should be one and the
      same, above all within the state, but if possible even everywhere on Earth.'
                                                        (DTA, Müller 1816: 200)
      ~ 'even everywhere on Earth' (*~ 'very everywhere on Earth')

(61) auch der Keyser   selbst/ durch   die Hechel gezogen worden weil
      also the emperor himself through the heckle pulled   been   because
      er den einen rechtmässigen Keyser   vertrieben/ den andern *gar*
      he the one   legal   emperor chased.away the other   PART
      ermordet hätte.
      murdered had
      'Even the Emperor himself was heckled because [they say] he had driven off
      one legal emperor and even murdered another.'   (DTA, Freyberger 1650: 24)
      ~ 'even murdered' (*~ 'very murdered')

(62) Bey denen, die uns bey unsern unglückseligen Zustand, darein   wir
      with those who us in our   unhappy   condition in.which we
      gerathen, Hülffe und Beystand leisten, sie   mögen nun höher,
      came   help and support afford they may   now higher.ranked
      oder unsers gleichen, oder wohl   *gar* geringere   seyn.
      or   as.us same   or indeed PART lower.ranked be
      'In the case of those who give us help and support in the unhappy condition in
      which we have come, they could be of higher rank, the same rank, or indeed
      even lower rank than us.'   (DTA, Rohr 1728: 91)
      ~ 'even lower' (*~ 'very lower')

It has been shown that the focus particle *gar* 'even' developed around 1600 from the intensifying particle *gar*, in contexts that are both semantically and syntactically ambiguous. Parallel to *zumal* 'especially', the shift in meaning took place via their shared semantic and morpho-syntactic properties. In contrast to *zumal*, the intensifying *gar* specifies the degree of the intensified element as surprisingly intensive, which has led to the surprise scale of its focus particle meaning. Already by the first decades of the 17th century, the focus particle *gar* had become independent and occurred in isolating contexts that exclude the 'old' intensifying meaning.

A different developmental analysis can be found in the DWB. It assumes two developmental paths for the focus particle *gar* (Figure 2).[27] In the first path, *gar* 'even' comes from the adverbial or adjectival use, and in the second, it is an abbreviation of the focus particle *sogar* 'even'. Similarly, Helbig (1994: 151) analyses the focus particle *gar* as "a reduced (obsolete) form of *sogar*".[28] In the DWB, the surprise scale is only assumed for the abbreviated *gar* (in bold). In this paper, however, it is shown that the surprise meaning component is already present in original contexts with an intensifying particle (IP) *gar*. The developmental path via the focus particle (FP) *sogar* 'even' is therefore unnecessary as an explanation for the surprise scale in *gar* 'even' (for the development of *sogar*, see 4.3).

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27. The entry for *gar* in the DWB was written by R. Hildebrand in 1874. The Brothers Grimm, after whom the dictionary is often named, completed in their lifetime only up to *fromm* 'pious' (Schares 2005: 50–1).

28. The original citation is "reduzierte (veraltete) Form von *sogar*".

present analysis: analysis in the DWB:

gar (IP)   *gar* (IP)   *gar* (Adv.)

gar (FP)   *sogar* (FP)   *sogar* (FP)   *gar* (FP)

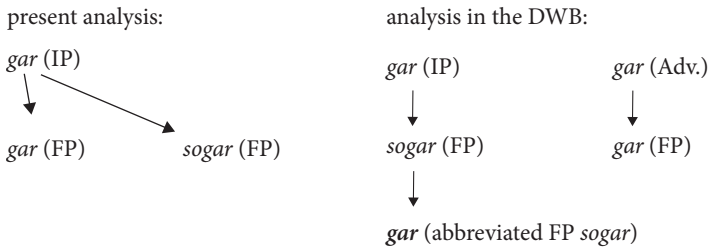   **gar** (abbreviated FP *sogar*)

Figure 2.

The intensifying particle *gar* 'very', 'completely' exists today in standard German only in negative contexts and has the meaning 'at all' (*gar nicht* 'not at all', *gar kein* 'not any', *gar nie* 'never ever') – (63).[29] In South German, Austrian, and Swiss variants, it has retained the function of a general intensifying particle 'completely', 'very' – (64). There, it can be used as *gar, so gar*, or *gar so* (DWDS *gar* 2 adv.).

(63)   Das ist *gar*   nicht lustig.
        that is   PART not   funny
        'That is not *at all* funny.'

(64)   Das Haus lag nicht *gar*   weit vom   Wasser entfernt.
        the house lay not   PART far from.the water   distant
        'The house stood not *very* far from the water.'   (DWDS *gar* 2 Adv.)

The focus particle *gar* 'even' appears in COSMAS-data in the newspapers of different regions throughout the German-speaking area – (65). It has, however, been largely displaced by its semantic and syntactic equivalent *sogar* 'even'.

(65)   Viele trauten   den Blau-Weißen *gar*   einen Durchmarsch
        many expected the blue-whites PART a   marching-through
        zu.
        VERB-PART
        'Many *even* expected the blue and whites to make a clean sweep.'
                            (COSMAS, *Berliner Zeitung* 2018)

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29. According to Kirschbaum (2002), the main function of the intensifying *gar* in today's German is to reject a presupposition. In (i), the presupposition that the mentioned car belongs to the speaker is rejected.

(i)   Aber ich hab gar   kein Auto.   (Kirschbaum 2002: 195)
       but   I   have PART NEG car
       'But I have no car at all.'

4.3   The particle *sogar* 'even'

Another case of the developmental path *up-toning intensifying particle > additive scalar focus particle* concerns the German additive scalar focus particle *sogar* 'even'. It developed from a reanalysis of the above-described intensifying particle *gar* 'even' in the scope of the particle *so*. Accordingly, it initially has the meaning '(so) fully', '(so) completely', '(so) very', 'to the extent' (DWB *sogar*; Pfeifer et al. 1993 *sogar*). This means that the intensifying particle which serves as a source meaning for the focus particle *sogar* is *gar*. An intensifying particle *sogar* has never existed in German.

Consequently, in its intensifying meaning, the syntax of *so gar* (i.e. the intensifying particle *gar* in the scope of *so*) must have the same properties as the bare particle *gar*. In fact, it has the same intensified elements: scalar AdjPs – (66), AdvPs – (67), and VPs – (67).

(66)   wie du [Christus] genagelt bist worden an das crütz mit grossen
as you Christ   nailed are been   to the cross with big
neglen die   durch dem *so gar* heilig hend vnd füß
nails which through the so PART holy hand and foot
geschlagen wurden
hammered were
'As you Christ were nailed to the cross with big nails which were hammered through the so very holy hands and feet.'   (von Landskron 1500)
~ 'so very holy'

(67)   Warum doch der fromme Gott mit den kleinen Kindern bißweilen
why   indeed the pious   God with the little   children sometimes
so gar balt aus dieser Welt eylet/ vnd sie   hinweg nimpt.
so PART early from the   world hurries and them away   takes
'Why the pious Lord with the little children sometimes leaves this world so very early and takes them with him.'   (DTA, Schreck 1632: 9)
~ 'so very early'

(68)   Da der Bawer sihet/ daß das Blut so streng   springet/ spricht er/
as the peasant sees that the blood so vigorously sprays   speaks he
Botz Velten/ Er Nicles/ warumb last jhr euch   den Leib *so*
gad zounds by jove   why   let you yourselves the body so
gar   zerreissen?
PART tear.apart
'When the peasant sees that the blood spurts, he says 'Gadzooks and zounds, why do you allow your body to be so completely torn apart?'
(DTA, Melander 1605: 324)
~ 'so completely torn apart'

Chronologically, the start of the critical and isolating contexts of *so gar* corresponds to that of the bare particle *gar*. This supports the assumption that the history of *sogar* 'even' in the pre-isolating phase is in fact that of the intensifying particle *gar*, as described in 4.2.

Semantically, intensifying *gar* and *so gar* share the same surprisingly high degree of intensity. For this reason, the later focus particle *sogar* 'even' is associated with a surprise scale, just as its cognate *gar* 'even'. The ambiguous critical contexts for *gar* in the scope of *so* are those as in (69)–(73). Here, too, there is apparent similarity to the critical contexts of the bare *gar*.

Syntactically, the ambiguous contexts likewise correspond to those of the bare intensifying particle *gar*. They include scalar AdjPs – (69), AdvPs – (70), and VPs – (71). Contexts with an intensification of negative expressions are also ambiguous. Example (72) has two available readings: 'not paid at all' and the focus particle reading 'not even paid'.[30] An ambiguous position in front of another intensifying particle is also possible – (73).

(69) Sie   machen jhnen auch gar   künstlich von   Vogelheuten etliche gar
      they make   them also very elegantly from bird.skins   some   very
      leichte Kleider weil   sie der Hitze wegen   nichts   anders tragen
      light   clothes because they the heat because.of nothing else   wear
      können/ vnnd selbiges   ist *so gar* artig   als Seidenstickerarbeit
      can   and this.same is [so] PART smartly as embroidery
      gemacht/
      made
      'They also make them very elegantly some very light clothes of birds' skins
      because they can wear nothing else because of the heat; and these are PART
      smartly made as embroideries'   (DTA, Kentz 1629: 170)
      ~ 'so very smartly'
      ~ 'even smartly'

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30. In present-day German, Examples (i) and (ii) are not ambiguous despite their nearly identical form. Structural (syntactic) ambiguity is ruled out: the ambiguity is resolved prosodically in the spoken language and in the written language, by spelling.

(i)   Das ist *sò gár*   nicht teuer.
      this is so at.all NEG   expensive
      'It is not expensive at all.'

(ii) Das ist *sogár* nicht teuer.
      this is even   NEG   expensive
      'It is even not expensive.'

(70) Die weltliche Fürsten hielten die heilige Martyrer für Narren/ als   sie
      the secular princes held   the holy martyrs for idiots   when they
      dieselbigen *so   gar* gern vnd gutwilligklich sterben sahen
      the.same [so] PART keenly and willingly   die   saw
      'The secular princes considered the holy martyrs to be idiots when they saw
      them die PART keenly and willingly.'   (DTA, Albertinus 1615: 304)
      ~ 'so very keenly and willingly'
      ~ 'even keenly and willingly'

(71) Dann nichts   ist/ daß das Gemüt so krefftiglich neiget/ zwinget/ vnd
      as   nothing is   that the mind so powerfully subdues compels and
      hindert/ vnnd *so   gar* durchdringet als die Liebe.
      obstructs and [so] PART pervades   as the love
      'For there is nothing that subdues, compels, obstructs, and PART pervades the
      mind so powerfully as love.'   (DTA, Arndt 1610: 289)
      ~ 'so completely pervades'
      ~ 'even pervades'

(72) Man hat gegen jhnen/ weil   es alte privilegirte Deutsche sein/ füglich
      one has against them because it old privileged Germans are   properly
      nichts   fürnemen können/ auch ansehen müssen/ daß sie *so   gar*
      nothing undertaken been.able also observe must   that they [so] PART
      nicht bezahlt werden.
      not   paid   are
      'They$_i$ were not able appropriately to take any steps against them$_y$, because they$_y$
      were old privileged Germans and they$_i$ had to consider that they$_i$ were PART
      not paid.'   (DTA, Aviso 1609: 97)
      ~ 'not paid at all'
      ~ 'even not paid'

(73) Das verdroß mich *so   gar* sehr/
      that annoyed me   [so] PART very
      'This annoyed me PART very much'   (DTA, Albertinus 1615: 158)
      ~ 'so very much'
      ~ 'even very much'

Brief mention should be made of the status of *gar* in *so gar* in the critical contexts,
since the bare *gar* is itself ambiguous between the intensifying and the focus par-
ticle meanings at this point. The only possible reading for it in *so gar* is however
an intensifying one, since focus particles in general cannot be in the scope of the
particle *so* 'so' – (75).[31]

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31. The only available reading in (75) is with a phoric *so*, which is itself in the scope of a leftward

(74) so sehr,   so ganz,   so gar
      so much so completely so fully

(75) *so zumal,   *so insbesondere,   *so sogar
      so in particular   so in particular   so even

The fact that in the critical period of *sogar*, we are actually dealing with the intensifying particle *gar* suggests once more that the German focus particles *gar* and *sogar* share the very same development in the purely intensifying and ambiguous periods and diverge into two separate words only upon the appearance of their respective critical contexts.

The isolating contexts appear in the DTA at the beginning of the 17th century. They include DPs – (76), PPs – (77), and later also CPs – (78), as an intensifying particle is not able to scope over these kinds of phrases.

(76) *So gar* Dauid verwundert sich   deßwegen
      PART David wondered   himself for.that.reason
      'Even David was surprised about it.'   (DTA, Albertinus 1615: 314)
      ~ 'even David' (*~ '(so) very David')

(77) *So gar* zu disen zeiten regiert die eyfersucht nit so sehr/
      PART at these times rules   the jealousy   no so very.much
      'Even at these times, jealously does not rule so strongly'
                                                       (DTA, Albertinus 1615: 363)
      ~ 'even at these times' (*~ '(so) very at these times')

(78) ein Beweis,   daß der Jnquisit seine Gedanken vollständig
      a   piece.of.evidence that the accused his   thoughts   completely
      auszudrücken im   Stande sey, *sogar* wenn er lügen wolle.
      express   in.the position is PART if   he lie   wants
      '[…] a proof that the accused is still able to express his thoughts completely, even if he wants to lie.'   (DTA, Moritz 1784: 55)
      ~ 'even if he wants to lie' (*~ '(so) very if he wants to lie')

Semantic isolating contexts include non-scalar AdjPs – (79), AdvPs – (80), and VPs – (81), as well as gradable phrases that already have a comparison form – (82).

(79) Die Ursache der   thierischen Bewegung muß unsäglich seyn, da ihre
      the cause   of.the animal   movement must ineffable be   as their
      Kraft in einem so kleinen Werkzeuge etlichen tausend Pfunden gleich
      power in a   so small tool   several thousand pounds equal
      ist, und lange, ja   *sogar* ganze Tage hintereinander   wirken kann
      is and long indeed PART whole days after.one.another function can
      'The cause of the animal movement must be ineffable, as their power in such a small tool is equal to several thousand pounds, and it can function for a long time, indeed even whole days in a row.'   (DTA, Unzer 1771: 180)
      ~ 'even whole days in a row' (*~ '(so) very whole days in a row')

(80)   Vnd konte ja   *so gar* hieran niemand zweifeln er müste   den
and could indeed PART it.here nobody doubt   he would.have.to then
selbst den Kopff voller Windmühlen haben.
himself the head full.of windmills   have
'And if nobody could doubt even this, he would have to have his head full of
windmills himself.'   (DTA, Cervantes [transl.] 1648: 89)
~ 'even doubt this' (*~ '(so) very doubt this')

(81)   der Hauptman […] erzeigte mir allen guten willen/ *so gar* setzte er mich
the captain   showed me all   good will   PART sat   he me
an seinen Tisch sampt andern vom Adel   vnd Befelchshabern.
at his   table with others of.the nobility and commanders
'the captain […] showed me every good will, he even sat me at his table together
with others of the nobility and commanders.'   (DTA, Albertinus 1615: 110)
~ 'even sat me at his table together with others of the nobility and commanders'
(*~ '(so) very sat me at his table together with others of the nobility and
commanders')

(82)   Thiere, die   sonst   stark sind, stehen den Verlust, *so gar* grösserer,
animals which otherwise strong are   endure the loss   PART of.larger
Eingeweide […] bisweilen ohne   merkliche Zufälle   aus
intestines   sometimes without recognizable drawbacks VERB-PART
'Animals which are otherwise strong sometimes survive even the loss of large
parts of intestine […] without apparent drawbacks.' (DTA, Haller 1774: 658)
~ 'even larger' (*~ '(so) very larger')

In the DTA, a change in spelling from *so gar* to *sogar* takes place sporadically at
first. From 1750 on, the different spellings have in part a disambiguating function
between the intensifying particle (<so gar>) and the focus particle (<sogar>) – (83).
Still, there are of course plenty of counter-examples to this rough rule (mainly *so
gar* as a focus particle), as the spelling has not yet been standardized. Irrespective
of the spelling, the focus particle *sogar* can be regarded as an independent lexical
item upon its appearance in isolating contexts.

(83)   Endlich so trift   man *sogar* in Pflanzen etwas   an,   welches
at.last so meets one PART in plants   something VERB-PART which
eine reizbaren Kraft nicht *so gar*   unänlich ist.
an   excitable force not   so PART dissimilar is
'At last we find *even* in plants something which is not *so completely* dissimilar
to an excitable force.'   (DTA, Haller 1772: 47)

The DWB (*gar* III 4 d, e) and, following it, also Gast (2017: 227–9) in his primarily non-diachronic paper propose an alternative analysis for the development of the focus particle *sogar* 'even'. The DWB assumes that it originates from contexts with extraposed *so gar*, as in (85), where it was "extraposed as the leader of a supplementary or intensifying thought"; later it "lost tone and meaning halfway and jumped over into the [next] clause, which used to be dependent on it".[32] The Examples (84)–(86) show the three developmental steps as they are assumed in the DWB: a. intensifying *so gar* with a following consecutive clause in (84), b. extraposed *so gar* in front of the consecutive clause in (85), and c. *so gar* as a part of the following clause with a consecutive meaning in (86).

(84) dann untrew,   finanz und das gelt/   hand ietzund   *so gar*
      for   breach.of.trust finance and the money have nowadays so PART
      überhand, das trew ist gwichen   aus dem land.
      ascendancy that trust is disappeared from the   country
      'For deceit, finance and money are so very in the ascendancy that loyalty has left the country.'   (DWB *gar* III 4 d, Wickram bilger g 2)

(85) Ferrau verirrte sich im   walde, ja   *so gar* (*so ganz*),   dasz er
      Ferrau erred   REFL in.the forest indeed so PART (so completely) that he
      kam wieder hin, da   er am   ersten war.
      came back   there where he at.the first   was
      'Ferrau got lost in the forest, so completely, that he ended up where he had started from.'   (DWB *gar* III 4 e, Werder Ariost 1632, 1, 23, 7)

(86) Und auf   diesen einfall ward eine ganze viertelstunde   gelacht; in
      and about this   idea was a   whole quarter.of.hour laughed in
      einem Fort, in einem fort; *so gar*   das trinken ward darüber vergessen.
      one   go   in one   go so PART the drinking was therefore forgotten
      'And they laughed a whole quarter of an hour about this idea, in one go, in one go, even the drinking was forgotten because of it.'
                                  (ibid., Lessing *Lustsp*. 1767 1,93 (jung. Gel. 2,8))

Gast (2017) locates this developmental model among the general developmental paths of scalar focus particles: "Such processes of integration and reanalysis of an afterthought seem to be frequent in the genesis of scalar operators" (Gast 2017: 227). Starting from an extraposed structure like the *Ferrau*-context in (85), Gast (2017) suggests the following reanalysis for the focus particle *sogar*, which

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32. The original citations are "[nachgebracht] als führer eines ergänzenden oder steigernden gedankens" and "[verlor] ton und sinn halb und in den von ihm erst abhängigen satz hinübersprang".

takes place in consecutive contexts, with the implicature of unlikelihood for the second conjunct.[33]

(87)   x does e_1 *so gar*/entirely that e_2 happens
       → x does e_1, (and) *sogar*/even e_2 happens   (Gast 2017: 228)

A reanalysis in extraposition contexts is however problematic. First, the DWB and Gast (2017) do not define any date for the reanalysis, but the examples they use originate from the time when (as shown in the present study) the reanalysis to the focus particle *sogar* had already taken place. They are examples by authors such as Wernike, Kant, or Lessing (18th century); the only 'early' evidence is in (85) from 1632. It is safe to say that most of these documents cannot serve as critical contexts.

The same applies to the frequency of contexts with extraposed *so gar*. From the period of critical contexts 1550–1610, the DTA-corpus lists exactly one example with an extraposed structure as in the *Ferrau*-example.[34] All other examples with extraposed *so gar* in the DTA date from the time of isolating contexts. The *Bonner Frühneuhochdeutschkorpus* provides similar data: it contains only one sentence with extraposed *so gar* in front of a consecutive clause (from 1660).[35] In the period of ambiguous critical contexts (around 1600), it thus has no *so gar* contexts with a structure as in the *Ferrau*-example. Thus, the corpus data do not support a reanalysis of *sogar* in extraposition contexts, since a reanalysis in general takes place in constructions of a certain frequency.

Structurally, Examples (85) and (86) are also problematic for reanalysis approaches in general. In (86), the DWB (*gar* III 4 e) assumes that the intensifying *so gar* is first extraposed from its clause and then reanalysed to a focus particle as part of the following clause. Example (88) illustrates the assumed structure. However, ambiguity in critical contexts implies the simultaneous availability of both readings in the very same position. Correspondingly, Example (86) cannot be part of the

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33. A further possible context for the reanalysis, which is also adopted in Gast (2017: 228), is shown in (i). Although appropriate, this example concerns only the development of the focus particle *gar* 'even', as described in 4.2.

(i)   du   armer kriegesmann, du   magst wol   niderlegen nun alles dein gewehr,
      you poor   warrior   you want   probably lay.down   now all   your weapons
      bis *gar*   auf deinen degen.
      up   PART   to   your   dagger
      'You poor warrior, you now seem to want to lay down all your weapons, even/completely up to your dagger.'   (DWB *gar* III 4 f β, Werder Ariost 11, 25, 6)

34. The status on 13.05.2020. Between 1550 and 1610, there are a total of 93 examples of *sogar/ so gar*, irrespective of the meaning.

35. Electronic version, access via ANNIS on 24.05.2020.

reanalysis, since it is not ambiguous. *So gar* functions here only as a focus particle. The reading as an intensifying particle is ruled out, as it cannot scope over the DP *das trinken*. Additionally, a reanalysis of elements in extraposition is only typical for the development of adverbial conjunctions.[36]

(88) Und auf   diesen einfall ward eine ganze viertelstunde t_i gelacht;
      and about this   idea was a   whole quarter.of.hour laughed in
      t_i in einem Fort, in einem fort; *so sehr*$_i$/   *sogar* das trinken ward
      one   go   in one   go so completely even the drinking was
      darüber vergessen.
      therefore forgotten

Probably the strongest argument against a reanalysis of *sogar* in an extraposed position in front of a consecutive clause is the fact that consecutive clauses cannot generally be in the scope of a focus particle – (89).[37]

(89) Ferrau verirrte sich   im   wald, ja   *so sehr*, dass er wieder dahin
      Ferrau erred   himself in.the forest indeed so much that he again   there
      kam, wo   er zuerst   war. /*ja   *sogar* dass er wieder dahin kam,
      came where he at.the first was indeed even that he again   there came
      wo   er zuerst   war.
      where he at.the first was

This means that *so gar* in the *Ferrau*-example cannot be interpreted and cannot be reanalysed as a focus particle. An important premise for a reanalysis is however that the sign in its position is both semantically and morpho-syntactically ambiguous, i.e. both the source and the target meaning are available at the same time. For this reason, the consecutive *Ferrau*-contexts are ruled out as possible contexts for the reanalysis of *sogar* as a focus particle.

To conclude, the diachronic data support the development of *sogar* 'even' from an intensifying particle *gar* in the scope of *so*. The corpus analysis shows that both the semantic and the syntactic properties of *so gar* in crucial critical contexts correspond to those of the bare intensifying particle *gar*. In addition, the reanalysis

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36. In general, the traditional shift theory, according to which an element of a first clause can develop into a complementizer of the next clause via a shift in the clause boundary, is highly controversial (cf. Axel-Tober 2012; Eberhardt & Axel-Tober accepted).

37. This could be due to the non-embedded status of consecutive clauses (cf. Reis 1997: 136, Pasch et al. 2003: 427–429, Demske 2009; Frey 2011: 74). Syntactically, non-embedded adverbial clauses cannot be in the scope of a matrix focus particle (König & van der Auwera 1988: 120, Haegeman 2003: 322–3, Eberhardt 2017: e71), since a focus particle cannot scope over the (matrix) CP boundary.

steps of *gar* and *sogar* coincide in their respective chronologies. For this reason, I assume that the two cases share an origin in the pre-isolating periods. Thus it is not at all surprising that today's focus particles *gar* and *sogar* are equivalent in their morpho-syntactic and semantic properties.

The present-day distribution of *gar* and *sogar* differ. The usage of *gar* as a focus particle is restricted. It has become rather widely accepted as a default negation intensifier in standard German. In contrast, *sogar* has developed into a default additive scalar focus particle with the meaning 'even'.

intensifying (*so*) *gar*

→ (*so*) *gar* 'at all' (negation intensifying particle)

→ (*so*) *gar* (so) 'very' (general intensifying particle), dialectal

→ *gar* 'even' (focus particle), restricted usage

→ *sogar* 'even' (focus particle), default usage
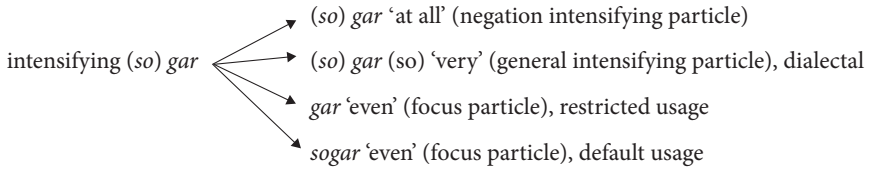
5.   Scalarity as a source of focus particle meaning

The development of *zumal* 'in particular', *gar* 'even', and *sogar* 'even' has been subject to a general diachronic tendency. Cross-linguistically, quite a number of cases can be observed in which additive scalar focus particles develop from elements that are connected to some form of scalarity.[38] These are expressions that indicate a maximum value on a scale or, more generally, an endpoint (often spatial or temporal). The *scalar quaestio*, which Gast & van der Auwera (2011: 11) assume for the synchronic use of scalar additive operators in general, can be assigned to this diachronic development. A *scalar quaestio* is thus one possible precondition for the emergence of an additive scalar operator, like, for example, the focus particles discussed in this paper. According to this, one can formulate a developmental pattern rule for additive scalar operators as follows:

> Developmental rule for scalar focus particles: If an expression x has a scalar meaning and is focus-sensitive, then the origin of x is likely to be a scalar non-focus-sensitive expression.

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38. Orenstein & Greenberg (2021) show the inverse development. In Hebrew, exclusive focus particle *be-sax ha-kol* – (i) – can have the approximative reading – (ii):

(i)   saba   sheli haya **be-sax ha-kol** pakid
       Grandfather mine was   be-sax ha-kol clerk
       "My grandfather was only / just a clerk".   (Orenstein & Greenberg 2021: 2)

(ii)   ha-xeder **be-sax ha-kol** naki
       the-room be-sax ha-kol clean
       "The room is more or less clean".   (ibid.)

An interesting example is the Slovenian *celo*, which has the same present-day distribution as German *gar* in its diachronic stages. It has three meanings: (i) an adjective 'whole' as in *célo leto* 'the whole year', (ii) an intensifying particle as in *celó svetlo* 'very bright' or *celó nič* 'nothing at all', and (iii) a scalar additive focus particle 'even' as in *Celó svojega očeta ne posluša* 'He doesn't even listen to his father' (Pleteršnik 2006: *cẹlọ̀* adv.).[39] Although no diachronic studies on *celo* are available, it is quite possible that its development was similar to that of *gar*.

The same applies to further intensifying particles which have scalar semantics, as shown in 3.2, and function synchronically as scalar focus particles (cf. Engl. *particularly, especially*; and their equivalents: Germ. *besonders*; It. *specialmente*; Rus. *osobenno*). To my knowledge, there are no diachronic studies on these expressions which derive the focus particle meaning from the intensifying meaning.

The ENHG scalar focus particle *bevorab* 'particularly' derives from the temporal adverbial structure *bevor ab* 'foremost' which is scalar. Scalar inclusive focus particles or focus sensitive elements with a connection to a scalar adverbial counterpart can be attested cross-linguistically. These scalar adverbial expressions mostly have temporal or local meaning, such as Slovenian *predvsem* 'particularly', 'first of all' (lit. 'before all'), Russian *prezhde vsego* 'particularly', 'first of all' (lit. 'before all', German *vor allem* 'particularly', 'first of all' (lit. 'before all'), Swedish *framför allt* 'particularly', 'first of all' or French *surtout* 'particularly' (lit. 'over all').

Further examples that illustrate this idea are listed in Gast & van der Auwera (2011). These include Welsh *hyd yn oed* 'even' (lit. 'as far as', 'up to'), Swedish *till och med* 'even' (lit. 'up to and with'), Spanish *aun* 'even' (from the Lat. *adhuc* 'until'), and Czech *dokonce* 'even' (lit. 'to the end'). The Russian *dazhe* 'even' originates in the Old Slavic 'up to', 'therewith' (Trubachev 1977: 181). The OE *ēac* goes back to the scalar verb *ēacnian* 'increase' (König 1989: 322).

The following languages have synchronous expressions with both lexically scalar (temporal or spatial) and focus particle meanings. Spanish *hasta* 'until' or 'even' (DLE *hasta*) and Portuguese *até* 'until' and 'including', 'even' (Aulete digital *até*) possibly derive from the Arabic word *hatta*, which in today's Arabic, parallel to in Spanish and Portuguese, has both the temporal (spatial) and the focus-sensitive meanings 'until' or 'even' (Wehr 1961: 155).

Visconti (2005) shows in her diachronic work that Italian *perfino* 'even' and *addirittura* 'even' go back to expressions that are oriented towards the spatial or temporal endpoint: *per fino* 'to the end' or *a dirittura* 'in the straight line', 'straight ahead'.

The Polish *nawet* 'even' (as borrowed into Ukrainian *navit* and Belarusian *nayat*) is a loan from the MHG *wette* 'pledge contract', 'repayment of a debt', or 'fee for a judge at the end of the court hearing' (BMZ *wette* stn. stf.). It was first a PP

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39. Note however the different accentuation in (i) and (ii)/(iii).

na wet, which was no longer used to express a payment due at the end of a trial, but meant more generally 'at the end', 'finally', and then later got the focus-sensitive meaning 'even' (Melnichuk et al. 2003: 16). Here as well, the additive scalar focus particle goes back to the expression of a temporal endpoint of a process.

The English additive scalar focus particle *even* developed according to Traugott (2006: 346–51) from a *particularizer* meaning 'exactly', which refers to scalar expressions of size, distance, or time, as in *euene doun to the erthe* 'all the way down to the earth' or *even to the Sterre chamber* 'right up to the Star Chamber' (Traugott 2006: 347). In the context of counter-expectation, *even* takes on its present meaning.

The numerous examples clearly show that scalar expressions in the broader sense have served as the *source meaning* for scalar additive particles in different language families. Such scalar expressions also include intensifying particles as described in this paper.

6. Conclusion

Up-toning intensifying particles and scalar focus particles are *word classes prone to reanalysis*. For the German intensifying particles *zumal, gar*, and *sogar* I have shown that they developed a focus particle meaning around 1600. The shift was facilitated by an essential overlap in the morpho-syntactic and semantic properties of the source and target uses. The appearance of the particles in critical and especially in isolating contexts is of particular interest here as they exactly define the time period in which the particle is ambiguous between the intensifying and focus particle meaning and the time at which the source meaning has already been excluded. The corpus data show that isolating contexts for our three particles can be either syntactically or semantically motivated. Furthermore, it has become clear that the new developmental path *up-toning intensifying particle > scalar focus particle* is part of a general tendency of additive scalar focus particles to develop from elements which are connected to some form of scalarity.

Acknowledgements

Funding

Corpora

Bonner Frühneuhochdeutschkorpus. http://www.korpora.org/FnhdC/>.
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DDD [Deutsch Diachron Digital]. https://korpling.german.hu-berlin.de/annis3/ddd.
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Do intensifiers lose their expressive force over time?

A corpus linguistic study

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This article presents a corpus study of German intensifiers, which was conducted with the goal to test the hypothesis of Biedermann (1969) that intensifiers lose their expressivity over time. Following the author, frequently used intensifiers wear out, which results in a loss of expressivity. The goal of the study is to carry out evaluations in the form of synchronic and diachronic frequency distributions. The results show that the use of intensifiers has increased. According to the data, most of them are in an ascending phase and thus, yield no support for the hypothesized loss of expressivity. Further investigations are necessary to validate the above-mentioned hypothesis. Nevertheless, this study provides the first empirical evidence of an increasing use of German intensifiers.

Keywords: corpus linguistics, expressives, expressivity, intensifiers, intensifying particles

1. Introduction and theoretical background

Expressivity is a frequently discussed topic in the linguistic literature and has received considerable attention in the last years. A key issue is that there is a fundamental difference between descriptive and expressive content, which speakers are inherently aware of during communication. This difference lies in the fact that the former is just a (neutral) description of situations, whereas the latter usually serves to verbalize the speaker's subjective attitudes, evaluations, and emotions, e.g. surprise, contempt, or disappointment (cf. d'Avis & Finkbeiner 2019: 1; Cruse 1986: 274). To test this distinction empirically and study the development of descriptive and expressive expressions over time, intensifying particles (henceforth: *intensifiers*) were examined in this study. These particles give additional emphasis

and credibility to an utterance and can be understood as "linguistic devices that boost the meaning of a property upwards from an assumed norm", as Quirk et al. (1985: 589) note. Paradis (2000: 2) claims that two dimensions can be subdivided: on the one hand, those particles that indicate totality (e.g. German *total* or *absolut*) and, on the other hand, those that encode scalarity and locate the gradable property described by the following adjective on a scale of values (e.g. German *sehr* or *ziemlich*). In this paper, the focus will be on the second group.

The idea of this study is based on an observation of the large number of intensifiers used in German (e.g. *super* or *mega*), bringing up the question, what are the reasons for this wealth of variants. Some authors postulate that these specific particles are subject to rapid and indispensable change, which can be attributed primarily to people's desire to be as expressive, innovative, and original as possible to achieve the strongest effect in the hearer (cf. Keller 1995: 216f. & Kirschbaum 2002b: 188). While Peters (1994: 271) describes intensifiers as "subject to fashion" by virtue of their fast-paced nature, Keller and Kirschbaum (2000: 42), just as Biedermann (1969: 126f.) and Bolinger (1972: 18), suspect that high frequency is decisive for rapid attrition which ultimately leads to intensifiers losing their amplifying effect if used excessively: the more often an intensifier is used, the less original it is. Consequently, this inflation has a negative impact on the expressivity, which subsequently dwindles, paving the way for new, more expressive expressions to take on the role of an intensifier. This is precisely the basic idea of the study, which aims to examine the development of intensifiers over time and to validate the following hypotheses that are brought forward in the theoretical literature, but are hardly backed up by corpus linguistic investigations:

H1.   The frequent use of intensifiers leads to a gradual loss of their expressivity.
H2.   The loss of expressivity goes hand in hand with a need for new expressions, allowing the speaker to continue to be expressive, innovative, and original.

However, it is not possible to directly reason a loss of expressivity by means of a corpus-based study. But it is attainable to make statements about the frequency as a mirror image of a loss of expressivity, provided that the hypotheses are correct. Thus, every intensifier's individual development of frequency serves to indicate a potential loss of expressivity with a corresponding (i.e. decreasing) course. As a result, it is assumed with regard to H1 in the run-up to the study that an expressive intensifier initially increases in frequency but loses expressivity over time and subsequently decreases (cf. Biedermann 1969: 126f.). The decrease in use is simultaneously accompanied by a parallel increase of another (more expressive) intensifier as a compensation strategy in order to remain expressive (cf. Bolinger 1972: 18). In view of H2, it is presumed that new expressive intensifiers appear in the corpus

throughout time, which might be an indication of needing new expressions and, with agreement of H1, they initially also indicate an increasing progression.

What are the characteristics of expressive language and how does it differ from non-expressive language use? In recent years, a number of authors have dealt intensively with this question in their research and compiled interesting features of the expressive meaning of expressions or utterances (cf. Cruse 1986; Kaplan 1997; Potts 2005, 2007; Gutzmann 2015). In accordance with Lang (1983: 307), Kaplan (1997) sees the essential difference between the descriptive and expressive content such that the descriptive content is propositional and subject to truth conditions, while this does not apply to expressive content. Hence, descriptive statements mainly serve to describe a (possible) situation or an object in the world without any evaluation: "A descriptive is an expression which describes something which either is or is not the case" (Kaplan 1997: 4). In contrast to expressive utterances, these are truth-functional, so the facts described in the sentence may be true or false under certain conditions: "[A]n expression is descriptively correct if what it describes is the case […]" (ibid.). This means that the proposition in the sentence *Kaplan was promoted* is true exactly iff Kaplan was actually promoted, whereas it is false if this is not the case in the given situation. However, this crucial point is different for expressive content: since expressives reflect or express an emotional state, attitude, or evaluation of the speaker, they are non-propositional and therefore non-truth-functional: "[E]xpressives display something about a state or attitude of the agent" (ibid.: 5). Due to the fact, that this is an internal state of a human being, questioning the truth of an expressive statement is not felicitous, which is why according to Kaplan (1997) appropriateness in a context is relevant. Thus, the expressive content in *Alas, that damn Kaplan was promoted* is true iff Kaplan was promoted and it is accurately used in a situation if the speaker actually has an aversion to Kaplan: "[A]n expression is expressively correct if what it expresses or displays is the case (or, if we take what it expresses or displays to be a state, if the agent indeed is in that state)" (ibid.). Potts (2007: 166f.) identifies the key characteristics of the two types of meaning and lists six criteria, which are relevant for their distinction and that will be presented shortly in the following. The first criterion, *independence*, refers to the peculiarity that both types act independently from each other and as a speaker one can add, omit, or change expressive content at will without affecting the descriptive content of the utterance (cf. ibid.: 167ff.). The second criterion is called *non-displaceability*. This means that expressive content always refers to the utterance situation and, moreover, it cannot be placed in the scope of a negation or be shifted modally or temporally (cf. ibid.: 169ff.). The third criterion describes Potts (2007: 173ff.) as *perspective dependence*, which means that expressive content is always speaker-oriented, but exceptions are possible (e.g. indirect speech). The

fourth criterion, *descriptive ineffability*, is based on the observation that expressive content cannot be paraphrased descriptively, i.e. non-expressively, because this would cause dissatisfaction on the part of the speaker (cf. ibid.: 176ff.). The fifth criterion is called *immediacy* and can be attributed to the fact that expressive content behaves like performative expressions and simply has to be articulated so as to achieve the intended effect satisfactorily for the speaker (cf. ibid.: 179ff.). Finally, Potts (2007: 182f.) gives a sixth criterion, *repeatability*, which says that expressive content can be repeated as often as desired: instead of being redundant as in the case of descriptive content, the repetition of expressive content evokes a strengthening of the statement. In addition, Gutzmann (2011, 2015b) pleads for a supplement on Potts's (2005) work on conventional implicatures. He introduces a mixed class based on McCready (2010), with the goal of filling the gap of expressions that have both descriptive and expressive content at the same time, which he calls *hybrid semantics*: "That is, instead of letting linguistic expressions have a single denotation in form of their truth-conditional content, they have a second meaning dimension in form of use-conditional content as well" (Gutzmann 2019: 13). These so-called *mixed expressives* include for instance racist slurs such as *Kraut* (ethnophaulism for 'German') as well as colored expressions as Gutzmann (2011: 131) demonstrates in Frege's (1897) example:

(1)   a.   This **dog** howled the whole night.
      b.   This **cur** howled the whole night.

While (1a) contains the descriptive expression *dog*, (1b) encodes also the annoyance of the speaker by means of the mixed expressive *cur* without being part of the at-issue content. Gutzmann (2019: 134) notes that both utterances are truth-conditionally equivalent, since they are true under the same conditions, specifically when there is a dog that has been yowling all night. Nonetheless, the two expressions differ in that the latter reflects a negative attitude expressed by the speaker towards the described dog, which comments on the descriptive content without being realized linguistically (cf. Gutzmann 2019: 134). Thus, mixed expressives like *cur* convey ordinary descriptive as well as additional expressive meaning and also have a neutral, descriptive counterpart that can also be used, with the consequence that the emotive attitude of the speaker is lost.

    The distinction between descriptive and expressive content can be transferred to the intensifiers. The main characteristic of the aforementioned two groups of identifiers is the classification according to descriptive and expressive, which will be explained in the following section. The first, relatively closed class of descriptive intensifiers is best exemplified by the standard degree word *sehr*, which occurs with gradable adjectives and acquired its intensifying function around the 15th century (cf. Bolinger 1972: 18). In the beginning, *sehr* had to compete with other

expressions, but it managed to assert itself permanently against them. Following Pfeifer (1995: 1270f.), the adjectival origin of *sehr* lies in the 9th century in the Old High German *sēro* that had the meaning 'with pain', 'painful', 'sad', 'sorrowful', 'hard', with which the English *sore* (= 'wound', 'pain', 'bad') is semantically related. In German, *sehr*, besides the intensifier, is only part of the adjective (*un-)versehrt* or the substantive (*Un-)Versehrtheit* (= 'undamaged', 'uninjured'). Jing-Schmidt (2007: 437) regards the original negative meaning as decisive to the fact that *sehr* has established itself as an intensifier, with the goal of expressing strong emotional intensity. But its emotive strength has decreased over time along with frequency of use and increasing conventionalization (cf. Breindl 2007: 420). This has ultimately caused the negative origin to completely fade; it is no longer noticeable to the speaker, meaning that the intensifier is only perceived as neutrally scaling: "[I]ntensifiers tend to lose their semantic specificities by frequent use, and as their meaning fades, their only function is to express degree, hence, becoming purely scalar intensifiers" (Méndez-Naya 2003: 379). In other words: the more an intensifier is desemantized, the wider its scope of application expands, resulting in an increasing use. As a consequence, this development goes hand in hand with a loss of its original expressivity, building the way for new formations to take on the role of intensifiers (cf. Breindl 2007: 420). On account of this, *sehr* serves only as a sheer amplifier and can be regarded as the most grammaticalized, due to the strong loss of its former semantic and morphosyntactic properties (cf. Ferraresi 2014: 68). Conventionalization keeps *sehr* stable as a descriptive intensifier, which expresses a stronger intensity in contrast to the positive, i.e. an adjective without an intensifier. This leads to it being completely unchallenged in all contexts and text types, as the following examples demonstrate:[1]

(2)   Das Wetter wird morgen sehr schlecht.
      'Tomorrow, the weather will be INT[DESC] bad.'

(3)   Die Qualität des Restaurants ist sehr gut.
      'The quality of the restaurant is INT[DESC] good.'

(4)   Die Mannschaft war nach der Niederlage sehr enttäuscht.
      'The team was INT[DESC] disappointed after the defeat.'

In contrast to the descriptive intensifiers, there are many more expressive intensifiers such as German *super, krass*, or *übel*(*st*). Their development can be described as an ongoing, productive process:

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1.   The distinction between descriptive and expressive content is indicated via the subscript *DESC* or *EXPR* on the intensifier.

(5)   Der Urlaub war super schön.
      'The holidays were INT$_{[EXPR]}$ great.'

(6)   Hannah ist krass gut in Mathe.
      'Hannah is INT$_{[EXPR]}$ good at maths.'

(7)   Die Klausur war übel(st) schwer.
      'The exam was INT$_{[EXPR]}$ difficult.'

In terms of Gutzmann's (2011, 2015b) classification of mixed expressives, expressive intensifiers have the same descriptive semantics as *sehr*. But they also introduce expressive content, it can be said that both intensifier classes basically differ from each other with regard to their expressive semantics since expressive intensifiers contribute simultaneously to both meaning dimensions. This means that a speaker who uses *super, krass*, etc. can convey an additional emotional attitude towards something that s/he would not be able to express choosing a word without an expressive component and can therefore encode an even higher degree than using the descriptive *sehr*: "[W]hile *very cool* is cooler than just *cool, sau cool* is even cooler" (Gutzmann 2019: 133). As a result, expressive intensifiers are fundamentally more restricted in their use, meaning they are less appropriate in formal situations and text types and thus less common, especially in the written language. As is well known, expressive intensification is associated with informal language use, non-standard varieties or group languages of younger people and less associated with formal language as well as older people (cf. Cruse 1986: 276; Lorenz 2002: 143; Tagliamonte 2008: 362f.). This register appropriateness causes that an expressive intensifier can be replaced with a descriptive intensifier, which is accompanied by a loss of expressivity and, consequently, a lower scaling, whereas an exchange in the other direction is not easily possible, as can be shown from the following hypothetical situations:

Example a.
Suppose that Robin and Ted relax with a beer in MacLaren's pub and talk about yesterday's ice hockey match. Robin says to Ted:
"Das Spiel war mega spannend."   = "Das Spiel war sehr spannend."
'The match was INT$_{[EXPR]}$ exciting.' = 'The match was INT$_{[DESC]}$ exciting.'

Example (a) includes an informal situation in which expressivity can be used without being inappropriate. In this case, the expressive intensifier *mega* can be substituted for another expressive intensifier such as *super* or the descriptive *sehr*. The latter would be accompanied by a lower scaling of the utterance engendered by the lack of expressivity. Nonetheless it can be said that the emotive expressive *mega* indicates or entails the descriptive *sehr*.

Example b.
Suppose that Marshall has applied for a job as a manager and is now interviewed by his potential future boss Arthur Hobbs. Marshall says to Arthur:
"Die Tätigkeit klingt sehr interessant." ≠ "Die Tätigkeit klingt mega interessant."
'The work sounds INT$_{[DESC]}$ interesting.' ≠ 'The work sounds INT$_{[EXPR]}$ interesting.'

Example (b) describes a formal situation in which expressive language use would be inappropriate, meaning that the descriptive intensifier *sehr* cannot be substituted for an expressive intensifier due to restrictions of expressivity use. In opposition to the previous situation, it cannot be assumed that the descriptive intensifier *sehr* indicates or entails the emotive expressive *mega*.

The etymological origin of most of the intensifiers used in German seems crucial, because it tends to lie in the negative dimension. This can be demonstrated by using Pfeifer (1995), for example, for the intensifiers *krass* (Pfeifer 1995: 727) or *übel* (Pfeifer 1995: 1479). Biedermann (1969: 158f.), who studies the evolution of intensifiers, notes that intensifiers often derive from the negative and traces the source domain back to an abnormal state of mind with expressions such as *schrecklich, fürchterlich*, and *furchtbar*. In addition, Hentschel (1998: 124) observes that this phenomenon does not only hold for German intensifiers, since it can be observed typologically in different languages and language families. Furthermore, she explains that especially strong negative feelings are used for intensification, whereas this does not seem to be possible with positive sensory impressions:[2]

(8) Max ist furchtbar traurig. versus *Max ist wohlig traurig.
'Max is INT$_{[NEG]}$ sad.'   'Max is INT$_{[POS]}$ sad.'

While these intensifiers also display a higher scaling, their lexical meaning has not completely faded, so that they have preserved a certain degree of expressivity compared to the descriptive *sehr* (cf. Ferraresi 2014: 64). Nevertheless, Hentschel (1998: 125) points out that not every intensifier with a negative origin can be used to reinforce a positive context, as exemplified by the following sentences:

(9) *John ist erschreckend nett.
'John is INT$_{[NEG]}$ nice$_{[POS]}$.'

(10) *Seine Mutter war haarsträubend freundlich.
'His mother was INT$_{[NEG]}$ kind$_{[POS]}$.'

(11) *Das Wetter war ekelhaft gut.
'The weather was INT$_{[NEG]}$ good$_{[POS]}$.'

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2. The subscript *NEG* or *POS* on the intensifier serves to indicate the expression as either negative or positive.

(12) *Das Bild ist scheußlich schön.
          'The picture was INT[NEG] beautiful[POS].'

The negative intensifiers used are evaluated negatively rather than positively by the listener because the statements receive an insincere component. Kirschbaum (2002a: 211) explains this by a two-stage development that intensifiers undergo: in the first step, an adjective is assigned the function of an intensifier beyond the adverbial function. Accordingly, the combination of intensifier and adjective with the same polarity should be possible without any problems (*abscheulich[NEG]* + *schlecht[NEG]*), whereas mixed combinations should be marked (*abscheulich[NEG]* + *nett[POS]*). In the second step, the delexicalization, the lexical meaning of the element converted into an intensifier is successively lost, owing to grammaticalization. As a result, the intensifying reading strengthens and the scope of application subsequently grows (cf. Tagliamonte & Roberts 2005: 284). Ultimately, this collocation expansion makes it possible for mixed combinations with different polarity to occur without the expression being marked (*furchtbar[NEG]* + *schön[POS]*). In this case, the negative meaning of the intensifier in the second step has faded to such an extent that it is only perceived as weak or non-emotional, which makes its use less restricted. This means that the intensifying use has established itself when the intensifier is "compatible with negative, neutral, and positive rating of the core element" (Biedermann 1969: 118, own translation). However, Kirschbaum (2002b: 195) points out that intensifiers do not necessarily reach the second stage, as can be seen in the following examples:

(13)   Die Dozentin war verdammt unfreundlich / nett.
          'The lecturer was INT[NEG] rude[NEG] / nice[POS].'

(14)   Die Dozentin war grauenhaft unfreundlich / *nett.
          'The lecturer was INT[NEG] rude[NEG] / nice[POS].'

(15)   Der Urlaub war traumhaft schön / *schlecht.
          'The holidays were INT[POS] great[POS] / bad[NEG].'

(16)   Der Urlaub war wunderbar günstig / *teuer.
          'The holidays were INT[POS] cheap[POS] / expensive[NEG].'

After the theoretical background has been laid out in Section 1, Section 2 moves on to consider the corpus study that aims to outline the synchronic and diachronic development of descriptive and expressive German intensifiers. Subsequently, Section 3 will concentrate on the outcome of the corpus study, while Section 4 presents a critical assessment of them. Finally, in the concluding section, the results will be summarized and evaluated regarding the hypotheses under examination, followed by a review of open questions and directions for future research.

2. Corpus study

The corpus study is essentially based on the two hypotheses explained above, which are to be empirically verified by the study. The first has been formulated by Biedermann (1969: 126f.), who claims that intensifiers lose their expressive character over time, blaming the loss with the frequency of use: "Frequency is the natural enemy of expressivity" (Keller & Kirschbaum 2003: 2, own translation). According to Bolinger (1972: 18), this results in a need for new linguistic expressions to maintain expressivity, which happens to be the second hypothesis to be studied. Therefore, the goal of this corpus linguistic investigation is to test the validity of the two hypotheses by carrying out quantitative evaluations in the form of synchronic and diachronic frequency distributions of selected intensifiers in German. By this approach possible changes that emerge in written language use can be made visible and interpretable, allowing conclusions to be drawn from the role and the presumed loss of expressivity. The corpus for this study was constructed from the German Reference Corpus [DeReKo] (cf. Kupietz & Keibel 2009) of the Institute for German Language from the *W – Archiv der geschriebenen Sprache* or *W-öffentlich*, searchable by means of the COSMAS II online tool (https://cosmas2. ids-mannheim.de/cosmas2-web/). The *archive W* (with new acquisitions) consists entirely of public text corpora of contemporary German, which comprises a total of approximately 32 million texts with 9 billion word forms. The underlying basic corpus contains all available issues of the magazines *Der Spiegel* and *Die Zeit* during the period of January 1950 to December 2017. Note that the issues of *Die Zeit* from January 1994 to November 1994 are not included due to unavailability. All in all, the corpus consists of 133 subcorpora with 727,375 texts and approx. 562 million words. *Der Spiegel* and *Die Zeit* were chosen because their long time coverage makes it possible to examine a linguistic phenomenon that is known to change rapidly in a homogeneous text type and over a long period of time. So, it is assumed that the compiled corpus of magazines offers a suitable source for the investigation of intensification in which the hypotheses cited can be linguistically tested. Nevertheless, it should be borne in mind that the rather conservative language in a magazine, drawing on work of Koch und Oesterreicher (1996, 2007), can be classified as conceptual written in which it can be difficult to find sufficient evidence for informal, colloquial, and group-language expressions and that potential changes occur delayed compared to oral communication. Even if some intensifiers only occur to a small extent, it is still possible to derive trends that can be associated with their development. In addition, positive results in a conceptually written corpus could suggest, also with fewer hits, that the intensifiers are already established and that the increase may reflect the actual language use.

Between June 2018 and January 2019, the lexical items examined ($n = 25$) were retrieved individually via the search mask of the web application COSMAS II. The search was conducted for the following expressive intensifiers ($n = 24$): *arg, arsch, derb, end, fürchterlich, furchtbar, hammer, krass, mega, ober, sau, scheiß, scheiße, schrecklich, schweine, super, übel, übelst, übertrieben, ultra, unheimlich, verdammt, voll*, and *wahnsinnig*. These were selected for their actuality (e.g. *mega*), but also because they are regarded as firmly established or usualized (e.g. *sau*). Furthermore, intensifiers with a negative source domain were included in the study to which for instance *furchtbar* or *schrecklich* belong (cf. Biedermann 1969; Hentschel 1998). This results in a flexible selection that serves to give a good, even if by no means complete overview of the expressive intensifiers present in German and to empirically test the hypotheses presented in the theoretical literature. In addition to the expressive intensifiers, *sehr* as the most important representative of the stable, descriptive intensifiers was included ($n = 1$), functioning as a baseline that can be consulted to compare potential changes in the use of expressive intensifiers.

Since the corpus was neither tagged nor parsed it was not possible to extract the intensifying usages automatically. Instead, all sentences with an occurrence of one of the intensifiers were tagged using the *TreeTagger* (cf. Schmid 1994, 1995), allowing to presort the results before checking the remaining hits for an intensifying function manually. The graphematic representation did not play a role in the study: both individual words (*megagut*) and two separate words (*mega gut*) as well as words linked by a hyphen (*mega-gut*) were included in the analysis if they were forms of intensification. In the case of *voll*, unambiguously absolute (and probably non-expressive) uses as in *voll funktionsfähig* or *voll ausgelastet* were excluded from the data. Also non-intensifying and purely qualitative uses were ignored, e.g. combinations with past participles such as in *übel zugerichtet* or *übel mitgespielt*.

The annotation procedure is demonstrated in the following by three selected sentences using the example of *krass*:

(17) Und keiner kann so **krass ernst** über Michael Schumacher und das
*And nobody can so **krass seriously** about Michael Schumacher and the*
Wetter reden wie Peter Klöppel.
weather talk like Peter Klöppel.
'And no one can talk as seriously about Michael Schumacher and the weather as Peter Klöppel.' *Die Zeit*, 28.02.2002

(18) Die Leute staunen, dass man so **krass stabil** im Leben stehen kann
*The people are amazed that you so **krass stable** in life stand can*
auch wenn man erst 30 ist.
even when you only 30 are.
'People are amazed that you can stand so blatantly stable in life, even when you're only 30.' *Die Zeit*, 24.08.2017

(19) Natürlich war das **krass attraktiv** für uns.
*Of course was that **krass attractive** for us.*
'Of course, that was blatantly attractive for us.' *Die Zeit*, 23.10.2014

As can be seen from the Examples (17) through (19), *krass* takes the position in front of the adjective to be amplified, which indicates that it is an intensifier. For this reason, sentences with this form were included in the analysis, whereas *krass* in the form of an adjective was excluded.

Thus, the list of each intensifier provides the total number as the result. This absolute token frequency represents the number of occurrences of each item in the corpus, which, however, depends strongly on the corpus size. For ease of comparison, the absolute values were normalized to 1 million words (≙ Instances **per Million Words [IpMW]**) with the intention to get the relative token frequency. This allows the overall diachronic development of the intensifiers to be graphically visualized by a combination of the individual relative values using diagrams or histograms.

3. Results

In this section a broad presentation of the outcome gained by the corpus study is given first. This is subdivided into the two groups of descriptive and expressive intensifiers in later sections. A Hierarchical Cluster Analysis follows, which demonstrates that the expressive intensifiers can be divided into different groups according to their corpus frequency. The statistical evaluations were performed using the software R and the packages lme4, ggplot2, and dplyr (cf. Bates et al. 2015; Wickham 2016; Wickham et al. 2019).

3.1 General results

The use of the examined expressive intensifiers ($n = 24$) has steadily increased in the magazine corpus, concentrating mainly throughout the last fifty years (cf. Figure 1).

Based on the relative values shown in Figure 1, it can be concluded that the total number of expressive intensifiers in the corpus has constantly increased over the time period studied. The 20 IpMW measured in the first five-year interval have roughly tripled in the last interval, which is a remarkable finding regarding that it is a rather conservative text type.

In addition, a high variability between the expressive intensifiers can be seen from the overall results, since they all show different frequencies. For the analysis this means that some of the items had to be disregarded because of a low
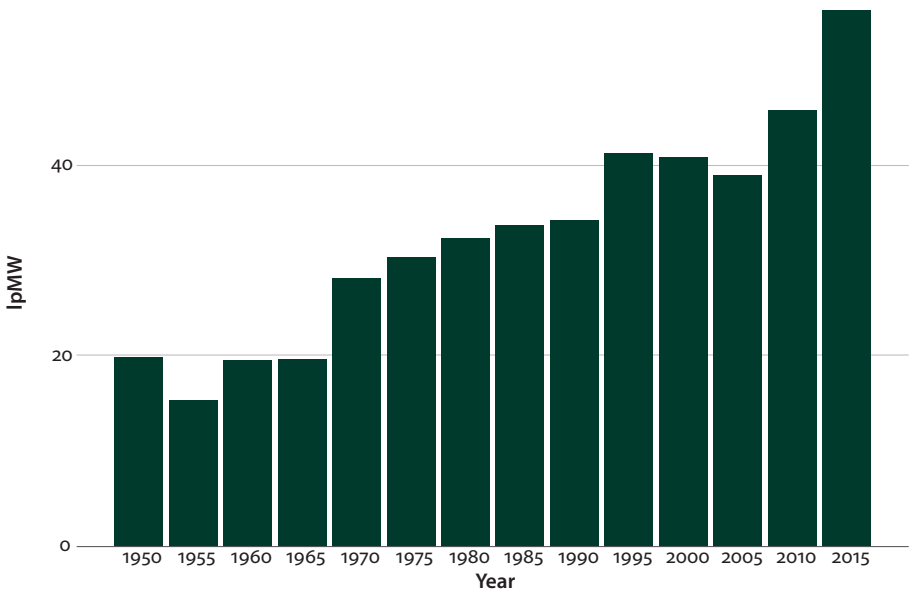
Figure 1. Diachronic development of all expressive intensifiers (*n* = 24) in the period from January 1950 to December 2017 with intervals of five years

token frequency, e.g. *end* (*n* = 3) or *scheiße* (*n* = 2), whose proportion equals 0%. Moreover, intensifiers are excluded from the analysis as well whose overall development is not applicable due to methodological reasons. An overview of the frequencies of all intensifiers is given in Table 1 in the Appendix.

3.2   Descriptive intensifier

As expected, engendered by its pronounced freedom of use, the descriptive *sehr* is by far the most frequently used intensifier in the magazine corpus. This can be proven throughout the period being studied with a total of 165,161 tokens, which illustrates how uncontroversial the use is even in the conceptually written text type. The frequency distributions for *sehr* are shown in Figure 2.

Judging by the relative corpus frequency in IpMW, the use of *sehr* decreases constantly from 1950 to the mid-seventies, whereas it increases again in the nineties. Therefore, the development of *sehr* can be described as a kind of dent with decreasing beginning and increasing end. It is noticeable that, due to delexicalization and lack of expressivity, *sehr* is used very often and the most common intensifier in the magazine corpus as well as presumably in the written language in general. In view of this development and the high occurrence, there are no indications
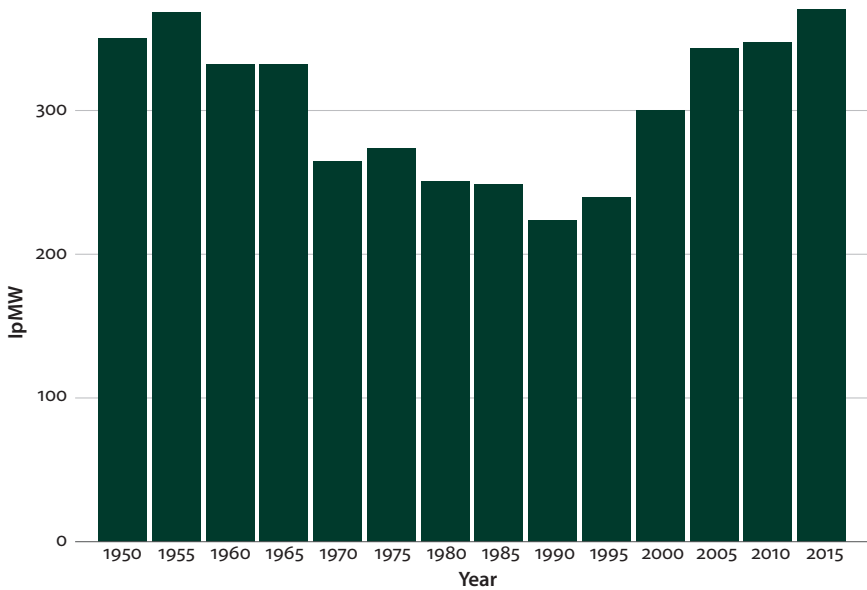
Figure 2. Diachronic development of the descriptive intensifier *sehr* in the period from January 1950 to December 2017 with intervals of five years

of a decline or displacement by other intensifiers. The attempt to correlate a part of the low point of *sehr* with the token frequencies of expressive intensifiers was unsuccessful, so that it cannot be assumed that *sehr* in its declining phase is being replaced by other, specifically expressive intensifiers.

3.3   Expressive intensifiers

After removing the 8 intensifiers that are low in frequency or cannot be interpreted, 16 of the 24 expressive items can be included in the evaluation. These are *arg, derb, furchtbar, fürchterlich, hammer, krass, mega, ober, sau, scheiß, schrecklich, super, unheimlich, verdammt, voll*, and *wahnsinnig* whose frequency distributions are shown in Figure 3.

From the data in Figure 3 it is apparent that the intensifiers, at first glance, can be divided into different groups on the basis of development processes, which are described in detail below.

The first group includes those intensifiers whose use increases temporarily, but also decreases again after a few years (*n* = 3). These are *arg, schrecklich*, and *unheimlich*. They indicate a more or less distinctive wave movement; a development, which can be seen at a very early stage, i.e. at the beginning of the investigation period. All
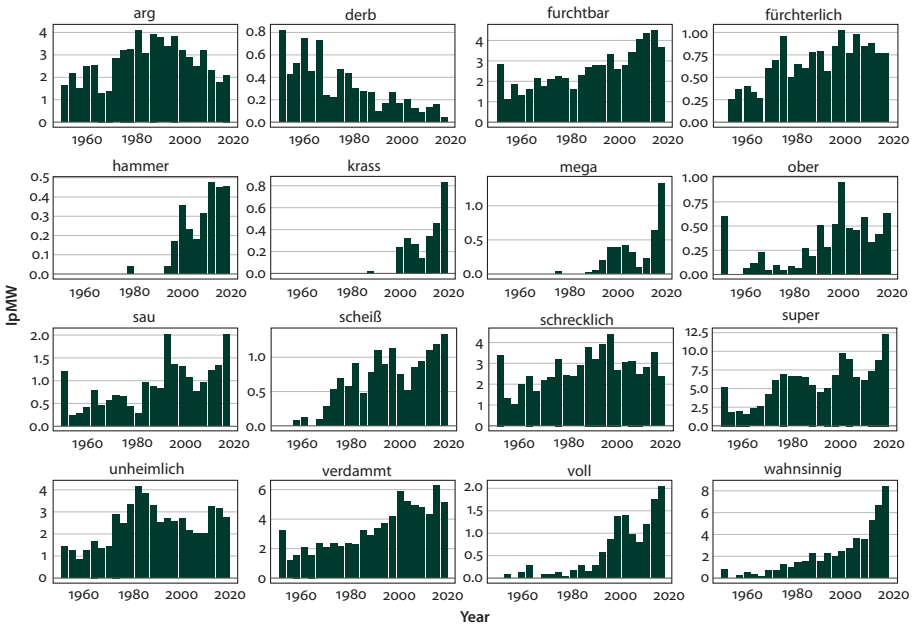
Figure 3. Synchronic and diachronic development of the interpretable German expressive intensifiers (*n* = 16) in the period from January 1950 to December 2017 with intervals of three years

three intensifiers reached their maximum height between 1970 and 1990. Since then they have decreased rather constantly. It is remarkable that for the most part they have risen again since 2010, which suggests the possibility of an iterative process. Whether or not this is actually the case cannot be answered at this stage, for this, a long-term observation would be necessary. Nevertheless, it can be assumed that they are firmly established intensifiers of German, which, despite the fluctuations, will probably not be displaced by others.

The next group consists of rising intensifiers (*n* = 6), which includes *furchtbar, fürchterlich, sau, super, verdammt*, and *wahnsinnig*. They show a broad continuous increase throughout time and may continue to do so. Owing to the quite homogeneous development and the stable corpus frequencies, it is possible that these intensifiers have not yet reached their summit and that they will be used in the future. This can particularly be seen in *furchtbar, sau, super, verdammt*, and *wahnsinnig*. Their use has increased steadily since the turn of the millennium. Astonishingly, these are almost exclusively "horrible intensifiers" that Biedermann (1969: 159) describes as an abnormal mental state and which are apparently still on a rise today. To recap, it can be seen that these intensifiers are also largely stable, which

suggests an intermediate stage between descriptive and expressive status: even if these intensifiers do not have the same characteristics as the descriptive *sehr*, they are still less restricted than the new expressive intensifiers.

In contrast, there is the group of decreasing intensifiers ($n = 1$), which is only represented by *derb*. Since its climax in the early sixties, *derb* appears to have been constantly decreasing and perhaps replaced by others, resulting in being almost extinct in intensifying function.

Finally, the last group comprises those intensifiers ($n = 4$) that apparently came into being and established themselves during the 70 years studied: *hammer, krass, mega*, and *ober*. Although some of them have had some matches at the beginning, they have only developed into sturdy intensifiers in the last twenty to thirty years. Here, the steady increase suggests that the peak has not yet been reached and that the intensifiers will become even more frequent in the coming years.

At an intermediate level between the ascending group (2) and the newly established group (4) there are two further intensifiers ($n = 2$) that cannot be clearly assigned to either one, namely *scheiß* and *voll*. They initially show signs of a background noise, but in the early seventies they were gradually used more and more as intensifiers, which will presumably increase in the coming years. Hence, on the one hand, both indicate an ascending course, which would justify the classification into the second group. On the other hand, however, it looks like they have only developed into intensifiers over time; this would favor the classification in the fourth group. *Scheiß*, e.g., shows a constant increase, which started up in the seventies, while *voll* did not start until the nineties.

3.4   Hierarchical Cluster Analysis

To statistically check this initial classification, a bottom-up Hierarchical Agglomerative Cluster Analysis was carried out with the goal of examining whether the above-mentioned assumptions regarding the group classification are correct or need to be revised. The groups are characterized in such a way that the members' features are similar within a cluster, i.e. they are homogeneous in terms of their absolute corpus frequencies, while they differ from the other clusters and are therefore heterogeneous. The greater the distance between the individual groups, the more different they are (cf. Sauer 2019: 437ff.). The dendrogram that groups the expressive intensifiers into different homogeneous clusters based on the Euclidean distance is shown in Figure 4.
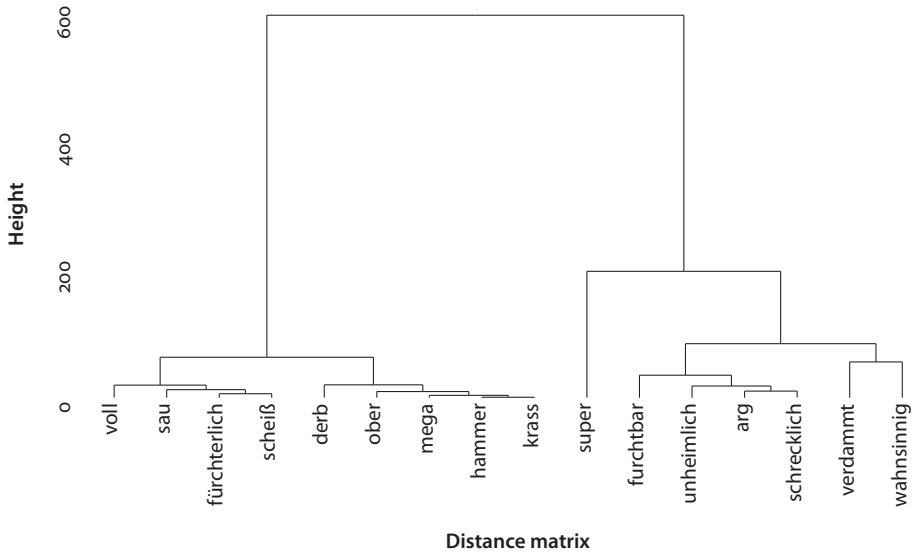
Figure 4. Cluster dendrogram of the German expressive intensifiers ($n = 16$) with 4 groups (distance method: Euclidean; amalgamation rule: Ward's linkage (cf. Ward 1963))

The result of the Hierarchical Cluster Analysis suggests that it is reasonable to consider two large clusters with two subclusters each. The first subcluster comprises the intensifiers *voll, sau, fürchterlich*, and *scheiß* ($n = 4$), the second contains *derb, ober, mega, hammer*, and *krass* ($n = 5$). In the second cluster, the subcluster that exclusively consists of *super* ($n = 1$) is opposed to the last subcluster, which is composed of *furchtbar, unheimlich, arg, schrecklich, verdammt*, and *wahnsinnig* ($n = 6$) (NB *verdammt* and *wahnsinnig* can also be interpreted as a separate, fifth subcluster, but are combined in this paper with the fourth for technical reasons). Consequently, it can be deduced that the first cluster contains all intensifiers that have recently established themselves throughout time as well as *derb*, which further decreases and those intensifiers whose use is still increasing. The second cluster includes, in addition to *super* as an equally ascending intensifier, those that belong to the "horrible intensification" and that reinforce the quality expressed by the adjective in the form of a perceptible negative expression. This proves that the previously adopted grouping is mainly correct, with a few exceptions discussed in the next chapter.

4.   Discussion

This section discusses the results gained and presented in Chapter 3. The first part deals with the descriptive intensifier *sehr*, followed by an assessment of the expressive intensifiers with reference to the outcome of the Hierarchical Cluster Analysis carried out with R. Subsequently, these results will be summarized and evaluated regarding the two hypotheses of Biedermann (1969: 126f.) and Bolinger (1972: 18) to be verified.

4.1   Descriptive intensifier (*n* = 1)

On the basis of the results of the corpus analysis, the development of *sehr* can be described as a dent with falling beginning and rising end. This suggests that the increase will continue and that the maximum has not yet been reached. Furthermore, *sehr* with 165,161 tokens, as expected, was by far the most frequently used intensifier, which can be explained by the high degree of delexicalization and the complete lack of expressivity. This seems to confirm the assumption that *sehr* is the most common intensifier in German – both in oral and written language – and that there is no evidence of a displacement by other intensifiers. Even given that only speculations are possible with regard to the initial decline (e.g. that *sehr* compared to other intensifiers could have been less popular in general or that the journalists might not have resorted to intensification as much at that time), the lack of expressivity could explain the subsequent increase that has taken place since the mid-nineties. In view of the rather conservative text type examined in the study, *sehr* offers the most neutral possibility of scaling, which is also appropriate in the context of the magazine language. Keeping in mind that in terms of Koch and Oesterreicher (1996, 2007) this is conceptual literacy, which, as the study made clear, tends to be considerably more descriptive than expressive. Hence, it is conceivable that after a temporary loss the use of *sehr* has indeed increased again in the written language, but in oral communication and above all in youth language it may be less satisfactory to express additional speaker attitudes, evaluations, and emotional content than expressive intensifiers. Since only speculation about the reasons is possible, the question of the distribution of descriptive *sehr* in comparison to expressive intensifiers in certain varieties such as youth language could be subject of future research.

4.2   Expressive intensifiers (*n* = 16)

In the following section, the outcome of the Hierarchical Cluster Analysis of the expressive intensifiers according to the two main clusters with the subclusters are discussed with the purpose to examine where the similarities and differences to

the previously mentioned group classification lie. Thereupon, the results are summarized and evaluated with reference to the two hypotheses to be tested set-up by Biedermann (1969) and Bolinger (1972).

4.2.1   Cluster I

Subcluster 1: The first subcluster consists of the following four intensifiers: *voll* ($n = 356$), *sau* ($n = 523$), *fürchterlich* ($n = 397$), and *scheiß* ($n = 403$). As already mentioned, both *voll* and *scheiß* fall in between the group of ascending and newly established intensifiers (although in my opinion grouping them in the former group would make more sense). *Fürchterlich* and *sau*, however, are intensifiers whose use has constantly increased over time and, as Pfeifer (1995) notes, which have already appeared in an intensifying function in the 17th or 19th century. Concerning the other intensifiers, there is no documentation of their first occurrence. It is noticeable that *sau, fürchterlich*, and *scheiß* are intensifiers that have derived from the partially homophone and predominantly negatively connotated nouns, as from *Sau* ('pig'), *Furcht* ('fear'), as well as *Scheiße* ('shit'). Particularly in the latter case the transparency and the negative connotation could be decisive for the fact that the item is not represented more frequently in the magazine corpus. In addition, 82.4% of the hits for *scheiß* are the largely conventionalized composition *scheißegal* (or *scheißejal*), while only 17.6% come up to other compounds, so that *scheiß* generally appears to be less productive.

Subcluster 2: The first subcluster, whose number of matches ranges in the middle, is opposed to the second that contains *derb* ($n = 150$), *ober* ($n = 185$), *mega* ($n = 115$), *hammer* ($n = 78$), and *krass* ($n = 73$) and whose absolute numbers are characterized by being substantially smaller. In addition to *derb* as the only decreasing intensifier, there are two dimensional intensifiers, namely *ober* and *mega*, which can be regarded as semantic equivalents by virtue of their etymology. *Mega* originates from Greek and means, following Pfeifer (1995: 855), 'big', 'high', 'long' or 'wide', which is why it is semantically related to German *ober* insofar as Pfeifer (1995: 940) defines it as 'above', 'elevated', 'at a higher level' or 'superordinate' (own translation). Moreover, *hammer* and *krass* can be considered as semantically related: the hammer is a powerful metal tool that is primarily used for heavy work. These are exactly those adjectives, which Pfeifer (1995: 727) associates with the meaning of *krass*, showing reasons for a possible connection.

4.2.2   Cluster II

Subcluster 3: The third subcluster contains only *super*, which has an absolute frequency of 3,476 tokens and is the most commonly used expressive intensifier. According to Pfeifer (1995), it was already established in the 16th century:

> During the 16th century *super-* became the first compositional element in German to be used in nominal compositions in order to denote an increase in content, cf. *superfein* adj. 'especially, very fine' (16th century), *superklug* adj. 'especially clever, extremely astute' (17th century) […] *superfaul* adj. 'especially lazy' (19th century).
>
> (Pfeifer 1995: 1398, own translation)

This indicates that *super* is one of the oldest intensifiers studied, which might be the reason for the comparatively high corpus frequency.

Subcluster 4: The last subcluster consists of *furchtbar* ($n = 1,557$), *unheimlich* ($n = 1,427$), *arg* ($n = 1,584$), *schrecklich* ($n = 1,600$), *verdammt* ($n = 2,020$), and *wahnsinnig* ($n = 1,351$) and thus, moves in a rather high frequency range. It is interesting that all of them are intensifiers with a clear negative origin. Using Pfeifer (1995), one can demonstrate that they took on the role as an intensifier at a very early stage, i.e. between the 16th century (*furchtbar*) and the 19th century (*unheimlich* and *verdammt*) what makes it apparent that they are well established and may have retained a certain, albeit low degree of expressivity.

4.2.3   *Summary and evaluation of the results*

In the previous sections it has become clear, that it is possible to describe the dendrogram clusters not only according to the corpus frequencies but also according to the semantic characteristics of their members: although the cluster analysis is based on the actual occurrence of the intensifiers in the corpus over time, there are even interesting semantic similarities within the respective groups. Since this is considered as a potential explanation for the behavior in relation to the token frequency of the intensifiers, the individual clusters were also analyzed semantically in this study. Thus, the first cluster contains those expressive intensifiers, which lie in a low to medium frequency range and whose etymology is (still) completely transparent. Regarding to the text type, this transparency and the associated negative connotation could be disadvantageous for these intensifiers and leads to them being used less frequently in favor of other, noncritical intensifiers. Moreover, this cluster consists of dimensional intensifiers, which locate the property expressed by the adjective or adverb spatially, i.e. *above a fixed boundary or threshold*. In parallel, there are powerful intensifiers, which stand for strength, hardness, as well as mass and assign the increased degree for the following element in the form of weight. Beyond the semantic relations, it can be deduced that this cluster contains all those intensifiers, which are comparatively new and, consequently, not yet frequently represented in the magazine language. The second cluster contains the most commonly used and longest established intensifier *super*, which expresses that the described property goes *beyond the normal extent*. Additionally, it includes the "horrible intensifiers", discussed by Biedermann (1969) and Hentschel (1998),

which are characterized by being originally negative expressions. Such expressions are used in many languages and language families for intensification. Quantitatively, the second cluster comprises those intensifiers that occur in the corpus with a high token frequency and can also be summarized with regard to their etymological development. As shown by making use of Pfeifer (1995), both *super* and *furchtbar* had already adopted the role of an intensifier in the 16th century as well as *schrecklich* (17th century), *unheimlich*, and *verdammt* (both 19th century) can be interpreted as older and well-established intensifiers. Even if no evidence can be found for the emergence of *wahnsinnig* and *arg*, it is quite imaginable that they also took over the intensifier role at an early stage.

But what does the outcome mean for the hypotheses set-up by Biedermann (1969: 126f.) and Bolinger (1972: 18)? Does frequent use actually cause a loss of expressivity, resulting in new expressions as a strategy to remain expressive, innovative and original as a speaker? As can be seen from the development throughout almost 70 years, 15 of the 16 intensifiers studied are still on an increase, giving no indication of a loss of expressivity. Based on the assumption that an intensifier that has lost its expressivity is less popular with speakers, and is therefore suppressed by others, leading to a decrease in use, the results provide only little support for this hypothesis. The only intensifier, which a possible loss of expressivity can be considered due to decreasing development, is *derb*. Whether the decline in *derb* can be attributed to the fact that it has gradually become less expressive as an intensifier or because it was at a disadvantage compared to other intensifiers for certain reasons cannot be justified corpus linguistically. The IpMW per five-year interval illustrate that *derb* is the least used intensifier (apart from *krass*), which might be an indication to reject the frequency hypothesis H1 (cf. Figure 3). Moreover, the question of whether *derb* was used more frequently (and possibly too often) in the period before 1950 must remain unanswered, viewing the limited investigation period of the study.

5.   Conclusions

The corpus linguistic study served to empirically test the validity of the hypotheses described above set-up by Biedermann (1969: 126f.) and Bolinger (1972: 18). According to them, the use of an intensifier over time is associated with a loss of its expressive character, with frequency being the decisive factor (cf. H1). This causes a constant need for new expressions that enable a speaker to remain expressive in order to incorporate an emotional attitude into the message (cf. H2). To test this, quantitative evaluations in the form of synchronic and diachronic frequency

distributions of selected German intensifiers were carried out based on a specially created corpus.

Judging by the results, the use of the descriptive intensifier *sehr* can be described as a kind of dent with decreasing beginning and increasing end. The subsequent increase as well as the stable corpus frequency indicate that, despite temporary loss, *sehr* is the most stable intensifier in (written) German and that there is no reason to assume a substitution by others. This probably can be explained by the fact that *sehr* scales neutrally and can therefore be used absolutely unchallenged at any time. Due to inappropriateness in certain registers and text types, such as magazine language studied here, this is not the case with expressive intensifiers. With respect to the etymology, *sehr* has lost its semantics and expressivity, but equally gained significantly in frequency. This stands in contrast to H1. One reason for this could be its century-long development, which may have contributed to *sehr* having established itself as a fixed neutral intensifier, without being attacked by expressive intensifiers for the reasons mentioned in the introduction, e.g. usage restrictions. Furthermore, the diachronic frequency distributions suggest that the use of expressive intensifiers in the corpus has strongly increased over time. For this increase several explanations can be considered. For instance, it is in principle possible that the style of writing in the magazines is more emotional than in the past, i.e. more intensification is incorporated into the articles. Another explanation is that the intensifiers investigated have generally become more acceptable even in the written language, which could be engendered by the (still) perceptible expressivity. The actual cause of the increase cannot be estimated on the basis of the corpus data alone, however.

The Hierarchical Cluster Analysis performed with R and based on the corpus frequencies identified two clusters with two subclusters each, into which the expressive intensifiers are divided according to homogeneous characteristics: while the first cluster consists mainly of intensifiers in the lower and middle frequency range, which are dimensional (i.e. force expressing) or of substantive origin, the intensifiers of the second cluster are in a high frequency range and originate in particular from negative expressions corresponding to an abnormal state of mind, described by Biedermann (1969: 159). The etymology, after Pfeifer (1995), allows the conclusion that they have existed for a very long time in an intensifying function and that, as a result, no decline in use is to be expected, which could indicate a potential loss of expressivity. In view of the text type, it can be presumed that the use of intensifiers of the first cluster in the conservative magazine language is currently much more controversial than that of the second cluster. How the frequency of these intensifiers will develop in the coming years, however, remains to be unanswered at the present time. Only one intensifier could be identified though this

study, *derb*, which has decreased more strongly over the course of time and thus, offers a reason for the assumption of the loss of expressivity (H1), hypothesized by Biedermann (1969: 126f.). Whether the use of *derb* is decreasing because it has been replaced by other intensifiers as a result of its dwindling expressivity or whether it was simply less popular than others cannot be answered on the basis of the corpus study. This means that further investigations and, ideally, experimental methods are required to confirm the outcome obtained by the corpus study. Nevertheless, it is conceivable that *derb* was less popular in general, which may have accelerated the linguistic change in favor of other intensifiers. The IpMW over a period of 70 years, though, indicate that *derb* was used much less frequently than the other intensifiers and that it has almost lost its intensifying function. Given the diversity and the ongoing development of the intensifiers used in German, it appears realistic that the intensifying *derb* will be completely repressed in not only oral but also written communication in the coming years, even if the question of the role of expressivity currently remains open. By virtue of its unique course, *derb* is the only intensifier in which the possibility of loss of expressivity actually can be considered.

Summarizing, almost all of the expressive intensifiers studied are increasingly used due to their continuing topicality and successive conventionalization, while particularly the more recent ones seem to confirm the second hypothesis (H2) set-up by Bolinger (1972: 18), according to which there is a constant need for new expressions as a strategy to remain expressive. The increase in the corpus frequencies of the intensifiers can possibly be attributed to a stronger inclination in the two weekly magazines in favor of more orally oriented text types such as letters to the editor, comments, or interviews. However, this assumption cannot be substantiated because of insufficient metadata, leaving the role of the register of those passages where the intensifiers occurred unclear. Nevertheless, research of pages that are freely accessible on the *Spiegel Online* homepage (https://www.spiegel.de/spiegel/print/index-2019.html) seems to confirm the assumption of internal changes in the structure of the magazines, since more recent editions are much more nuanced than the older ones. The restructuring has led to the publication of (conceptually oral) reader comments, which has not been the case in the past, offering the possibility of increased emergence of expressive intensifiers.

Despite the gained results, it should be considered that the underlying text type, following Koch and Oesterreicher's (1996, 2007) classification, is conceptual literacy and hence associated with communicative distance. This class is primarily characterized by the fact that, in contrast to oral communication, linguistic innovations occur delayed, if at all, and that it takes a certain amount of time before they can be proved. The circumstance that the phenomenon investigated is intensification, which is strongly associated with informal group-specific varieties (cf. Lorenz 2002: 143; Tagliamonte 2008: 362), undoubtedly contributes to the fact that

the newer intensifiers are found considerably less frequent than the descriptive *sehr*. Nonetheless, it is also possible in a magazine corpus to investigate the occurrence of intensifiers and to make visible diachronic changes. In addition, the increased number of the expressive intensifiers in the corpus can be interpreted as an indicator of an advanced language change: if there is more evidence for the expressive intensifiers over time, it can be assumed that these expressions have established themselves in oral communication and that the change has successively spread to written language use.

A further interesting approach could be the limited combinability of negative intensifiers with positive adjectives described in the introduction, which was not relevant in the context of the present study. As explained, Biedermann (1969: 118) purports that an intensifier has established itself when it can be combined with negative as well as positive and neutral expressions. This means that the factor of combinability may provide further information about the degree of expressivity. In this regard, it might prove fruitful in future studies to examine the combinations of the intensifiers contained in the corpus with adjectives of different polarity, so as to make statements about the influence of expressivity on the development of intensifiers.

Finally, it can be stated that also a conceptually written corpus can serve to derive developmental tendencies from intensifiers, which, as discussed in detail, are important characteristics of the oral communication. Irrespective of the fact that an answer to the examined hypotheses H1 and H2 is only marginally feasible, this study offers the first empirical evidence for an increase of expressive intensifiers in the written language and at the same time paves the way for further examinations of linguistic expressivity in general as well as intensifiers in particular.

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Appendix

Table 1. Frequency distribution of the 25 intensifiers at a corpus size of approx. 562 million words

Intensifier	Classification	Corpus frequency	Percentage
sehr	descriptive	165,161	89
ultra	expressive	4,243	2.29
super	expressive	3,476	1.87
verdammt	expressive	2,020	1.09
schrecklich	expressive	1,600	0.86
arg	expressive	1,594	0.86
furchtbar	expressive	1,557	0.84
unheimlich	expressive	1,427	0.77
wahnsinnig	expressive	1,351	0.73
übertrieben	expressive	732	0.39
sau	expressive	523	0.28
scheiß	expressive	403	0.22
fürchterlich	expressive	397	0.21
voll	expressive	356	0.19
ober	expressive	185	0.1
derb	expressive	150	0.08
mega	expressive	115	0.06
hammer	expressive	78	0
krass	expressive	73	0
übel	expressive	53	0
schweine	expressive	29	0
arsch	expressive	27	0
übelst	expressive	16	0
end	expressive	3	0
scheiße	expressive	2	0
Total		**185,571**	**100**

The interpretation of the German additive particle *auch* ('too, also') in quantificational contexts

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This article discusses an unexpected interpretation that arises for the German additive particle *auch* ('too, also') in quantificational contexts. It will be proposed that what *auch* conveys in such contexts is a superset-to-subset relation between two of its arguments. This rather unusual meaning and its alternation with the classical additive meaning will be argued to be tied to specific syntactic constructions in which the particle occurs. The main purpose of this article is to present novel data and make a tentative suggestion on how the correspondence between syntactic structure and semantic interpretation could be explained.

1. Introduction

The aim of this paper is to present novel data that outline a reading of additive particles not yet discussed in the literature. This reading arises for certain syntactic structures involving quantification.

The meaning that is commonly ascribed to an additive particle can be paraphrased as 'in addition to x…' (consider, for instance, Heim 1992; Rullmann 2003; Ahn 2015, on English *too*). The German additive particle *auch* ('too, also') fits the classical definition in most respects – it triggers an additive presupposition, which coincides with the above mentioned standard meaning of additives (Kripke 1990/2009; Beaver & Clark 2008; Ruys 2015; Abrusán 2011, 2016; among many others). For a run-of-the-mill sentence like (1), no unlikely effects arise, i.e. nothing exceptional or unexpected is happening in this kind of syntactic configuration.

(1) Maria hat geschlafen. Hans auch.
     Maria has slept   Hans too
     'Maria slept. Hans did too.'

Hence, at this stage, there is no obvious reason to expect that *auch* would behave differently in connection with a quantificational antecedent. But actually, the sentence in (2) is ambiguous between two kinds of readings – a classical additive one (2a), which is dubbed 'exclusive' throughout this paper; and an (henceforth referred to as) 'inclusive' one (2b), in which *auch* lacks its typical additive 'in addition to…' meaning.

(2)   Jeder Student hat geschlafen. Hans auch.
        every student has slept   Hans too
   a.   Hans and every student slept.
   b.   Every student slept. This includes Hans.

The substantial difference between those two interpretations is that, in the exclusive case, Hans is understood to be one of the sleeping (non-student) individuals. In other words, Hans is interpreted to be a member of the set of individuals that are in the nuclear scope of the quantifier from the antecedent sentence. Therefore, 'In addition to every student (being asleep), Hans slept' is a suitable paraphrase for (2a). But under the inclusive reading, the additive particle's DP-argument *Hans* is rather understood as being a member of the restrictor set of the quantifier as well – i.e. such that Hans is one of the students who slept. So the default additive meaning does not quite properly capture what (2) actually conveys under the reading in (2b). Because whatever is predicated of every student is predicated of Hans alike already. The meaning paraphrase 'In addition to every student (being asleep), Hans slept' would thus contain redundant material or rather convey redundant information. No such redundancy is apparent in (2).

The observation that the default additive meaning does not quite coincide with (2b) begs the question of how an inclusive reading arises. The primary concern of this paper is to present data in connection with inclusive interpretations that have (as to the best of my knowledge) not been discussed in the literature yet. Furthermore, some (partly problematic) aspects that develop from a correspondence between *auch*'s syntactic position and available interpretations that has neither been investigated so far will be exposed. Hence, my major goal here is to address issues that the German data poses to the classical understanding of additivity. I will also outline the core ingredients of an analysis which aims to derive inclusive as well as exclusive interpretations on the basis of a single underlying mechanism.

This article proceeds as follows. In the next section, the distribution of inclusive and exclusive constructions will be outlined in 2.1 first; and it will be explained in 2.2 why this alternation is not straightforwardly predicted by existing theories of additives. The proposed analysis in Section 3 will seek for an explanation for the inclusive cases first and then extend it to exclusives. In other words, the development

of this theory somehow defies common practice. It focuses on a derivation for a marginal phenomenon – and only then, in a next step, will it be discussed whether and how such an analysis can be extended to further explain the more common cases. (Note that since this paper was written at quite an intermediate stage of developing the formal theoretical underpinning, its goal is to just informally illustrate the landmarks of how such an analysis might work out in principle.) After having that done in 3.1, consequences and predictions that arise from the suggested assumptions will be examined in 3.2. Finally, in Section 4, a few of the unfinished tasks will be discussed; followed by the conclusion in Section 5.

2.   More data & previous theories on additives

In this section, I will first discuss the distribution of inclusive and exclusive readings and descriptively delineate that their availability depends on syntactic structure. Afterwards, I will briefly illustrate why it is not straightforward how to derive inclusive readings and the alternation between inclusive and exclusive from previous theories of additives.

Please note that I will focus on DPs as (more direct) argument of *auch* – such as *Hans* from (2). As two anonymous reviewers mentioned, *auch* may further combine with adjectives or prepositional phrases in the same syntactic position, and it also co-occurs with temporal and event quantifiers. I have nothing concrete to say about such combinations at the moment but a conjecture that they might, in the end, work out in a similar fashion as the DP-examples would – at least in principle, ignoring formal details. Lastly, a notational convention: I will use the terms 'quantificational NP' and 'QNP' interchangeably.

2.1   The distribution of inclusive and exclusive readings

There are four main constructions of interest in the context of this analysis. In this section, they will be descriptively discussed in the light of the correspondence between syntactic structure and available readings. It happens to be the case that two out of those four structures unambiguously give rise to one or the other interpretation. To start with, an appositive position of *auch* and its DP-argument as in (3) results in an inclusive meaning.

(3)   Jeder Student, auch Hans, hat geschlafen.
       every student   too   Hans has slept
       ≈ Every student slept. This includes Hans.

Exclusive interpretations are unavailable for appositive structures, without any exception.[1] Actually, this effect is so strong that whenever inclusion contradicts our world (or contextual) knowledge, the sentence will be infelicitous; as the following examples illustrate.

(4) a. #Jeder Student, auch Professor Hans, hat geschlafen.
         every student too professor Hans has slept
         ≈ Every student slept. #This includes professor Hans.

     b. Jeder einzelne Mitgliedsstaat der   EU, auch Frankreich/#Neuseeland,
         every single member-state of-the EU too France/New-Zealand
         hat das Klimaabkommen unterzeichnet.
         has the climate-agreement signed
         ≈ Every member state of the European Union has signed the climate agreement. This includes France/#New-Zealand.

The opposite case, where inclusive meanings are ruled out, figures as elliptical structure involving conjunctive coordination; see (5a) and (5b).

(5) a. Jeder Student hat geschlafen und Hans auch.
         every student has slept   and Hans too
         'Every student slept and Hans did too.'

     b. #Jeder Student hat geschlafen und der Physikstudent auch.
         every student has slept   and the physics-student too
         #'Every student slept and the physics student did too.'

Hence, we arrive at the following unambiguous structure-reading correspondences: apposition-inclusive as in (3), and ellipsis (plus conjunction)-exclusive as in (5a). That is to say that (3) would be infelicitous in a context where Hans is,

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1. However, as an anonymous reviewer observed, such sentences (might) also have a scalar meaning. That is, (3) furthermore conveys that it is surprising and worth emphasizing that Hans was asleep – maybe because he is an insomniac. Hence, *auch* would be pretty similar to *sogar* ('even') here. If that was an additional meaning component which necessarily or obligatorily arises for appositive *auch*-constructions, then (3) should be infelicitous in a context where Hans is known to be dead to the world every night. This is not the case. In fact, it is possible to add *natürlich* ('certainly, of course') to the apposition, as in (i) – i.e. one can emphasize that Hans indeed was expected to be among the sleeping students; and the sentence would not be deviant at all.

(i) Jeder Student, natürlich auch Hans, hat geschlafen.
     every student certainly too Hans has slept
     'Every student, certainly also Hans, slept.'

So, the direction of scalarity (most/least expected) can vary (if there is one). This variation might also be somewhat dependent on intonation – a rising intonation of the apposition in (3) tends to favor an *even*-like interpretation, whereas a falling intonation rather makes the dead-to-the-world meaning more salient.

for instance, a professor (who slept); and (5a) would be infelicitous in a context where Hans is one of the (asleep) students. How the structures assumed here for (3) and (5a) as well as for the following examples exactly look like, will be shown in Section 3.1, where they will be tied to the semantic derivation proposed in this paper. For the time being, the distinction between apposition and ellipsis will suffice to follow the description.

As already exemplified in the introduction, there are also constructions which allow for both readings – namely (6a) and (6b) with a (more or less slight) bias towards inclusive and exclusive, respectively.

(6) a. Jeder Student hat geschlafen, auch Hans.
         every student has slept   too   Hans
     b. Jeder Student hat geschlafen. Hans auch.
         every student has slept   Hans too

The connection between syntactic structure and possible interpretations is nevertheless far from arbitrary, even for cases such as (6). It is argued here that (6a) and (6b) are derived constructions. Their base structure could be either an appositive or an elliptical one. Depending on which kind of construction is assumed (which can, in turn, be determined by contextual factors), the corresponding reading arises. In particular, if the underlying structure is an ellipsis without conjunction, we get an exclusive interpretation of the sentences in (6). If, on the other hand, we think of the appositive as a dislocated phrase, inclusive meanings arise.

The inclusive/exclusive bias mentioned above can be traced back to conventions concerning whether *auch* precedes or succeeds its DP-argument. While the additive particle's precedence is rather common for apposition, the opposite is the case in elliptical structures. The tendency towards one or the other reading is stronger for inclusive than for exclusive, as the examples in (7) intend to illustrate.

(7) a. Jeder Student hat geschlafen, ??auch Professor Hans.
         every student has slept   too   professor Hans
     b. Jeder Student hat geschlafen. Der Physikstudent   auch.
         every student has slept   the physics-student too

Several implications arise from claiming that syntactic structure determines the availability of readings. I will turn to the consequences that are accompanied by this hypothesis in Section 3.2. It will be argued there that not only the distinction between inclusive and exclusive can be explained under such an assumption, but it is also predicted that such a distinction exists. Because neither the alternation between the two interpretations nor the existence of an inclusive reading as such straightforwardly follow from the common behavior of additive particles – as will be examined briefly in the next section.

2.2 Previous theories on additives

To better understand what makes an inclusive interpretation appear un-additive at first sight, it is probably useful to clarify what essentially constitutes additivity in general. Hence, the following survey seeks to define the components of which the meaning of an additive particle is comprised and what its distinctive characteristics (with respect to other particles) are. An important note in advance: None of the accounts cited here discuss *auch*, but rather its English counterpart *too*. There is a comparatively small amount of analyses of the German additive particle, which mainly concentrates on issues associated with focus and/or stress patterns (see, for instance, Reis & Rosengren 1997; Krifka 1999; Féry 2009). Although these are major topics, I will nevertheless not address them in this paper since the suggested analysis does not crucially rely on those matters.

Generally, *too* is categorized as non-scalar additive (cf. Schwarz 2005, among others), in contrast to the scalar additive *even*. Additive particles are agreed to trigger an existential presupposition, although accounts differ in how to derive it (consider for instance Beaver & Clark 2008; Brasoveanu & Szabolcsi 2013; Ahn 2014; Szabolcsi 2017). At least since Kripke (1990/2009) though, we know that an additive's presupposition cannot be met in the opaque requirement that any proposition of the appropriate form holds – such as *x likes listening to the Rolling Stones* in (8a), for instance. Because that would include the weak proposition that somebody (in the sense of: anybody, no matter who) does or is *P* (that is to say: that a predicate *P* holds of an unspecific somebody). It is also not sufficient to simply have another individual salient in the discourse; as pointed up by (8b)'s deviance.

(8) a. Juna likes listening to the Rolling Stones, too.
   b. [??]Paul admires Juna. Juna likes listening to the Rolling Stones, too.

If the weak proposition that somebody likes listening to the Rolling Stones – which's truth can be inferred by the band's world wide and long lasting success qua world knowledge – was enough to satisfy the presupposition triggered by *too*, (8a) should be fine in an out-of-the-blue context. This is not the case. Neither is (8b) a perfect discourse sequence. Hence, it would be difficult to explain the behavior of *too* in terms of an existential presupposition only.[2]

Many of the previous accounts on additive particles have centered around the question what *too* actually presupposes and how this additive presupposition should be derived. Starting with Heim (1992), it is often assumed that the additive particle has an (implicit) anaphoric meaning that can be captured in terms of 'in addition to *x*'. In a similar tradition, Rullmann (2003) states that *too* presupposes

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2. On the discussion about why even accommodation fails for *too*, cf. van der Sandt & Geurts (2001); Geurts & van der Sandt (2004); Beaver & Zeevat (2007) and the references therein.

that one of the propositions which is in the focus value of the phrase the additive is adjoined to is true. With regard to the German data, the question arises whether this focus condition is met in both the inclusive and the exclusive cases – i.e. whether *jeder Student hat geschlafen* ('every student slept') can be said to be one of the focus values of *auch Hans (hat geschlafen)* ('Hans too (slept)'), likewise if Hans is one of the students and if not so. But even if it is assumed that this is the case either way (cf. Rooth 1992 and the references therein), the problem remains how to correctly predict that certain syntactic structures are tied to specific interpretations. Maybe this could be done by adding some assumptions that can account for the interaction between apposition, focus structure and presuppositional content. Another remaining issue, though, concerns the computation of redundant meaning components for inclusives on the basis of an 'in addition to…'-paraphrase. A mechanism or specific derivation would be needed to explain why the appositive content might be redundant in theory, but not in practice – i.e. why the appositive's meaning contribution to the sentence is still relevant in some way.

Ahn (2015) presents a conjunctive account of *too*. According to this analysis, the additive particle asserts (not presupposes) that there is another proposition q (besides p) which is true. The presupposition itself consists of a requirement concerning the form of that other proposition q. Namely, q structurally resembles p, but the property in question must not be ascribed to the same individual in the antecedent as in the *too*-sentence. Hence, a sentence like (8a) would presuppose that q is of the form *x likes listening to the Rolling Stones* such that $x \neq$ Juna; and assert that 'in addition to q being true, Juna likes listening to the Rolling Stones'. It is not entirely clear whether and how this analytical strategy would derive the alternation between inclusive and exclusive, as well as inclusive interpretations as such. To claim that *auch* does assert conjunction would conflict with the inclusive meaning – unless, maybe, different paraphrases are assumed; like (9a), yielding (9b) as assertion.

(9) a. Jeder Student ist ein Student, der geschlafen hat, und Hans auch.
      every student is a   student who slept   has and Hans too
      ≈ Every student is a student who slept and Hans too (is a student who slept).

   b. In addition to *every student is a student who slept* being true, Hans is a student who slept.

Yet, it is not obvious how and why a paraphrase like (9a) should arise for an appositive construction; and how and why it would, in turn, differ from the exclusive ones. It seems that under any account on the basis of an 'in addition to…'-meaning, the information conveyed by the apposition is at least under suspicion of being redundant. But that would be a counterintuitive assumption concerning the German examples.

In Beaver & Clark (2008), it is claimed that *too* marks that a partial answer to the (current) QUD (Question Under Discussion) has already been given (in the discourse, via Common Ground etc.). The other part of the answer must not be already entailed by *too*'s prejacent. Hence, if one assumes *Who slept?* as QUD for (10), which has an (unambiguously) exclusive interpretation,

(10)   Jeder Student hat geschlafen und Hans auch.
       every student has slept   and Hans too

then *auch* would mark that *jeder Student (hat geschlafen)* ('every student(slept)') is a partial answer to this QUD. From Hans being asleep, it does not follow that every student is asleep. Consider now the (unambiguously) inclusive structure from (3), repeated in (11) for convenience

(11)   Jeder Student, auch Hans, hat geschlafen.
       every student   too   Hans has slept

and assume that the QUD once more is *Who slept?*. The partial answer already given would certainly be *jeder Student* ('every student') again. But then the question arises whether this answer is indeed only partial, given the fact that Hans ought to be one of the students.[3] If the answer is not considered as partial, the supposed requirements are not met, and *auch Hans* would not add any new information to the overall meaning of the sentence. If, on the other hand, the answer is considered as partial, that would suggest that (3)/(11) is only felicitous in contexts where Hans was not known to be a student – which is not the case. To assume a more specific QUD like *Who of the students slept?*, or rather a sub-question to the QUD like *Is Hans one of the students?* might suffice to justify the occurrence of the apposition. But as a consequence, *auch* would mark a (partial) answer to a partial question that is derived from the QUD – and that would, in turn, have to be tied to the appositive syntax somehow.

Overall, it is not entirely clear how existing theories of additives as they are capture the German data – in order to derive inclusive readings as well as their alternation with exclusive readings, additional assumptions would have to be made. The rest of this paper aims to outline some core ingredients of an analysis for additives which intends to account for both readings as well as their alternation on the basis of a mechanism that operates at the syntax-semantics interface. So, instead of adjusting previous theories in such a way that they provide a straightforward

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3.   On the question whether an expression like *every student* can serve as a complete answer to a QUD if it is not known who the student individuals are, see Aloni (2001).

explanation for the data, the cornerstones of a different analytical path will be given. This new analysis suggested here comes with its own troubles and ramifications – some of which will be discussed in Section 4. It is an attempt to gain greater insight into the principle of additivity as such by questioning the common sense understanding of additivity – or, at least, shedding a different light on it.

3.   The proposal

In Section 3.1, I will propose an analysis that is supposed to capture inclusive and exclusive meanings as well as their alternation based on the underlying syntactic structure. Consequences and predictions that arise from these suggestions will be discussed in Section 3.2.

3.1   The underlying principle

The point of departure for the analysis outlined here is the point of the additive particle's departure from its common additive meaning. Hence, an explanation for the inclusive cases will be developed first. A possible derivation of the exclusive interpretations by the very same strategy will be given afterwards. To start with, I will focus on structures like (3) – because appositives only give rise to inclusive readings (and other constructions for which inclusives are available were argued to be derived from apposition in Section 2.1). The question is how *auch*'s un-additivity in such examples can be defined exactly. Under a common sense understanding of additivity, (3) would be supposed to convey that 'in addition to every student (being asleep), Hans (who is one of the students) slept'; or just that every student is a student who slept and Hans is a student who slept. Whereas both readings are not incorrect as such, they would somehow suggest that the apposition only contains redundant material (on an informational level). But, as already considered in Section 2.2, there is no such redundancy conveyed by sentences like (3).

A different meaning could be supposed instead, like 'Every student slept, Hans was one of those students who slept' – but how should it be accounted for? It is claimed here that inclusive readings arise through a superset-to-subset relation, which *auch* establishes between its DP-argument and the restrictor set of the quantifier. At first sight, that might appear a little bit unconventional and deviant from the mechanisms which are usually (i.e. in the exclusive cases) assumed to be at work. Hence, such a claim begs the question whether there are two instances of *auch* that operate on the basis of two different principles. Since a positive answer

to this question would be highly undesirable, I will entertain the hypothesis that the observed interpretational differences are only due to structural matters – that is to say, *auch* always establishes a superset-to-subset relation between an antecedent (super-)set-denoting expression (henceforth: superset argument) and another expression it obligatorily takes as its argument (henceforth: subset expression/argument). The syntactic environment in which the additive particle appears determines which expression serves as antecedent superset.
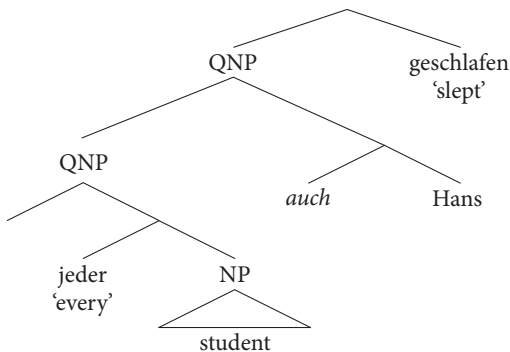
Reconsidering the exclusive structure, repeated in (12) for convenience, there are two potential set-denoting candidates that could act as superset argument: the restrictor set of the QNP again, and the VP denotation.

(12)   Jeder Student hat geschlafen und Hans ~~hat~~ auch ~~geschlafen~~.
       every student has slept   and Hans has too   slept

If it is assumed that the latter candidate, i.e. the set of sleeping individuals, is the antecedent superset of *Hans*, the resulting (exclusive) meaning would differ from the inclusive in the relevant point – namely, in that Hans is among the sleeping individuals, but not (or at least, not necessarily) among the students.

Hence, the theory proposed in this paper can be boiled down to the following claims. The German additive particle obligatorily takes two arguments: an antecedent (super-)set-denoting expression and an argument which enters the subset relation. Other additional arguments may enter the derivation at a later stage. Which element serves as an antecedent superset is determined by syntactic structure. In particular, only the syntactic sister of *auch* or of the phrase in which *auch* is contained can be accessed to find a suitable superset argument. Specifically, the structure I assume for (3) is given in (13).

(13)

The only potential superset candidate *auch* can access in inclusive constructions is the quantifier's restrictor set. An exclusive interpretation for such constructions is, in turn, unavailable, because *auch Hans* appears adjoined to the quantified NP (i.e. it cannot look further up). Since the apposition does not contain a relative pronoun or *wh*-expression, there is, at least, no obvious reason to believe that it is an appositive relative – which would, in turn, be base-generated within the QNP.[4] In the spirit of Griffiths & de Vries (2014), I assume that *auch Hans* is an identificational apposition.[5] I do not want to commit myself on the issue that the apposition stands in a coordinated relationship to its anchor, i.e. to the quantified NP (cf. Griffiths 2015). Neither may yet be decided whether this instance of an appositive is a full CP (involving ellipsis, cf. Ott & Onea 2015, Ott 2016) or not. However, so far nothing in the analysis presented in this section hinges on a decision concerning these loose ends. What matters from a present perspective is that the additive particle and its DP-argument form a constituent in the appositive structure – mainly for practicable reasons, though. It was assumed earlier in Section 2.1 that *auch Hans* can be dislocated such that it appears at the end of the sentence.[6] So it might be more useful to assume a single moved constituent instead of two loosely related elements that would have to be moved separately. The crucial point is that I take dislocation of the appositive to be movement on PF-level and therefore predict that in a sentence like (6a), repeated in (14a) with its associated (reduced) structure in (14b),

(14) a. Jeder Student hat geschlafen, auch Hans.
         every student has slept   too   Hans
     b. [[[$_{\text{QNP}}$ jeder Student] t_1] geschlafen] [auch Hans]$_1$

the quantifier's restrictor set will be *auch*'s superset argument.

On the other hand, conjunction blocks (for whatever reason exactly) the additive particle's access to the restrictor set – and even if there is no such restriction, ellipsis would still provide a structurally closer superset argument, as can be seen from the assumed structure illustrated in (15).

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4. A null-operator could be assumed instead, but such a claim would demand some (independent) evidence. Concerning the syntax of appositive relatives, consider, for instance, Demirdache 1991; de Vries 2006; Citko 2008 and the references therein.

5. The crucial example from Griffiths & de Vries' (2014) in this respect is given in (i).

    (i) The students, including/excluding Sally, failed the exam.

                                      (Griffiths & de Vries 2014, 48: (38b))

6. This movement operation might seem a little bit unorthodox – but note that (in a more descriptive fashion) something similar has already been assumed in McCawley (1998). For a more detailed discussion of this issue, see also Potts (2005).

(15)

It might thus be said that *auch* prefers a local superset antecedent for its subset argument.

Generalizing these findings, (16) can be ascribed to the German additive particle

(16)   a. $[\![auch]\!] = \lambda x_\delta.\ \lambda \beta_{\langle \delta,t \rangle}.\ \{x\} \subset \beta$
        b. $\{w \mid \beta(x,w)\} \not\supseteq c$, where c is the context set

where (16a) is the formalized version of *auch*'s meaning in terms of a superset-to-subset relation between its two arguments, and (17b) is an additional condition to assure that whatever an *auch*-sentence conveys was not previously known in the discourse.

In the next section, I will turn to the consequences that arise from defining *auch*'s meaning as in (16) and the predictions that are made, assuming a superset-to-subset relation as underlying principle.

3.2   Consequences and predictions

If this account is on the right track, syntactic structure (rather than a pragmatic mechanism) determines the expressions participating in the superset-to-subset relation (rather than a common sense additive meaning) that *auch* establishes between them. A major consequence of this claim is that it poses certain requirements on the superset antecedent for inclusive constructions. In particular, on what this superset argument cannot denote and that is, primarily, a singleton set.[7] This

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7.   Ignoring the fact that such constructions would already be ruled out by (16a) due to a type mismatch; note that it could be a singleton in principle if one thinks of sets being subsets of themselves. But in (16a), it is also assumed that *auch*'s DP-argument is a proper subset of its superset denoting antecedent – hence, cases like (i) are predicted to be deviant.

(i)   *Maria$_i$, auch Maria$_i$, hat geschlafen.
        Maria   too   Maria   has slept

Furthermore, the inclusive appositive (3) and its derived, dislocated version are predicted to be infelicitous if Hans is the only student (and simply false if there are any students who did not sleep).

prediction is borne out. (17a) is deviant because Hans cannot be a subset of Maria. Consequently, the corresponding exclusive construction (17b) is felicitous, since Hans enters the subset relation to the (super)set of individuals who built a snowman, not to Maria.

(17)   a.   *Maria, auch Hans, hat einen Schneemann gebaut.
            Maria too Hans has a   snowman   built
            ≈ Maria built a snowman. #This includes Hans.
       b.   Maria hat einen Schneemann gebaut und Hans auch.
            Maria has a   snowman   built   and Hans too
            'Maria built a snowman and Hans did too.'

Concerning the ambiguous structures, having a proper name in the antecedent is predicted to be fine in exclusive-biased constructions and to be (at least) less acceptable in constructions biased towards an inclusive interpretation. This prediction can be confirmed as well, as illustrated in (18).

(18)   a.   Maria hat einen Schneemann gebaut. Hans auch.
            Maria has a   snowman   built   Hans too
            'Maria built a snowman. Hans did too.'
       b.   ??Maria hat einen Schneemann gebaut, auch Hans.
            Maria has a   snowman   built   too   Hans

Evidence in favor of two assumptions made earlier in this paper may further be drawn from (18b)'s deviance. First, such constructions are derived from an appositive base structure via dislocation of the apposition. I.e. since (17a) is ruled out, so will be (18b). Why (18b) is somewhat slightly better than (17a) can be explained in terms of the possibility to assume an elliptical base structure (typically for exclusives) for (18b) instead. Actually, spelling out the otherwise (phonologically) elided parts significantly improves the sentence's acceptability.[8]

(19)   Maria hat einen Schneemann gebaut, auch Hans hat einen
       Maria has a   snowman   built   too   Hans has a
       Schneemann gebaut.
       snowman   built

Second, *auch* indeed prefers a local antecedent (that serves as its superset argument). Because if a cooperative hearer of (18b) really would want to make sense out of this sentence, s/he might generate a reading that conveys that Maria built a snowman as well as she built Hans (where Hans might have been a part of the snowman). Nevertheless, it has to be pointed out that such a reading is neither salient, nor very plausible at all.

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8.   Although one would probably replace the colon with a period, though, in both (19) and (18b) to highlight the elliptical structure.

A further consequence of *auch*'s meaning contribution as stated in (16a) is that a sentence like (20) should be infelicitous in a scenario where Hans, Maria and Peter are the only students. This happens to be the case, too.[9]

(20)   #Jeder Student, auch Hans, Maria und Peter, hat geschlafen.
         every student too Hans Maria and Peter has slept

But in a scenario where there are four (or more) students, (20) is predicted to be fine, according to (16a). Setting specific contexts that might justify such utterances aside, the theory outlined here does not account for the fact that (20) is still slightly odd if the set of students only contains four students in total. From (16) in its current state, it does also not follow that (20)'s felicity increases with the overall amount of (relevant) students.

Another fact that seems rather unexpected is that appositive inclusives are not overall acceptable in combination with collective nouns like *Mannschaft* ('team') or *Komitee* ('committee'). Only in its dislocated version is the appositive structure perfectly fine:[10]

(21)   a. ??Die Mannschaft, auch Hans, hat sich   nach dem   Spiel
             the team   too Hans has SELF after the.DAT game
             heftig betrunken.
             severe got-drunk
       b.   Die Mannschaft hat sich nach dem   Spiel heftig betrunken,
             the team   has SELF after the.DAT game severe got-drunk
             auch Hans
             too   Hans
             ≈ The team got dead drunk after the match. This includes Hans.

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9.   Another factor that plays a part in why (20) is deviant is the competition between singular and plural agreement on the verb. Per default, the QNP triggers singular agreement, whereas a phrase like *auch Hans, Maria und Peter* triggers plural agreement. But in the end, (20) is unacceptable, regardless of which number feature appears on the verb. Furthermore, the dislocated version of (20), where the question of number agreement does not arise, is just as deviant in the 'three students in total' scenario as (20) itself is:

   (i)   #Jeder Student hat geschlafen, auch Hans, Maria und Peter.
          every student has slept   too Hans Maria and Peter

10. Adding *ganze* ('whole') to a sentence like (21a), i.e. emphasizing that, indeed, many individuals were involved, improves acceptability though.

   (i)   Die ganze Mannschaft, auch Hans, hat sich nach dem   Spiel
          the whole team   too Hans has SELF after the.DAT game
          heftig betrunken.
          severe got-drunk
          ≈ The whole team got dead drunk after the match. This includes Hans.

The situation concerning collective nouns is inhomogeneous. Replacing *die Mannschaft* ('the team') in (21) with *das Violoncello Quartett* ('the violon-cello quartet') makes both sentences (more or/and less) unacceptable:

(22) a. ??Das Violoncello Quartett, auch Hans, hat sich   nach dem
          the violoncello quartet   too Hans has SELF after the.DAT
          Konzert heftig betrunken.
          concert severe got-drunk
     b. ?Das Violoncello Quartett hat sich   nach dem   Konzert heftig
          the violoncello quartet has SELF after the.DAT concert severe
          betrunken, auch Hans.
          got-drunk too Hans

The question is whether this non-uniformity is based on properties of such nouns themselves or on other factors – like taking the collection of such groups as unitary, in which way ever.[11]

Besides the complications arising in connection with collective nouns, there are further problematic issues that stem from the assumptions made here, which will be addressed in the next section – or, at least, some of them.

4.   What needs to be done

In this section, I will discuss some of the loose ends that will have to be tied in further research.

The most urgent open issue is probably presupposition, because the theory outlined in this paper did intentionally ignore it yet – for two reasons. First, because inclusive as well as unambiguously exclusive constructions do not trigger a classical additive presupposition. What (3) actually presupposes is that Hans is a student (and probably, that there is another individual who is a student – rather than that there is another individual besides Hans who slept)[12] and in (5a), the additive presupposition does not project to sentence-level. Since (6a) is assumed to be derived from an appositive structure and the tendency towards an inclusive

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11. That sentences like (21a) are deviant can, at least, not be traced back to the absence of a quantifier – because both of (i) are fine.

(i) a. Die Studenten, auch Hans, haben sich nach der Prüfung heftig betrunken.
         the students   too Hans have SELF after the exam   severe got-drunk
     b. Die Studenten haben sich nach der Prüfung heftig betrunken, auch Hans.
         the students   have SELF after the exam   severe got-drunk too Hans

12. The attentive reader might want to convince herself by applying, for instance, von Fintel's (2004) *Hey, wait a minute!* test.

reading is really strong for such constructions, the case left to be explained for the time being is an antecedent-less version of (6b), as in (23).

(23)   Hans hat auch geschlafen.
          Hans has too   slept
          'Hans slept too.'

As the theory outlined here in its current version in (16) stands, (23) does not presuppose but assert that there is another individual besides Hans who slept; or, more precisely, that there is at least one more *x* different from Hans in the set of sleepers. I have no concrete solution to this to offer at the moment. But, secondly, to determine what *auch* indeed presupposes is neither trivial nor easy to capture.[13] One complication concerns parallelism. The question that arises here is not how to restrict in the right way that the antecedent parallels the *auch*-sentence in its form – it is rather how to loosen any such restriction in the right way. Because on the one hand, *auch*'s antecedent can be a proposition which is different from the one expressed by the *auch*-sentence, on a structural and on a semantic level. On the other hand, this apparent contingency must at least be restricted such that the two propositions fit the specific utterance context. Consider (24), for instance.

(24)   *Two prison inmates talking to each other on their way back to the cell.*
          a.   Das Abendessen war grauenhaft heute.
                  the dinner   was atrocious today
                  'The dinner tasted atrociously today.'
          b.   Die   Aufseher waren auch total   unfreundlich.
                  the.PL guards   were too   totally unfriendly
                  lit. 'The guards were unfriendly, too.'

The concrete relation between the first and the second sentence in (24) is not entirely clear. Nevertheless, (24a) provides the antecedent proposition for the additive presupposition triggered in (24b). One could claim, of course, that (24b) maybe rather relates to an earlier utterance in the discourse, where it was stated that someone else (who is/are not one of the guards) was unfriendly. But the point is that this does not have to be the case at all. The sequence from (24) is completely fine as it is – no contextual background assumption, no preceding or further discourse, or a special cause or occasion is necessary. The two propositions do not contain parallel material – and still, (24a) satisfies the presupposition triggered by *auch* in (24b).

   Since a complete derivation of the additive particle's presuppositional behavior is beyond the scope of this paper and the aim of this theory, I will just present an

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13. On complications that arise from a default definition of additive presupposition, see also, for instance, Zeevat (2004); Grubic & Wierzba (2019).

idea in a nutshell at this point: *auch* can take constituents of various sizes as its argument(s). Whenever the additive particle takes a proposition as its subset argument, the only available superset is the context set (which will have to be further restricted, though). Discourse or contextual information has to assure that the proposition of (24b) is not the only proposition in the context set – this is done by (24a) in the sequence from (24). The main difference between (24) and the examples primarily discussed in this paper is that the antecedent superset is in some way externalized if the subset is a proposition. The size of the subset constituent is assumed to be determined via focus (cf. Selkirk 1984, among many others).

Moving on to the next problem, the claim that conjunction blocks *auch*'s access to the restrictor set of a quantifier is nothing more than a mere stipulation yet. If it is indeed the case, as stated in Section 3.1, that an expression is blocked as superset antecedent because a more local candidate is available, then it remains unclear why (25) only has an exclusive interpretation. Because according to structural considerations and their implications regarding semantic interpretation, (25) would rather be expected to give rise to an inclusive interpretation.

(25)   Jeder Student und auch Hans hat geschlafen.
every student and too   Hans has slept
≈ Hans and every student slept.

Actually, the main aspect that distinguishes (25) from its inclusive counterpart (3) is the appearance of conjunction – intervening between the quantified NP and the phrase that contains the additive particle and its subset argument. Hence, there must be a fundamental difference between symmetric structures and apposition that rules out a subset relation to the restrictor set in the former, and forces the restrictor set to act as a superset in the latter – and that might also shed some new light on appositive syntax and its relation to coordination.

Another open issue and among them, the last one to be discussed here, is the insertion of negation into the phrase (of whichever size) that contains the additive particle. It happens to be the case that negation is obligatorily inserted whenever the antecedent shows an instance of negation – no matter whether the construction is inclusive or exclusive and no matter how negation materializes itself exactly (as long as it does so overtly). Just consider the sentences in (26).

(26)   a.   Kein Student hat geschlafen, auch Hans *(nicht).
no   student has slept   too Hans NEG
b.   Maria hat nicht geschlafen und Hans auch *(nicht).
Maria has NEG slept   and Hans too   NEG
c.   Es ist nicht der Fall, dass Maria geschlafen hat. Hans auch *(nicht).
it is NEG the case that Maria slept   has Hans too   NEG

In its current state, there is nothing in the theory outlined here that would suggest those double occurrences of negation. Actually, quite the opposite is the case – for (26b), for instance, the analysis predicts that the antecedent superset is provided by the predicate's denotation. But if the complement set, i.e. the set of non-sleeping individuals, already is the set *Hans* is a subset of, negation turns up rather unexpected. As far as the exclusive cases are concerned, a possible explanation could be given in terms of the claim that some additive particles may only combine clauses of the same polarity – i.e. either positive or negative ones (cf. Levinson 2008, among others). Depending on the exact notion of polarity, such an assumption would either suffice or not.[14] If negative polarity is defined merely via the overt presence of negation, that would correctly predict when *auch* needs to occur together with negation. In particular, whenever negation is overtly present in the antecedent sentence, it also has to appear in the *auch*-sentence, see (26). As soon as non-overt negative elements like *wenige* ('few') are included to the definition of negative polarity, the situation gets more complicated. Especially if overt and non-overt occurrences of negation are mixed between the two sentences.

(27) a. Wenige der   Studenten haben geschlafen und wenige der
         few   of-the students have   slept   and few   of-the
         Professoren auch (??nicht).
         professors   too   NEG
     b. Kein Student hat geschlafen und wenige der   Professoren
         no   student has slept   and few   of-the professors
         auch ??(nicht).
         too   NEG
     c. Wenige der   Studenten haben geschlafen und die   Professoren
         few   of-the students have   slept   and the.PL Professors
         auch ??(nicht).
         too   NEG

There are many factors that determine the felicity of such constructions (if they are felicitous at all) – such as whether *auch* immediately follows the conjunction or occurs deeper embedded in the structure as it does in (27); the choice of quantifiers (negative or not). In short, the situation is complex and there is just no salient generalization I can think of at the moment that would account for the data correctly.

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14. See Rullmann (2003) for a detailed discussion of the role of polarity for the distribution of additive particles such as *too* and *either*.

5. Conclusion

In this paper, I presented new data that challenge classical theories of additives. In particular, it was shown that if the German additive particle *auch* and its (more) direct argument appear in an appositive structure, as an adjunct to a quantified NP, an unexpected reading arises (dubbed 'inclusive' here). Contrary to common interpretations of additives, inclusives rather convey that x is an element of the restrictor set of the quantifier – not an element 'in addition' to an antecedent expression, both of which the predicate holds. Some main ingredients of an analysis in terms of a superset-to-subset relation between *auch*'s arguments were informally presented and it was outlined how to apply such an analytical strategy to a broader range of syntactic constructions containing *auch*; i.e. 'classical' additive structures involving ellipsis, subsumed under 'exclusive' throughout this article.

The main purpose of this paper was to outline the problematic data and explain why the structure-meaning-correspondence observed for German *auch* constructions cannot straightforwardly be resolved in terms of existing theories of additives. Concerning the overall relevance of these data, it must be noted that the Japanese particle *mo* gives rise to what looks like an inclusive reading as well, as illustrated in (28).

(28) a. gakusei-ga   John-mo hashitta.
         student.NOM John-MO ran
         'The students ran, including John.'
     b. #gakusei-ga   Suzuki-sensei-mo   hashitta.
         student.NOM Suzuki-teacher-MO ran
         'The students ran, #including teacher Suzuki.'

Those examples were taken from Kobuchi-Philip (2009, 5: (11a) and 15: (8)). For their detailed analysis, I refer the reader to the cited article – and, furthermore, to Szabolcsi (2018) where *mo* has been analyzed in the context of quantifier particles (consider also Szabolcsi 2015). Lastly, concerning data from Romanian, one should also consider Nicolae (2020).

To conclude, the phenomenon discussed here might be a marginal phenomenon, but it is neither a special feature of German nor easy already fully captured by existing theories (i.e. without making one or the other additional assumption). The analysis outlined in this article suggests to see additivity from a slightly different perspective and thereby capture the unexpected inclusive interpretation – but other explanations might turn out more suitable or practicable once the phenomenon of inclusives will be further investigated. As it seems, there is still a lot to say on and to learn about additivity.

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The German modal particle *ja* and selected English lexical correlates in the Europarl corpus

As you know, after all, of course, in fact and *indeed*

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This study deals with lexical correlates of the German modal particle *ja* in English, using data from the Europarl corpus for illustration. The central question addressed is whether, or to what extent, English has expressions that are functionally equivalent to *ja*. A graph-based model for the analysis and comparison of linguistic expressions used for discourse management is proposed, and five typical lexical correlates of *ja* found in English speeches are analysed in terms of this model: *as you know, after all, of course, in fact* and *indeed*. The question of equivalence with *ja* is addressed in each case and a number of descriptive generalizations are made concerning the conditions under which these expressions are found in English translations of German sentences with *ja*. It is argued that there is a categorical difference in the use conditions of *ja* and the English expressions under study: While *ja* is never used to (newly) establish a speaker's commitment to the truth of a proposition, or any type of consensus, as it requires propositions to be ratified or uncontroversial at the time an utterance is made, all of the English expressions under study can be used in sentences establishing some type of epistemic commitment or consensus. At a general level, the conclusion is that none of the English expressions in question is functionally equivalent to *ja*, even though – under specific circumstances – they may have similar communicative effects.

Keywords: discourse management, Common Ground, commitment, activation, move

1.   Introduction

It is commonly assumed that English, unlike most of its Germanic relatives, does not have a class of elements traditionally called 'modal particles', as illustrated in (1) with a minimal example from German (see for instance Bublitz 1979; Fischer 2007; König et al. 1990 and König & Gast 2018: 307–309).[1]

(1)   Es regnet *ja*!
      'It is raining [as we all can see]!'

Modal particles are typically defined in terms of distributional properties.[2] Grosz (2020) characterizes them as "deficient sentence adverbs" (adopting this term from Cardinaletti 2011), as they lack specific distributional properties that other types of sentence adverbs have. For example, they cannot be coordinated with any other constituent (see (2a)), and they cannot occur in the Forefield, the initial structural slot of V2-clauses of German (see (2b)). From a phonological point of view, modal particles cannot be stressed without losing their characteristic function.

(2)   a.   *Es regnet leider und *ja*.
            'It is raining unfortunatly and [as we can all see].'
      b.   **Ja* regnet es.

From a distributional point of view, there is no doubt that English does not have a class of elements comparable to modal particles like *ja*. It has been claimed, however, that "English has some, but not many, simple words with functions like those of the German particles; but in their place it has a number of phrasal expressions that appear to have similar functions" (Fillmore 1984: 133). Fillmore (1984) provides the example in (3) (among others) to illustrate this point.

(3)   I am your father, you know. (*ja*)

The example in (3) is not very well chosen, as it is an unlikely sentence, whose German translation with *ja* (*Ich bin ja dein Vater*) would moreover have very

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1.   Here and in the following, the communicative effect of *ja* will be paraphrased in the English translations in brackets, if the English translation does not contain any material signalling this effect already. Material in parentheses is part of the original examples. Italics, as well as any material in brackets, have been added by the author.

2.   The literature on modal particles in German is so vast that it cannot possibly be summarized here. Among the most frequently cited monographs are Weydt (1969), Doherty (1985), Hentschel (1986) and Thurmair (1989), but there are many more. Döring (2016) and Müller (2018) are two recent studies where more relevant references can be found. I will largely rely on the recent survey provided by Grosz (2020) in the following discussion.

different implications from (3). More recently, claims about the existence of modal particles in English have been made by Fischer (2007) and Fischer & Heide (2018) for other types of particles (*then*, *already, all right*) in examples like those in (4).

(4) a. What's wrong then? (Fischer & Heide 2018: 517)
    b. Move those sheep already! (Fischer & Heide 2018: 522)
    c. I believe you all right!
(Fischer & Heide 2018: 525, from König et al. 1990: 205)

Fischer & Heide (2018) mention three further candidates potentially qualifying as modal particles in English, *after all* (also mentioned by Fillmore 1984), *indeed* and *just*. Two of these expressions, *after all* and *indeed*, will be discussed in the present study.

    The idea that English uses different formal means for the type of function associated with modal particles has long been entertained in contrastive studies. In his comparison of English and German, Bublitz (1979) points to the importance of tag questions and intonation as ways of expressing speakers' attitudes. König et al. (1990) provide a wealth of examples illustrating how the function of modal particles like *ja* can be rendered in English. Some relevant examples are given in (5)–(7) (König et al. 1990: 145).

(5) a. Es ist ja bekannt, dass er trinkt.
    b. (Of course,) it's well known that he drinks.

(6) a. Die Malerei war ja schon immer sein Hobby.
    b. (As you know) painting has always been his hobby.

(7) a. Fragen Sie Dr. B., er bearbeitet diesen Fall ja.
    b. Ask Dr. B, (after all,) he's working on this case.

In this contribution I address the question to what extent lexical expressions of English like those in (5b), (6b) and (7b) are equivalent to the German particle *ja*. I use data from the Europarl corpus for illustration. I do not provide any quantitative evidence, however. A comprehensive quantitative study of German modal particles and their English correlates, based on data from the Europarl corpus, is provided in Gast (2022).

    Five English expressions will be compared to the German particle *ja: as you know* (see (6b)), *after all* (see (7b)), *of course* (see (5b)), *indeed* (mentioned by Fischer & Heide 2018) and *in fact* (which is often regarded as a stylistic variant of *indeed*, at least in specific uses). These expressions also emerged as prominent lexical correlates of *ja* in Gast (2022).

    The study is organized as follows: In Section 2 I outline a model of discourse management that is intended to capture aspects of meaning and use that are

characteristic of modal particles like *ja* and the English expressions compared to it. In Section 3 the five English expressions mentioned above are discussed with respect to their degrees of equivalence with *ja*, using the model introduced in Section 2. Section 4 contains the conclusions.

2.   Modeling discourse management

Grosz (2020) distinguishes three types of approaches to the analysis of modal particles: (i) syntactic-force based approaches, (ii) presuppositional approaches and (iii) use-conditonal approaches. As the present study is not concerned with syntax, and as a comparison between German and English requires reference to various levels of analysis, I pursue an approach that fits into Grosz's (2020) category of 'use-conditional' (see Gutzmann 2015 for this term): I intend to describe the conditions under which a lexical expression can felicitously be used. In this section I outline a model of analysis which is geared towards capturing these conditions. Given that I use a graph as the structure underlying the models, I call it a 'graph-based discourse model' (GBD-model). The model has been implemented using the programming language Python, and the technical details of this implementation have, to some extent, shaped the design of the model. The GBD-model is obviously inspired by dynamic approaches to discourse in the tradition of Heim (1983) and Kamp & Reyle (1993), and it makes use of 'rich' representations of context and discourse, likening a conversation to a game (e.g. Sacks et al. 1974; Roberts 1996, 2012; Farkas & Bruce 2010). Analyses of modal particles using an elaborate notion of 'discourse' have been presented by Fischer (2007), Döring (2016) and Müller (2018). For the specific purpose of this study (a comparison of English and German), I borrow several elements from these publications but I provide my own (computational) implementation, which uses slightly different ways of representing the model components than the aforementioned approaches.

The model is technically defined in the Appendix, and implemented in Python[3] in the Supplementary Materials.[4] It has the following components and properties (technical terms to be defined below and implemented in the model are in small caps upon first mention):

–   It contains representations of speakers' (private) Information Models, roughly corresponding to their episodic memories, as well as the speakers' models of other speakers' Information Models, i.e. Meta-Models.

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3.   For the graph model, I use the graphtool-package (Peixoto 2014).

4.   The scripts are available at https://github.com/VolkerGast/GBDM.

–   Propositional information is represented in the form of Proposition Graphs.
–   In addition to propositional information, Information Models contain an Epistemic Map, i.e. a representation of interlocutors' epistemic attitudes towards propositions.
–   The GBD-model contains a series of Common Grounds, i.e. public Information Models which are distinct from the private Information Models of the interlocutors, though systematically related to them, and which are updated during a conversation.
–   The elements of the Common Ground (discourse referents and situations) have specific activation states, stored in an Activation Map.
–   Speakers can express epistemic commitment to a proposition in the Common Ground. Such commitment is stored in Commitment Maps.
–   Propositions in the Common Ground can be situationally accessible, and they can be (implicitly or explicitly) 'ratified' by the interlocutors. This information is stored in Consensus Maps.
–   The GBD-model is 'interactional' in assuming the (rule-governed) interaction between rational discourse agents negotiating the Common Ground by modifying it with Moves.
–   In making a Move, a speaker updates the Common Ground, e.g. by adding a proposition to its Proposition Graph, by expressing public commitment to an epistemic attitude towards a proposition (thus modifying the Commitment Map), or by ratifying a proposition (modifying the Consensus Map).

2.1   Information Models

The information accessible to an interlocutor can, in its most simple form, be regarded as a set of assumptions, i.e. epistemically weighted propositions. It could be regarded as a 'catalogue', more or less as in 'file card semantics' (Heim 1983), with the catalogue containing information about 'discourse referents' (Karttunen 1976), which is updated with each utterance (Kamp & Reyle 1993).[5] A model of this type could also be likened to a database or, more conveniently, a graph, representing the entities, situations and propositions about which we hold attitudes. Graph-based models for the representation of propositional knowledge have a longstanding tradition in semantics and ultimately go back to the work of Frege (1879) and Peirce (1880, 1885) (see Sowa 1987 for an overview of 'semantic networks'). 'Knowledge graphs' have also become increasingly popular in artificial intinnence. Hogan et al. (2021: 2) define a knowledge graph as "a graph of data intended to accumulate

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5.   An analysis of four German modal particles along these lines was provided in Gast (2008).

and convey knowledge of the real world, whose nodes represent entities of interest and whose edges represent relations between these entities". I use the term PROPOSITION GRAPH for a graph representing propositional information by linking predicative elements to arguments. A graph of this type is illustrated for the beginning of the Grimms' tale 'The Frog King' (Zipes 2015: 19) in Figure 1 (circles stand for entities, squares represent situations).
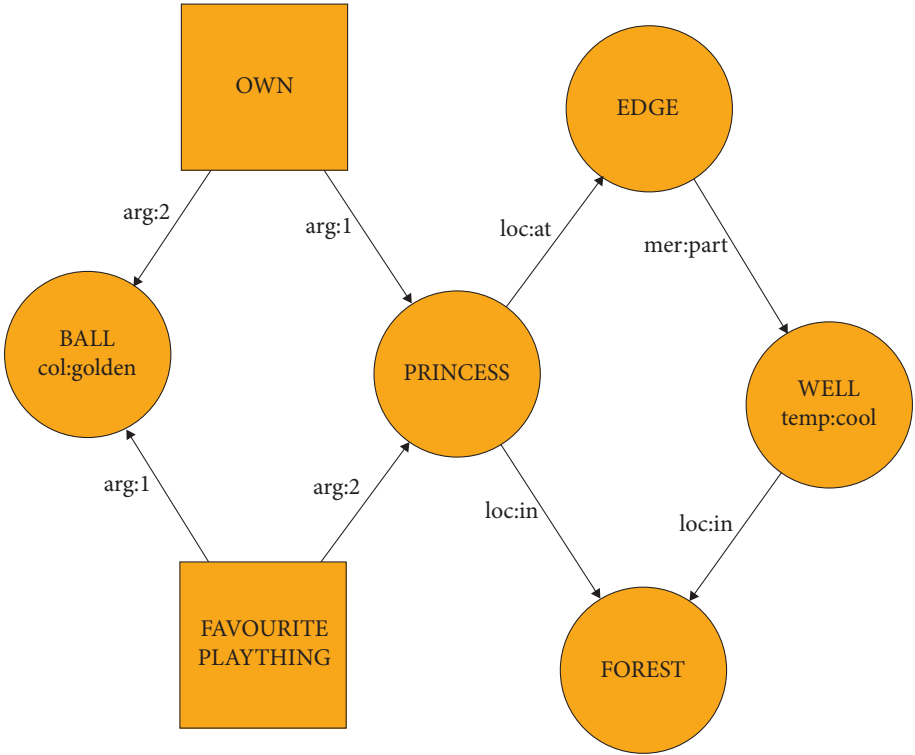

Figure 1. A fragment of an Proposition Graph representing the beginning of the Frog King: *Once upon a time there was a princess who went out into the forest and sat down at the edge of a cool well. She had a golden ball that was her most favorite plaything*

During a conversational exchange, Proposition Graphs are built up step by step, adding or modifying one piece of information at a time. With the first clause (*Once upon a time there was a princess...*), a node for a discourse participant with the property PRINCESS is created (in the centre of the graph, round, indicating the type 'entity'). The relative clause (*who went out into the forest*) adds a (square) situation node to the graph, as does the following clause (*and sat down at the edge of a cool well*), and so forth.

Propositional information is represented in the form of sub-graphs of a Proposition Graph. Propositions formed by (potentially recursive) functional application of a predicate to a set of arguments correspond to sub-graphs with a specific (square) predicative node n and all nodes on all argument paths[6] originating at n. For example, the proposition ⟦*The princess owned a golden ball*⟧ can be recovered from the OWN-node and the two arguments connected to it (PRINCESS and BALL in Figure 1). Each Proposition Graph G is thus associated with a finite set of propositions, which I call the PROPOSITION SET of G, represented as Π_G.

An interlocutor's INFORMATION MODEL $\mathcal{M}$ contains a Proposition Graph G as well as information about epistemic attitudes towards the propositions π in the proposition set Π_G. I assume that these attitudes are represented as epistemic weights ranging from 0 (assumption of falsity) to 1 (assumption of truth). 'Epistemic weight' can be regarded as a subjective version of probability. A value of 0.5 indicates epistemic indifference. This information is stored in an EPISTEMIC MAP (of an Information Model $\mathcal{M}$), represented as $\mathcal{E}_{\mathcal{M}}$. For example, if an interlocutor i believes that the proposition $\pi = $ ⟦*The princess owned a golden ball*⟧ is true, the Epistemic Map $\mathcal{E}_{\mathcal{M}}$ of i's Information Model $\mathcal{M}$ contains the mapping $\mathcal{E}_{\mathcal{M}}(\pi) = 1$.

I assume that each interlocutor i has their own 'private' Information Model at any stage of a conversation. For communication to be successful, interlocutors also need representations of the other interlocutors' Information Models, i.e. they need a theory of mind (see for instance Abraham & Leiss 2012 in the context of modal particles).[7] This is why I assume that interlocutors have access to META-MODELS. Meta-Models are defined in the same way as private Information Models, but their Epistemic Map does not contain information about epistemic attitudes held by an interlocutor i, but about attitudes attributed to some other interlocutor j by i.

2.2   The Common Ground

In social-cognitive[8] approaches to linguistics, human communication is not only regarded as a process of two or more individuals reading each others' minds; rather, it is seen as a cooperative endeavour, and it happens in a "shared, intersubjective context" (Tomasello 2008: 74). Tomasello (2008: 74) uses the term "joint attentional

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6.   An argument path is a directed path all of whose edges have an argument attribute; see the Appendix for details.

7.   Westra & Carruthers (2018: 71) define a theory of mind as "[t]he capacity to predict and interpret behavior by using representations of hidden, causally efficacious mental states."

8.   "Most generally, social cognition is defined as any cognitive process that involves other people. These processes can be involved in social interactions at a group level or on a one-to-one basis" (Frith & Blakemore 2006: 139).

frame" and points to the notion of 'Common Ground' as explicated by Clark (1996) (see also Stalnaker 2002; see Fetzer & Fischer 2007 for a discussion of different notions of Common Ground). I assume that a Common Ground $\mathcal{G}$ is a 'public' Information Model that is jointly constituted by, and negotiated between, the interlocutors in a conversational exchange, and that is an object of "joint attention" (Tomasello 2008). The Common Ground obviously has to be compatible with the private Information Models of the interlocutors (at each stage d of a discourse), but it is a different object. Systematic deviations from the compatibility requirement of the private Information Models and the (public) Common Ground can be observed, for instance, in lying.

The Common Ground differs from private Information Models with respect to attitudes towards propositional information. Like private Information Models, the Common Ground contains a Proposition Graph G. The elements of the Proposition Set of G, Π_G, are not associated with epistemic attitudes, however. Rather, a Common Ground comes with social-cognitive attitudes. Specifically, a Common Ground is associated with degrees of ACTIVATION of discourse entities (discourse referents and situations), with degrees of COMMITMENT made by discourse participants towards the propositions in the Common Ground (Hamblin 1971; Gunlogson 2008; Krifka 2015), and with degrees of CONSENSUS between interlocutors concerning propositional information. Commitment is made (publicly) by interlocutors through a conversational contribution (MOVE). Consensus emerges either from joint commitment or ratification (e.g. through explicit agreement or non-objection), or from situational accessibility.

Activation, commitment and consensus states are social-cognitive objects. They are stored in ACTIVATION MAPS ($\mathcal{A}$), COMMITMENT MAPS ($\mathcal{C}$) and Consensus Maps ($\mathcal{R}$). Activation Maps are functions from nodes of the Proposition Graph $G_{\mathcal{G}}$ (of a Common Ground $\mathcal{G}$) to activation states. For instance, a maximally active discourse referent x is mapped to an activation state of 1 ($\mathcal{A}_{\mathcal{G}}(x) = 1$). Commitment Maps are functions from tuples of a discourse participant i and a proposition $\pi \in \Pi_{G,\mathcal{G}}$ to Commitment States (e.g. $\mathcal{C}_{\mathcal{G}}(i, \pi) = 1$ if participant i has publicly committed to the truth of π), and Consensus Maps are mappings from propositions to Consensus States (e.g. $\mathcal{R}_{\mathcal{G}}(\pi) = 1$ if all discourse participants agree to take the truth of π for granted).

2.3   Discourse

A discourse Δ is conceived of as a rule-governed activity in which the interlocutors negotiate a series of Common Grounds $\Gamma = \langle \mathcal{G}_1 \ldots \mathcal{G}_n \rangle$. Common Grounds are modified with MOVES. In making a Move, interlocutors can introduce new elements into the Proposition Graph of the current Common Ground, they can (re)activate

elements from the Common Ground, they can express epistemic commitment to propositions in the Common Ground, and they can ratify propositions from the Common Ground. A Move μ is a function from one Common Ground $\mathcal{G}_d$ to another Common Ground $\mathcal{G}_{d+1}$. It is submitted by a speaker i addressing a set of addressees A at discourse stage d, using a linguistic expression α (see the Appendix for technical details).

For illustration, consider the two graphs in Figure 2. The Common Ground $\mathcal{G}_1$ only comprises a referent, introduced with *Once upon a time there was a princess...* The second Move (*who went out into the forest*) maps $\mathcal{G}_1$ to $\mathcal{G}_2$. A new referent with the property FOREST is introduced, and the predication π =WENT_INTO(PRINCESS) (FOREST) is added to the graph. The narrator commits to the truth of that proposition, hence $\mathscr{C}_{\mathcal{G}2}$ (Narr, π) = 1.[9] As the proposition is not yet ratified at this stage, the ratification state is at 0. Activation states are at 1 when a node is introduced, and decrease with time.
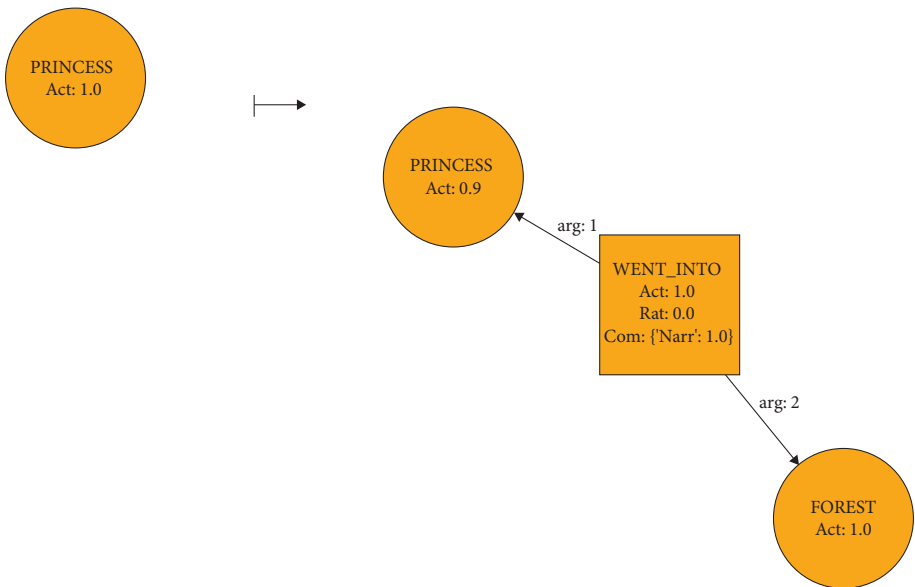
Figure 2. Two Common Grounds corresponding to the beginning of 'The Frog King'

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9. The argument π is implicit in Figure 2. $\mathscr{C}$(Narr, π) = 1 is thus represented as {Narr: 1.0} on the root node of π.

3. German sentences with *ja* and their English correlates

In this section I use the GBD-model to analyse the function of the German modal particle *ja* and a set of English expressions that have been claimed to be near equivalents of this particle. I use material from the Europarl corpus (Koehn 2005), specifically from the Europarl-direct corpus (Cartoni & Meyer 2012) for illustration, but the focus is not on frequencies of occurrence, but on types of contexts in which the relevant correlates are found. For quantitative observations on the use of the English expressions under analysis, the reader is referred to Gast (2022).

After providing a description of the function of *ja* in Section 3.1 five English lexical expressions qualifying as correlates of *ja* are discussed in Sections 3.2–3.5, i.e. *as you know, after all, of course, indeed* and *in fact*.

3.1 The function of *ja*

König et al. (1990: 145ff.) distinguish two uses of unstressed *ja*. In its first use *ja* indicates that the proposition expressed in the relevant sentence is regarded as shared background knowledge (see (8)). In its second use, *ja* is said to show that there is clear evidence for a statement (see (9)).

(8) a. Wir können *ja* nicht immer nur ihn reden lassen.
    b. We can't let him do all the talking [as I assume we all agree].
       (König et al. 1990: 145)

(9) a. Da ist *ja* Herbert!
    b. (Look/well,) if that isn't Herbert!   (König et al. 1990: 147)

I take it that both of these uses can be covered by the same generalization: sentences with *ja* indicate that the information in the scope of the particle is 'uncontroversial' (see also Grosz 2020). In terms of the GBD-model, this means that in using *ja* with scope over the denotation π of a natural language object α ($\pi = [\![\alpha]\!]$) the speaker signals that s/he assumes π to be taken for granted by all participants, i.e. it is either ratified or situationally accessible. In other words, the output Common Ground $\mathcal{G}_{d+1}$ does not differ from the input Common Ground $\mathcal{G}_d$ in terms of the elements of the Proposition Graph G (see (10a)), the Commitment Map $\mathcal{C}$ (see (10b)) or the Consensus Map $\mathcal{R}$ (see (10c)). What changes is the the Activation Map $\mathcal{A}$. I call this condition the condition of Uncontroversiality. Uncontroversiality is regarded as a property of a Move μ. It is defined in (10).

(10)   For any discourse Δ, speaker $i \in \mathcal{I}_\Delta$, set of addressees $A \subset \mathcal{I}_\Delta \setminus \{i\}$, discourse
stage $d \in \mathcal{N}_\Delta$, series of Common Grounds $\Gamma_\Delta = \langle \mathcal{G}_1 \ldots \mathcal{G}_n \rangle$ and linguistic
object α, a Move $\mu_{i,A,d,\alpha}$ is Uncontroversial iff

    a. $\Pi_{G,\mathcal{G}d} = \Pi_{G,\mathcal{G}d+1}$ (Proposition Set unchanged)
    b. $\mathcal{C}_{\mathcal{G}d} = \mathcal{C}_{\mathcal{G}d+1}$ (Commitment Map unchanged)
    c. $\mathcal{R}_{\mathcal{G}d} = \mathcal{R}_{\mathcal{G}d+1}$ (Consensus Map unchanged)
    d. $\mathcal{R}_{\mathcal{G}d}(\llbracket \alpha \rrbracket) = 1$ ($\llbracket \alpha \rrbracket$) is at consensus state 1)

3.2   *As you know*

As you know is probably the English expression whose function *prima facie* corresponds most closely to that of German *ja*. An example of a German sentence with *ja* and its English translation is given in (11). (12) is an example that was translated from English into German.

(11)   a.   Jeder Vorsitzende bzw. jede Vorsitzende hat *ja* so viele Stimmen, wie die Fraktion Mitglieder hat.
      b.   *As you know*, each chairman has the same number of votes as his Group has Members.

(12)   a.   Having said that, we have a disagreement, *as you know*, about whether or not Article 90 should be modified.
      b.   Allerdings besteht *ja* zwischen uns eine Meinungsverschiedenheit, was die Frage anbelangt, ob Artikel 90 geändert werden soll oder nicht.

Both examples clearly illustrate the characteristic function of *ja*, as the information expressed in the *ja*-sentences is presented as uncontroversial. The members of the European Parliament are taken to be familiar with the rules of procedure in (11), and they are taken to agree to the fact that there is disagreement with respect to the Article 90 mentioned in (12).

What is important about the examples in (11) and (12) is that the relevant pieces of information are literally 'knowledge', i.e. information that is assumed to be contained in all addressees' Information Models at the stage the utterance is made. *As you know* is less appropriate in contexts in which the information in question is situationally accessible, not retrievable from the Information Models (corresponding to episodic memory). (13b), for example, is a possible translation of (13a); but it is not appropriate as a spontaneous expression upon realizing that it is raining. (13b) could be uttered during a phone conversation, e.g. if the speaker has previously mentioned that it is raining.

(13) a. Es regnet *ja*.
      b. *As you know*, it is raining.

Given that *as you know* (literally) relates to the addressee's Information Model, rather than the Common Ground, its use is also odd if the proposition in question provides information to which the addressee has better access than the speaker. *Ja*, by contrast, is not sensitive to this type of asymmetry, as it relates to the 'public' information in the Common Ground. (14a) is therefore perfectly fine, whereas (14b), the English translation of (14a) (translated with *indeed* in the corpus), would be inappropriate with *as you know*.

(14) a. Sie wollten *ja* sogar die weitgehend unzureichenden Antidumpinginstrumente weiter aushebeln!
      b. *Indeed* (# *as you know*) you even wanted to continue cancelling the largely inadequate anti-dumping instruments!

Note also that the German expression *wie Sie wissen* ('as you know') sometimes cooccurs with *ja*, e.g. in (15a).

(15) a. In allen Kontakten, die wir mit den Taliban aufnehmen konnten – die sind, *wie Sie wissen, ja* durchaus beschränkt –, haben wir nie einen Zweifel daran gelassen, daß dieses Verhalten von uns verurteilt wird. Das wird auch in Zukunft so geschehen.
      b. In all the contacts which we have been able to make with the Taliban – and *as you know*, they have been quite limited – we have never left them in any doubt as to the fact that we condemn this behaviour and shall continue to do so in the future.

As you know can in fact be interpreted literally, as a specific type of *as*-parenthetical (Potts 2002). In those cases where the proposition it modifies is not retrieved from episodic memory but situationally accessible, we sometimes find *as you can see* instead. (16b) (as a translation of (16a)) is a pertinent example.

(16) a. Herr Präsident, Herr Kommissar, Kolleginnen und Kollegen! Vor uns liegt *ja* ein ganzer Strauß von aktuellen wettbewerbspolitischen Angelegenheiten und Entscheidungen.
      b. Mr President, Commissioner, ladies and gentlemen, *as you can see* we have before us a whole host of topical matters and decisions related to competition policy.

Potts (2002) analyses predications modified by *as*-parentheticals as conventional implicatures. I will assume that such parentheticals indicate consensus. In statements of the form [as *you know* [α]], there is consensus that ⟦α⟧ is known to the

addressee(s), and in [*as you can see* [α]], there is consensus that ⟦α⟧ is visually accessible (consider also *as you said, as we hope*, etc.). I will say that the proposition in the scope of an *as you know*-parenthetical is AD[DRESSEE]-KNOWN. The condition of being AD-KNOWN is treated as a property of Moves in (17). A Move is AD-KNOWN iff the speaker assumes that there is consensus that the proposition in question is known to all addressees, i.e., all addressees associate the proposition in question with an epistemic weight of 1 in their private Information Models.

(17)   For any discourse Δ, speaker $i \in \mathcal{I}_\Delta$, set of addressees $A \subset \mathcal{I}_\Delta \setminus \{i\}$, discourse stage $d \in \mathcal{N}_\Delta$, series of Common Grounds $\Gamma_\Delta = \langle \mathcal{G}_1 \dots \mathcal{G}_n \rangle$ and linguistic object α, a Move $\mu_{i,A,d,\alpha}$ is AD-KNOWN iff
$\forall j \in A[\mathcal{R}_{\mathcal{G}d}(\text{KNOW}(j)(\llbracket \alpha \rrbracket)) = 1]$

The description provided above suggests that the condition of being AD-KNOWN is implied by uncontroversiality. Accordingly, the contexts where *as you know* can be used can be expected to be a subset of the contexts where *ja* can be used. While most, perhaps all, examples found in the Europarl corpus are compatible with this generalization, there is one type of context (beyond the cases of situational accessibility mentioned above) where *as you know* is possible while *ja* is not: if the addressee was not previously aware of the fact that the speaker had access to the relevant information. Consider (18).

(18)   Madam President, *as you know*, the reason we are voting this report today rather than last week is because of the numerous and serious translation errors, particularly in the French version.

While the French translation errors may have been known to be known to everybody (being ratified information from the Common Ground), it is also conceivable that the addressee (the president) was not previously aware that the speaker knew about them. Even though this is unlikely in the context of the European Parliament, it is not impossible. In this case, *as you know* would be felicitous while *ja* would not. This shows that *ja* requires information to be publicly agreed upon at the time an utterance is made, while *as you know* can be used in Moves in which epistemic commitment is made or consensus is established.

3.3   *After all*

The function of *after all* is described as follows in the OED:

(19)   *after all:* 'In spite of any indications or expectations to the contrary'

<div align="right">(OED, s.v. after)</div>

In a typical *after all*-context, some issue was undecided at an earlier stage of a conversation before it was resolved (see Fischer & Heide 2018: 527 for examples). Typically, the *after all*-Move represents the more unlikely option, as in (20). In such cases, *after all* sometimes corresponds to German *doch*.

(20)   a.   I do not mean that everything here is not justified – but tell us the story. Maybe we asked for some initiatives but, on reflection, we would say that they are not such a priority *after all*.

        b.   Ich will damit nicht sagen, dass die vorgeschlagenen Initiativen nicht gerechtfertigt sind, aber wir brauchen mehr Informationen. Vielleicht haben wir ja einige der Initiativen angeregt, aber nach einigem Nachdenken festgestellt, dass sie vielleicht *doch* nicht ganz so wichtig sind.

In a historical study, Lewis (2007) distingishes three use types of *after all:* (i) a temporal sense (not of interest here, but probably the [etymologically] most literal use),[10] (ii) a counter-expectation sense (see (20) above) and (iii) a 'justificative' use. It is this latter use in which *after all* is often found as a correlate of Germ. *ja*. The term 'justificative' refers to the rhetorical relation of 'justification' as defined by Mann & Thompson (1987).[11] A relevant example is provided in (21), where a Danish politician is criticized for talking to the Danish press, rather than the Environment Committee of the European Parliament.

(21)   a.   I understand that she has had certain things to say about the Environment Committee in the Danish press. I do not know why she confines herself to the Danish press when she can, in fact, be perfectly blunt speaking to us here tonight who are, *after all*, members of the Environment Committee.

        b.   Ich verstehe, daß sie bestimmte Dinge über den Umweltausschuß gegenüber der dänischen Presse äußern mußte. Ich kann jedoch nicht verstehen, warum sie sich auf die dänische Presse beschränkt, wo sie doch heute Abend die Möglichkeit hat, hier vor uns, die wir *ja* immerhin die Mitglieder des Umweltausschusses sind, offen ihre Meinung zu sagen.

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10. Lewis (2007: 90) provides the following example from the BNC: – Oh God, I'm tired. You woke me up this morning I tell you Sid. – What time did you get to bed after all?

11. "R's comprehending S increases R's readiness to accept W's right to present N" (Mann & Thompson 1987: 11).

The argumentation scheme in which justificative *after all* often occurs can be described as follows: There is an unratified proposition π, e.g. π = ⟦*she can talk to us*⟧. The clause in the scope of *after all* (*we are members of the Environment Committee*) lends support to this proposition. Obviously, justificative Moves of this type will by their very nature use propositions that are uncontroversial, to strengthen the argument. As Lewis (2007: 97) puts it:

> As an introduction to a conclusion or generalization, *after all* comes to be associated with speaker commitment to the truth of the proposition. The claim presented in the scope of *after all* is an acknowledged one, that can be taken for granted, so that *after all* comes to mark an accepted, backgrounded idea which is mentioned in order to provide support for a new and more salient idea.

In terms of the GBD-model, justificative *after all* can be used under the following conditions: there is a proposition π in the Common Ground to which the speaker has committed and that has not been ratified (e.g. π = ⟦she *can talk to us*⟧ in (21)). The speaker submits a Move μ which activates a ratified proposition ⟦π⟧ (e.g. ⟦*we are members of the Environment Committee*⟧). The assumption is that the addressees $A = \{i_1 \ldots i_n\}$ will be more willing to ratify π when being aware that ⟦α⟧ is true. The relationship between ⟦α⟧ and π is thus ideally such that there is consensus that ⟦α⟧ → π. These conditions are summarized in (22): there is an unratified proposition $\pi \in \Pi_{Gd}$ at stage *d* (see (22a)) to whose truth the speaker has committed (see (22b)). The proposition expressed in the relevant Move is ratified (see (22c)), and ⟦α⟧ → π is ratified, too (see (22d)).

(22)　For any discourse Δ, speaker $i \in \mathcal{I}_\Delta$, set of addressees $A \subset \mathcal{I}_\Delta \setminus \{i\}$, discourse stage $d \in \mathcal{N}_\Delta$, series of Common Grounds $\Gamma_\Delta = \langle \mathcal{G}_1 \ldots \mathcal{G}_n \rangle$ and linguistic object α, a Move $\mu_{i,\,A,\,d}$ is Justificative iff

$\exists \pi \in \Pi_{\mathcal{G}d},\ \pi \neq \llbracket \alpha \rrbracket$:

a.　$\mathcal{R}_{\mathcal{G}d}(\pi) < 1$　　　　　　　　　　　　　　　　　(π is unratified at *d*)

b.　$\mathcal{C}_{\mathcal{G}d}(i, \pi) = 1$　　　　　　　　　(speaker *i* has committed to π)

c.　$\mathcal{R}_{\mathcal{G}d}(\llbracket \alpha \rrbracket) = 1$　　　　　　　　　　　　　　　(⟦α⟧ is ratified)

d.　$\mathcal{R}_{\mathcal{G}d}(\llbracket \alpha \rrbracket \to \pi) = 1$　　　　　　　　(⟦α⟧ → π is ratified)

According to the analysis provided above, the correspondence between *after all* and *ja* (in specific contexts) results from the fact that the two expressions cover similar rhetorical or discourse-relational ground. *Ja* is uncontroversial and therefore commonly used in justificative Moves; *after all* is used in justificative Moves by virtue of its lexical meaning, and given this rhetorical function, it combines with ratified propositions. The difference between the two expressions becomes obvious if we consider contexts without a discourse antecedent. (23) cannot be uttered out of the blue. The only conceivable interpretation here is one of counter-expectation.

Accordingly, a possible German translation of (23) would be (24), with *doch*, an element commonly used in this type of context (see also (20b) above).

(23)   It's raining after all!

(24)   Jetzt regnet es doch (noch)!

According to the analysis presented above, *after all* is thus associated with the intention to change ratification states in the Common Ground, as it prompts the addressees to ratify a hitherto unratified proposition. *Ja* is compatible with such contexts, and in fact frequently occurs in contexts of this type, but it does not require any change in ratification or commitment states.

3.4   *Of course*

The function of *of course* is described as follows in the OED:

(25)   *of course:* 'naturally, as will be expected in the circumstances; for obvious reasons, obviously' (OED, s.v. *course*)

In its (etymologically) most literal sense, *of course* indicates a natural sequence of events, as in the English original in (26a). The German adverb *natürlich* is largely equivalent to *of course* in this function (see (26b)). I call this function EVENT-CONSECUTIVE.

(26)   a.   Madam President, this is a compromise amendment which was negotiated among groups and then, *of course*, examined by the various groups last night.

   b.   Frau Präsidentin! Dies ist ein Kompromißantrag, der zwischen den Fraktionen ausgehandelt und dann *natürlich* gestern abend von den verschiedenen Fraktionen geprüft wurde.

Of course often primarily expresses 'naturalness' of a proposition based on information in the Common Ground more generally: the proposition in question follows from the information in the input Common Ground. This is illustrated by the English sentence in (27a) and its German translation in (27b).[12] I call these uses 'CG-CONSECUTIVE'.

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12.   The speaker is talking about Bangladesh. Bangladesh ist about five times larger than Belgium though. The speaker was probably fooled by the map projection.

(27) a. The country is about the size of Belgium but has 143 million people. They are managing to feed themselves for the first time after many years of independence and *of course* there are problems.

   b. Das Land hat etwa die Größe von Belgien, jedoch 143 Millionen Einwohner. Nach vielen Jahren der Unabhängigkeit kann sich das Land zum ersten Mal selbst ernähren, und *natürlich* gibt es da Probleme.

In some cases *of course* seems to indicate 'naturalness' without any obvious link to material from the Common Ground, see (28a) and its translation in (28b) (with *ja*).

(28) a. I very much agree with Mr Sjöstedt that environmental policy is a very important policy within the Union and that Community policies generally should be taking much more account of environmental matters. Indeed, in the Amsterdam Treaty which has not yet been ratified, *of course*, there is an additional Union obligation to give environmental considerations a higher priority.

   b. Ich kann Herrn Sjöstedt vollkommen darin zustimmen, daß die Umweltpolitik eine sehr wichtige Politik der Union ist und daß Gemeinschaftspolitiken ganz allgemein Umweltbelange stärker berücksichtigen sollten. Im Vertrag von Amsterdam, der *ja* noch nicht ratifiziert ist, findet sich in der Tat eine weitere Verpflichtung für die Union, Umweltfragen einen höheren Rang einzuräumen.

As Wichmann & Aijmer (2010: 12) note (referring to earlier relevant literature), *of course* can have rather different rhetorical and interpersonal effects, depending on the discourse context. First, it can be "authoritative and potentially patronising" (Holmes' 1988 'impersonal type'), and it can "[signal] solidarity and can act as a positive politeness device". (28) above is an example of the latter type. A confrontational example is given in (29) below. *Of course* seems to correspond to Germ. *ja* only in 'consensus-oriented' uses of the type illustrated in (28).

(29) a. What is more, your line of reasoning is also faulty, as you are presuming that the two markets are the same size. If you compare the two markets, you have to observe that the South Korean market, *of course*, is much smaller than the European one, and that means that you are comparing apples with oranges.

   b. Außerdem ist Ihre Argumentation fehlerhaft, denn Sie gehen davon aus, dass die beiden Märkte gleich groß sind. Wenn Sie die beiden Märkte vergleichen, müssen Sie beachten, dass der südkoreanische Markt *natürlich* viel kleiner ist als der europaische, und dies bedeutet, dass Sie Äpfel mit Birnen vergleichen.

In terms of the GBD-model, the function of (epistemic) *of course* can be decribed as follows: a speaker expresses commitment to a proposition which is treated as ratified. *Of course* thus requires contexts in which the speaker's commitment seems to be at stake, despite previous ratification of a proposition. For example, in (28a), the speaker refers to the Amsterdam treaty, which creates "an additional Union obligation to give environmental considerations a higher priority". This may call into question the (ratified) proposition that the treaty has not been (legally) ratified yet. As the speaker's attitude towards that proposition is at stake, re-emphasizing commitment to an already ratified proposition is not uninformative.[13]

I assume that *of course* may correspond to *ja* if it is CG-CONSECUTIVE: a speaker submits a proposition which is taken to follow from the Common Ground. In terms of the GBD-model, the function of CG-CONSECUTIVITY can be defined as in (30): there is a ratified proposition in the Common Ground (π, see (30a)), and the speaker commits to the truth of the new proposition $[\![\alpha]\!]$ (see (30b)). Moreover, the implicational relation $\pi \to [\![\alpha]\!]$ is ratified (see (30c)).

(30)   For any discourse Δ, speaker $i \in \mathcal{I}_\Delta$, set of addressees $A \subset \mathcal{I}_\Delta \setminus \{i\}$, discourse stage $d \in \mathcal{N}_\Delta$, series of Common Grounds $\Gamma_\Delta = \langle \mathcal{G}_1 \ldots \mathcal{G}_n \rangle$ and linguistic object α, a Move $\mu_{i,A,d,\alpha}$ is CG-CONSECUTIVE iff
$\exists \pi \in \Pi_{gd}$:
a. $\mathcal{R}_{\mathcal{G}d}(\pi) = 1$ (π is ratified at d)
b. $\mathcal{C}_{\mathcal{G}d+1}(i, [\![\alpha]\!]) = 1$ (speakers commits to $[\![\alpha]\!]$)
c. $\mathcal{R}_{\mathcal{G}d}(\pi \to [\![\alpha]\!]) = 1$ ($\pi \to [\![\alpha]\!]$ is ratified at d)

Note that in cases like (28), where there is no obvious apodosis (π), we can assume that $\pi = [\![\alpha]\!]$. In such cases, the proposition in the scope of *of course* is ratified, and the speaker re-establishes commitment to that proposition. As the speaker 'corrects' a false impression of non-commitment to a ratified proposition, these cases are 'consensus-oriented' and signal positive politeness in the sense of Holmes (1988).

According to the analysis sketched above, the main difference between *of course* and *ja* is that in using *of course* a speaker establishes commitment, while such commitment is not established with *ja*. In cases like (28a) above, *of course* actually conveys a sense of commitment that is absent from the German translation in (28b). In consensus-oriented contexts, the redundant expression of commitment seems to be 'innocuous' though, as it only adds to the feeling of solidarity in the exchange.

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13. This is in accordance with the analysis of Holmes (1988: 53), who regards *of course* as "an overt signal that the speaker is assuming that the hearer accepts or is already familiar with the propositional content of her or his utterance, and functions to emphasise the validity of that content" (quoted from Wichmann & Aijmer 2010: 11).

3.5   *In fact* and *indeed*

In their core uses, *in fact* and *indeed* have very similar functions and the difference between them is partly diatopic *(indeed* is often perceived as a British variant). The OED describes these items as follows:

(31)   *in fact:* 'In reality, actually, as a matter of fact. Now often used parenthetically as an additional explanation or to correct a falsehood or misunderstanding'

(OED, s.v. *fact*)

(32)   *indeed:* 'In actual fact, in reality, in truth; really, truly, assuredly, positively'

(OED, s.v. *indeed*)

An important functional difference between *indeed* and *in fact* is that *indeed* is typically confirmatory whereas *in fact* may also be used "to correct a falsehood or misunderstanding" (see (31)). An example of this use type is given in (33). The German translation of this sentence contains *in Wahrheit* (lit. 'in truth').

(33)   a.   In many cases companies use the argument of negligence rather than saying it is deliberate but *in fact* negligence in its way is deliberate.
       b.   In vielen Fällen gebrauchen Unternehmen eher das Argument der Fahrlässigkeit, als zu sagen, es sei absichtlich geschehen, doch *in Wahrheit* ist Fahrlässigkeit irgendwie auch Absicht.

There are other use types of *indeed* and *in fact* with very different conditions of use (see Fischer & Heide 2018: Sections 3.2 on *indeed)*. A prominent use has a scalar implication. In these cases (which Lewis 2018 analyses as instances of 'elaboration', in terms of Mann & Thompson 1987) we often find a scalar particle such as *sogar* in German. Relevant examples are given in (34) and (35) for *in fact* and *indeed*, respectively.

(34)   a.   On the second question, I agree with Mr Harbour and *in fact* I proposed legal action in a case that concerned Denmark, so we see eye to eye on that matter.
       b.   Ich stimme Herrn Harbour zu. Ich habe *sogar* in einem Fall, der Dänemark betraf, gerichtliche Schritte vorgeschlagen. Wir sind uns in dieser Angelegenheit also einig.

(35)   a.   Let us be sensible and adopt this sound and sensible proposal or we will risk a great divergence and *indeed*, discordance, in the Union.
       b.   Wir sollten vernünftig sein und diesen soliden und vernünftigen Vorschlag annehmen, denn andernfalls riskieren wir große Unterschiede und *sogar* Unstimmigkeiten in der Union.

In specific uses of *indeed* and *in fact*, a proposition is confirmed that is under discussion, establishing the speaker's epistemic commitment and thus ratifying the proposition in question (Lewis 2018 calls *indeed* 'anaphoric'). This is illustrated in (36a) and its German translation in (36b).

(36)　a.　In recognising the prompt action of the UK on 20 and 21 February, could you confirm that the UK has *in fact* now asked to draw down the remaining tranche of agrimonetary compensation, as the British Minister announced last night.

　　　b.　Könnten Sie im Zusammenhang mit der prompten Reaktion des Vereinigten Königreichs am 20. und 21. Februar bestätigen, dass das Vereinigte Königreich *in der Tat* nun darum ersucht hat, die letzte Tranche der agromonetären Entschädigung in Anspruch zu nehmen, wie vom britischen Minister gestern Abend angekündigt.

In fact is found as a correlate of *ja* only if it is clearly confirmatory, not corrective. (37a), with its translation into German in (37b), is a relevant example. Some context is provided in the English original to show the consensus-oriented character of the exchange.

(37)　a.　[I know that the Commissioner would agree that humanitarian aid should not at any time be seen as a substitute for political action. Of course I support the principle behind the initiative we are discussing this evening.] Financing operations to progressively take over from humanitarian action and paving the way for long-term development planning is very welcome. The regulation shows, *in fact*, that the Commission recognizes that there is a necessity for better coordination between available instruments and that the elaboration of a more holistic approach to development is also very welcome.

　　　b.　Aktionen zu finanzieren, damit sie die humanitären Hilfsaktionen nach und nach ersetzen und den Weg für langfristige Entwicklungsplanung freilegen, ist sehr zu begrüßen. Die Verordnung zeigt *ja* auch, daß sich die Kommission über die Notwendigkeit einer besseren Koordinierung der verfügbaren Mechanismen im klaren ist, und daß auch die Ausarbeitung breiterer Ansätze bei der Entwicklungsarbeit sehr begrüßt wird.

According to the description provided above, (confirmatory) *indeed* and *in fact* are used under the following conditions: there is a proposition π in the Common Ground which is active (see (38a)), and to which some other interlocutor has committed (see (38b)). The speaker, too, commits to the truth of this proposition (see (38c)). I call the function corresponding to the conjunction of these conditions CG-CONFIRMATORY.

(38) For any discourse Δ, speaker $i \in \mathcal{I}_\Delta$, set of addressees $A \subset \mathcal{I}_\Delta \setminus \{i\}$, discourse stage $d \in \mathcal{N}_\Delta$, series of Common Grounds $\Gamma_\Delta = \langle \mathcal{G}_1 \ldots \mathcal{G}_n \rangle$ and linguistic object α, a Move $\mu_{i,\,A,\,d,\,\alpha}$ is CG-CONFIRMATORY iff
$\exists\, j \in \mathcal{I}, j \neq i:$

   a. $\mathcal{A}_{\mathcal{G}_d}(\llbracket \alpha \rrbracket) > 0$ ($\llbracket \alpha \rrbracket$ is active)

   b. $\mathcal{C}_{\mathcal{G}_d}(j, \llbracket \alpha \rrbracket) = 1$ (some j has committed to $\llbracket \alpha \rrbracket$)

   c. $\mathcal{C}_{\mathcal{G}_{d+1}}(i, \llbracket \alpha \rrbracket) = 1$ (i commits to $\llbracket \alpha \rrbracket$)

As far as equivalence with *ja* is concerned, *indeed* and *in fact* are similar to *of course* insofar as they – unlike *ja* – can imply the establishment of epistemic commitment. Just like in the case of *of course*, this commitment seems to be 'innocuous' though, as it only confirms an existing consensus. Relevant examples are given in (39) (for *indeed)* and (40) (for *in fact*).

(39) a. Der Kollege Caccavale hat sehr richtig festgestellt, daß man in dieser Union alles transportieren kann und daß alles ungehindert die Grenzen überschreiten kann, die es offiziell *ja* gar nicht mehr gibt.

      b. Mr Caccavale was quite right to point out that all kinds of things can be transported within this Union, and all kinds of things can move unhindered across the frontiers – which *indeed* no longer officially exist.

(40) a. Ich glaube, an dieser Stelle nicht nochmal extra wiederholen zu müssen, daß sich diese Summe *ja* auf sieben Jahre verteilt, was einen jährlichen Betrag von 140 Millionen Euro bedeutet.

      b. I believe that I do not have to repeat yet again here that this sum is *in fact* spread over seven years, meaning an annual amount of EUR 140 million.

3.6 Summary

As the discussion of the functions of *after all, as you know, of course, indeed* and *in fact* has shown, none of these expressions is equivalent to *ja* at a lexical level. *As you know*, which seems to come closest to being equivalent to *ja*, primarily relates to the addressee's knowledge, not to the Common Ground, and is therefore inappropriate in specific cases where German uses *ja*, e.g. if the proposition in question is not retrieved from memory but situationally accessible (*Das ist ja Hans!* 'That is JA Hans'), and if the addressee has better access to the information in question than the speaker (*#Du hast ja Kopfschmerzen* 'You ja have a headache'). Moreover, *as you know* can establish epistemic commitment towards the proposition in question. *After all* is often used for the rhetorical function of 'justification', and for this reasons tends to be used in combination with propositions that are uncontroversial. It comes with the intention of modifying consensus states, however, as the propositions in its scope lend support to another, unratified, proposition. *Of course*

indicates what I have called 'CG-CONSECUTIVITY': the proposition in question is presented as following from information in the Common Ground. Still, in using *of course* the speaker commits to the truth of the proposition in question. Finally, *in fact* and *indeed* have been analysed as 'CG-CONFIRMATORY' elements, in the relevant uses. They are used to commit to the truth of a proposition that is under discussion (active), and to which some other interlocutor has committed before.

As I have tried to show, the use conditions of *ja* overlap with those of the English expressions in various ways. There is an important difference, however: While the core assumption about *ja* has been that this particle is never associated with the intention to change commitment or consensus states, but rather presents a proposition as information that is ratified or situationally accessible, all of the English elements under study can imply such change in the Common Ground at some level. There is, accordingly, no functional equivalence between *ja* and the five lexical expressions of English compared to that particle in the present study.

4.   Conclusions

The starting point of this study was the question of whether or not English has modal particles. This is obviously a matter of definition. Most definitions of modal particles use a combination of distributional and functional criteria. While there can be no doubt that from a distributional point of view, English does not have modal particles, it is thus possible that English may have elements with similar functions, as claimed by Fillmore (1984), among others. The analysis presented in this study has shown, however, that at least as far as *ja* is concerned, English does not have a lexical functional equivalent. *Ja* differs in an important respect from all the English elements that were analysed: it is used to activate a proposition without changing commitment or consensus states. All the English elements investigated are used in contexts where some change of this type is established. Even at a purely functional level, German *ja* thus seems to differ quite categorically from the five English expressions under study.

It is possible, of course, that there are other types of communicative signals in English – other than the (lexical) ones analysed in this study – which do have a function comparable to that of Germ. *ja*. The focus on the five expressions under analysis was motivated by the corpus material used. The genre of the Europarl-corpus (scripted speech) makes it unlikely to find specific types of expressions that have been claimed to be instrumental for the type of discourse management associated with *ja*. Given the formal character of the register, tag questions are certainly much rarer than in spontaneous, informal conversation (see Bublitz 1979). Since the corpus, originally consisting of scripted speech, does not contain any prosodic,

let alone visual signals (e.g. gestures and facial expressions), the focus of this study has been on lexical markers of discourse management only.

Beyond the descriptive level – identifying use conditions for a comparative analysis of Germ. *ja* and five English expressions that are often found in translations – I hope to have shown that a rich yet formally explicit model of discourse management – the graph-based discourse model (GDB-model) – can capture subtle differences in the use of particles like those investigated in the present study. By providing a computational implementation of the model in Python, I moreover hope to have illustrated that there is a way of bridging the gap between the ever-growing resources in the domain of Natural Language Processing (e.g. knowledge graphs, which can be automatically retrieved from texts) and fine-grained, theoretically informed linguistic analyses.

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Appendix

Note on notation: Any unique element E of a tuple T is represented as E_T. Embedded sub-scripts will be separated by commas for better readability. For instance, rather than representing an element S of E_T as S_{ET}, it will be written as $S_{E,T}$. Python classes and attributes are represented in `verbatim` script.

A: Proposition graphs

A Proposition Graph G (implemented as the class `PropositionGraph`) is a directed graph that comprises a set of nodes N, a set of edges E, and an incidence function ϕ:

(41) a. $N = \{n_1 \dots n_n\}$
      b. $E = \{e_1 \dots e_n\}$
      c. $\phi : E \to N^2$

Both the nodes and the edges of a Proposition Graph can have properties. Properties are regarded as attribute-value pairs. Technically, attributes are treated as functions that map nodes and edges to the corresponding values. For example, the attribute TEMPERATURE has values such as *cool, hot*, etc. I will write V_A for the values of an attribute A (e.g. $V_{\text{TEMPERATURE}}$ = {cool, *hot* … }). A node attribute A^N is a function from the set of nodes of a graph G to the values of A^N, V_{A^N}, see (42a). Edge attributes are defined accordingly, see (42b).

(42) For any Proposition Graph G,
      a. $A^N : N_G \mapsto V_{A^N}$
      b. $A^E : E_G \mapsto V_{A^E}$

To illustrate the workings of node attributes, the node representing the well in Figure 1 (say, n_1) has the attribute cool. This is represented as a mapping from the set of nodes to the set of values of the attribute temperature, which returns the value *cool* when applied to n_1.

(43)   TEMPERATURE (n_1) = *cool* $(n_1 \in N_G)$

I assume that each node has an obligatory TYPE-attribute ('entity' or 'situation'). This attribute is represented with shapes in Figure 1 (round: entities, square: situation).

The Proposition Set Π_G of a Proposition Graph G is the set of all (propositional) subgraphs G' of G such that G' contains a specific node n_s of type 'situation', and all nodes located on all argument paths originating at n_s (see Note 6). Note that edges linking arguments to situation nodes are specified for the attribute 'arg', which maps edges to numbers (corresponding to the position in the argument frame of the relevant predicate, e.g. 1 for the subject/external argument, see Figure 1). (44) provides a definition of paths.

(44)   For any Proposition Graph G = $\langle$N, E, $\Phi\rangle$,
       a.   the set of paths ψ in G is defined as follows:
            $\psi_G = \{\psi = \langle e_1 \dots e_{m-1}\rangle, e_1 \dots e_{m-1} \in E_G \mid$
            $\exists s_n = \langle n_1 \dots n_m\rangle, n_1 \dots n_m \in N_g$
            $[\forall e_i \in \Psi [\Phi(e_i) = (n_i, n_{i+1})] \wedge$
            $\neg\exists i, j \in [1, m\text{-}1] [i \neq j \wedge e_i = e_j]\}$
       b.   The set of argument paths is defined as
            $\Psi_{arg} = \{\Psi = \langle e_1 \dots e_m\rangle, \Psi \in \Psi_g \mid \forall e \in \Psi [\text{TYPE} (e) = \text{'arg'}]\}$

The proposition set Π_G of a graph G can now be defined as follows:

(45)   Let Ψ_1 be the start node of a path, Ψ_2 the end node:
$\Pi_G := \{G' = \langle N', E', \Phi' \rangle | N' \subseteq N_G \wedge E' \subseteq E_g \wedge \Phi' \subseteq \Phi_G \wedge$
$\exists n \in N' \, [\text{TYPE}(n) = \text{'situation'} \wedge$
$\forall m \in \text{N}'[m \neq n \mapsto \exists \Psi \in \Psi_{arg, G'} \, [\Psi_1 = n \wedge \Psi_2 = m]]]\}$

Properties of propositions are stored as attributes of the situation nodes.

B: Information Models

An Information Model $\mathcal{M}$ (`InformationModel`) comprises a Proposition Graph G and an Epistemic Map $\mathcal{E}$ (`EpistemicMap`):

(46) $\mathcal{M} = \langle G, \mathcal{E} \rangle$

An Epistemic Map stores epistemic attitudes towards propositions. It maps the propositions $\pi \in \Pi_G$ (for a graph G) to epistemic weights ranging from 0 to 1. The holder of an epistemic attitude is called the 'Epistemic Evaluator'.

(47)   For any Information Model $\mathcal{M}$,
　　a.　$\mathcal{E}_{\mathcal{M}} : \Pi_{G, \mathcal{M}} \mapsto [0, 1]$
　　b.　for any proposition $\pi \in \Pi_{G, \mathcal{M}}$,
　　　　$\mathcal{E}_{\mathcal{M}} = (\pi)$ 0 if the Epistemic Evaluator regards π as false and
　　　　$\mathcal{E}_{\mathcal{M}}(\pi) = 1$ if the Epistemic Evaluator regards π as true

C: Common Grounds

Common Grounds, represented as $\mathcal{G}$, comprise a Proposition Graph G and a set of discourse participants $\mathcal{I}$ as well as three maps: an Activation Map $\mathcal{A}$ (`ActivationMap`), a Commitment Map $\mathcal{C}$ (`CommitmentMap`), and a Consensus Map $\mathcal{R}$ (`ConsensusMap`):

(48) $\mathcal{G} = \langle G, \mathcal{I}, \mathcal{A}, \mathcal{C}, \mathcal{R} \rangle$

Activation Maps store activation states associated with the nodes of the Proposition Graph (entities and situations discussed in a conversation). Activation states are represented as values ranging from 0 (inactive) to 1 (maximally salient, see (49)).

(49)   For any Common Ground $\mathcal{G}$,
　　a.　$\mathcal{A}_{\mathcal{G}} : \text{N}_{G, \mathcal{G}} \mapsto [0,1]$
　　b.　For any node $n \in \text{N}_{G, \mathcal{G}}$,
　　　　$\mathcal{A}_{\mathcal{G}}(n) = 0$ if n is inactive,
　　　　$\mathcal{A}_{\mathcal{G}}(n) = 1$ if n is active.

Commitment states associated with a Proposition Set Π_g are stored in a Commitment Map $\mathcal{C}_{\mathcal{G}}$ of a Common Ground $\mathcal{G}$. A Commitment Map maps tuples of a discourse participant and a proposition to degrees of epistemic commitment (ranging from 0 to 1, see (50)).

(50)   For any Common Ground $\mathcal{G}$ and any set of discourse participants I,
　　a.　$\mathcal{C}_{\mathcal{G}} : \text{I} \times \Pi_g \to [0,1]$
　　b.　For any interlocutor $i \in \mathcal{I}$ and any proposition $\pi \in \Pi_{\mathcal{G}}$,
　　　　$\mathcal{C}_{\mathcal{G}}(i, \pi) = 0$ if i has committed to regarding π as false,
　　　　$\mathcal{C}_{\mathcal{G}}(i, \pi) = 1$ if i has committed to regarding π as true.

A Consensus Map $\mathcal{R}_\mathcal{G}$ maps propositions from the proposition set Π_g to degrees of consensus (also ranging from 0 to 1). A proposition can be considered fully ratified, i.e. taken for granted by all discourse participants, if it has a consensus level of 1 (see (51)).

(51)   For any Common Ground $\mathcal{G}$,
    a. $\mathcal{R}_\mathcal{G} : \Pi_\mathcal{G} \mapsto [0, 1]$
    b.   For any proposition $\pi \, \varepsilon \, \Pi_\mathcal{G}$,
        $\mathcal{R}_\mathcal{G}(\pi) = 0$ if π has been ratified as false,
        $\mathcal{R}_\mathcal{G}(\pi) = 1$ if π has been ratified as true.

D: Discourse

A discourse Δ (`Discourse`) is conceived of as comprising four elements, a set of discourse participants I (`Discourse.Participants`), a series of discourse stages $\mathcal{N}$ (`Discourse.Stages`), a series of Common Grounds Γ (`Discourse.CommonGrounds`) and a matrix of Information States Σ (`Discourse.InformationMatrix`).

(52)   Discourse $\Delta = \langle I, \mathcal{N}, \Gamma, \Sigma \rangle$
    a.   The interlocutors
        $\mathcal{I} = \{i_1, i_2 \ldots i_m\}$
    b.   The discourse stages
        $\mathcal{N} = \langle d_1, d_2 \ldots d_n \rangle$
    c.   Sequence of Common Grounds
        $\Gamma = \langle \mathcal{G}_1, \mathcal{G}_2 \ldots \mathcal{G}_n \rangle$

The matrix of Information States Σ contains all Information States S of all participants i, at all stages d of a discourse.

(53)   Matrix of Information States

$$\Sigma = \begin{bmatrix} S_{1,1} & S_{1,2} & \ldots & S_{1,n} \\ S_{2,1} & S_{2,2} & \ldots & S_{2,n} \\ \ldots & \ldots & \ldots & \ldots \\ S_{m,1} & S_{m,2} & \ldots & S_{m,n} \end{bmatrix}$$

The rows of Σ correspond to participants, the columns to discourse stages. For example, the first row corresponds to all information stages of participant 1 throughout a discourse. Each cell ($\mathcal{S}_{x, y}$) thus corresponds to the information stage of a specific participant i at a specific discourse stage d. The number of rows of Σ therefore corresponds to the cardinality of I (the number of discourse participants), the number of its columns corresponds to the length of $\mathcal{N}$ (the number of discourse stages).

    An information state $\mathcal{S}_{i,d}$ covers the private Information Model $\mathcal{M}$ of a discourse participant as well as Meta-Models of the other discourse participants. Information states are therefore sequences of length $|\mathcal{I}|$ as there is one Information Model per interlocutor in each Information

State. The information state $\mathscr{S}_{1,1}$ – the top-left cell in the matrix of information states in (53) – contains the Information Models shown in (54), in a discourse with three participants.

(54) $\mathscr{S}_{1,1} = \langle \mathcal{M}_{1,1,1}, \mathcal{M}_{1,1,2}, \mathcal{M}_{1,1,3} \rangle$

Each model in (54) carries three indexes, one for the interlocutor, one for the discourse stage and one for the interlocutor to whom the model is attributed. $\mathcal{M}_{1,1,2}$ is thus the Information Model attributed to participant 2 by participant 1 at discourse stage $d = 1$. If the first and the last index of an Information Model are identical, this model is the private Information Model of the relevant interlocutor; otherwise the model is a Meta-Model.

A conversation consists of 'Moves' (Roberts 1996, 2012). In making a Move μ using a linguistic expression a an interlocutor *i* submits an 'update' to the discourse Δ. A Move is directed at a set of addressees *A*, and it maps an input Common Ground $\mathscr{G}_d$ to an output Common Ground $\mathscr{G}_{d+1}$:

(55) For any discourse Δ, speaker $i \in I_\Delta$, set of addressees $A \subset I_\Delta \setminus \{i\}$, discourse stage $d \in \mathcal{N}$, and natural language object α,

    a. $\mu_{i, A, d, \alpha}: \Gamma_\Delta \to \Gamma_\Delta$

    b. $\mu_{i, A, d, \alpha} (\mathscr{G}_d) = \mathscr{G}_{d+1}$

CHAPTER 6

Syntactic change and pragmatic maintenance

The discourse particle *then* over the history of English

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This chapter presents a corpus-based study of the history of *then* as a discourse marker in English. It will be shown that the pragmatic use of *then* and its status as a discourse particle was more or less stable throughout the history of English, even though its syntax changed profoundly.

The precursor of *then* in Old English occurs on a large scale in a fixed position in questions, imperatives and conditional correlatives, and is presuppositional in the sense that it reflects a speaker's response to the context, such as surprise or disapproval in questions, reinforcement or downtoning of the directive in imperatives.

From early Middle English onward, the pragmatic use of *then* in questions and imperatives occurs in available alternative positions in the clause: initially (in yes/no questions and imperatives) and final (in questions). The older particle position became restricted to questions. The finally position was extended to declarative SVO clauses.

The division of labour between particle use and temporal adverb use will be shown to interact, over the late Middle English and early Modern periods, with major syntactic changes that affected each of the clause types in different ways: the loss of V2, the auxiliation of the modals and the rise of *do*-support, and the loss of V to T movement. Through these developments, the pragmatic use of *then* has, if anything, expanded. This suggests that its robust discourse function was a powerful drive for maintenance under syntactic change.

1. Background and aims

This chapter traces the history of English *then* in its use as a discourse marker – we will call it a discourse particle here. This use is primarily exemplified in present-day English by the use of *then* in a non-temporal sense, in which it refers to information in the context. An example, taken from Schiffrin (1987: 259) is (1):

(1) Freda: a. Do y'still need the light?
     Debby: b. Um.
     Freda: c. We'll have t'go in **then**.
              d. Because the bugs are out.
              e. We're gonna go crazy with the bugs.

The use of then in (1c) indicates a request for action on the part of Freda which is contingent on the information in the preceding context: if Debby still needs the light, then they will have to go in. This reading has a clear conditional contextual relation. According to Schiffrin (1987), *then* may precede or follow the request (it follows the request in (1); an alternative is *Then we'll have to go in*). Recent work by Haselow (2011) focuses on the clause-final use of *then* in spoken English, likewise arguing for status as a discourse marker used to link the utterance it accompanies to a preceding utterance. According to Haselow, final *then* converts a proposition *p*1 expressed in a preceding discourse segment into a conditional protasis and thus marks the proposition *p*2 it accompanies as motivated by and directly linked to a preceding segment. This approach, too, brings out the conditionality of the context, which is paraphrased as 'if *p*1, as is the case, *p*2 then' (2012: 159).

Haselow (2012) presents a treatment of the history of utterance-final *then* in English, observing that final *then* originated over the Middle English period in the spoken language. Based on a small corpus containing texts in spoken genres, Haselow arrives at the following timeline for final *then*, as part of a total of different attested uses (2012: 161):

(2)   OE   early ME   late ME   eModE
     final connector *then* 0   3 (3%)   13 (8%)   51 (34%)

Van Kemenade & Links (2020) link the discourse pragmatics of final *then* with the early history of *then* in Old and Middle English, identifying it as a discourse marker use which is robustly attested particularly in Old English, although exclusively in a designated middle field position and in specific clause types such as questions and imperatives. Two examples of Old English questions in (3) (preceded by the relevant context in square brackets), illustrate the reference to the context, and the fact that the discourse particle *þonne* occurs in a fixed position in questions: pronominal (discourse-given) subjects precede it, and (new) nominal subjects follow it.

(3) a. [… the head above must take care not to let the feet slip in their course,
         for, if the feet fail, the whole body is inclined, and the head comes to the
         ground.]
         Hu   gerades mæg **ðonne** se   biscep brucan ðære hirdelican are, …
         how properly may PRT   the bishop enjoy   the   pastoral dignity
         'How, then, can the bishop properly enjoy the pastoral dignity?'
                                                              CP:18.133.3.898

b. [Hold this fast in your hearts, that the Almighty and the Righteous God compels no man to sin, but he knows, nevertheless, beforehand who will sin through their own will.]

Hwi ne sceal   he **þonne** rihtlice wrecan þæt yfel ðæt he onscunað.

Why not-shall he PRT   justly   avenge that evil that he abominates.

'Why then should he not justly avenge that evil which he abominates?'

ÆCHom_ I_7:237.174.1309

The argument is that *þonne* in these examples relates the question to the context, in the same vein as argued by Schiffrin and Haselow for present-day English *then*. Following up their readings for *then*, we will use a paraphrase as 'in that case' as a diagnostic for discourse particle status. This paraphrase expresses the conditional contextual relation.

Taking these observations for Old English as its background, the aim of this chapter is threefold: the first is to identify the discourse marker use(s) of *then* from Old English onward. We will see that this includes, from Middle English onward, a clause-initial use as in (4a); a clause-final use as in (4b) which also features in Haselow's and Schiffrin's work (cf. (1); a clause medial use as in (4c), see also (3), and an alternative pattern as part of the *wh*-constituent (cf. (4d). The particle position typical of *then* in Old English questions is no longer used in Present-day English (cf. (4c):

(4) a. Initial: **Then** why did you do that?
     b. Final: Why did you do that **then**?
     c. ?? medial: Why did you **then** do that? (cf. Old English as in (3))
     d. Part of wh: Why **then** did you do that?

I claim that these four uses in present-day English questions (three felicitous ones: (4a, b, d) are basically identical semantically and pragmatically, that is, they all imply that, given a situation/condition stated or implied in the context, it raises this particular question. Haselow (2011, 2012) formulates this as a conditional protasis for the case of final *then*. This is in line with the diagnostic assumed here: the reading 'in that case'. I will identify, in the course of the chapter, these positions as Spec,CP (in the (a) examples in (4)–(6)); final (in the (b) examples; Prt (in the (c) examples; *wh*-incorporated (in the (4d) example), where *wh* is in Spec,CP);. I will motivate this in the course of the discussion.

The same line of reasoning applies to imperatives with *then* in present-day English, and also in clauses that do not have some special illocution, e.g. (6), which presents variants of (1c):

(5) a. Initial: **Then** tell her about your adventure!
     b. Final: Tell her about your adventure **then**!
     c. ? medial: Tell her **then** about your adventure!

(6) a. Initial: **Then** we'll have to go in.
    b. Final: We'll have to go in **then**.
    c. ?? medial: We'll **then** have to go in.

The overall picture will show that there was one use of *then* as a discourse particle in Old English, which was almost completely restricted to one clause-internal position 'Prt' in specific clause types. From Middle English onward, alternative positions became available for the discourse marker use, and at some point the original Prt position was lost.

The Old English facts raise a number of issues that are addressed in part in van Kemenade & Links (2020): the discourse marker use of *then* in Old English suggests that it was an adverb grammaticalized to discourse particle status, and that it combines a specific syntactic position, in specific types of clauses, with a pragmatically special use that links the clause to the preceding discourse. We will see that this pragmatic use is maintained over the centuries, shifting to (and co-existing with) alternative positions. These observations raise a number of questions about the interaction between syntax, pragmatics, and discourse management. Why the positional shift? What is the nature of the alternative positions that arose from Middle English onwards? When and why did the original clause-medial 'Prt' position fall into disuse? The provisional answer to these questions at this point is: the discourse marker use was restricted largely to V to C contexts (questions, imperatives). The Prt position became, from late Middle English onward, increasingly firmly associated with the position of the finite verb in T (the Tense head in the inflectional domain), and this domain became increasingly "syntacticised" as verbal periphrastic expressions arose over the early and late Modern periods. This ultimately left little room for pragmatic expressions in this part of the clause, and the clause-initial and clause-final positions took over the pragmatic use of *then*. These changes affected the various clause types in different ways. We will come back to this in greater detail in Section 4.

The chapter is organised as follows: I will first summarise the findings and the analysis of the Old English precursors of *then* in van Kemenade & Links (2020). The purpose of Section 2 is to show that the Old English temporal adverbs meaning 'then' both strongly behaved as discourse particles of the type that is widely attested in present-day Dutch and German. Section 3 will trace the development of the use of *then* as a discourse particle over the Middle and early Modern English periods. The clause-medial position (cf. (4c) continued to dominate through the Middle English period in questions as well as imperatives, with the *wh*-incorporated pattern as a stable minority alternative. The alternative positions (4a) and (4b) start to occur with some robustness over the early Modern period, dramatically so in imperatives. Section 3 will also link the main developments to post-medieval syntactic changes. Section 4 concludes.

1.1 Theoretical background and major syntactic developments in the history of English

This section gives a brief outline of some key properties of Old English (OE) clause structure, in particular the Verb Second (V2) property and its loss in most contexts in the later history of English. This is key to understanding the clause structure in which particles appear, and how they shift in different clause types over time.

It is well-known that Old and Middle English had various types of V2 word orders, where V2 refers to the phenomenon that Vf follows the first constituent in main clauses, regardless of whether that constituent is a subject, object, PP, adverb etc. I first sketch a word order template for V2 clauses, which also takes account of the by now generally accepted analysis that the word order variation in Old English main clauses shows clear evidence for two front positions for the finite verb, and more tangential evidence for a third. There are also at least two positions for subjects, as in (7) (e.g. Cardinaletti & Roberts 2002; Fischer et al. 2000; Haeberli 2000, 2005; van Kemenade 2011, 2012, van Kemenade & Westergaard 2012):

(7) XP   Vf1   Subj 1   Vf 2   Subj2   (…)   Vf3 …
          C   F   T

The highest of the verb positions is taken to be in C, and is illustrated in (8). The exemplary case is that of a question, where the XP is in Spec,CP and Vf is in C. The diagnostic for this V2 type is that all subjects, including pronominal subjects, follow the finite verb. This verb position also occurs in negative-initial main clauses and in clauses introduced by a discourse-sequencing adverb *þa* or *þonne*, both meaning 'then', and in imperatives. It is restricted to main clauses, cf. the more general literature on the V2 property in the present-day Germanic languages, such as Dutch, German and the Scandinavian languages (following up the seminal work by Den Besten 1983).

(8) Hwi wolde God swa lytles þinges him forwyrnan
     Why would God so   small thing   him deny
     'Why should God deny him such a small thing?'   ÆCHom_I, 1.14.2

The second position for Vf in (7) is what I call F here, an intermediate position in the C-domain which is preceded by pronominal subjects (in the Subj1 position, and with Vf in F), and followed by a nominal subject (in the Subj2 position). Examples are given in (9):

(9) a. On twam þingum hæfde God þæs mannes sawle gegodod
         in   two   things   had God the man's soul   endowed
         With two things God had endowed man's soul'   ÆCHom I, 1.20.1

b. Be ðæm we magon suiðe swutule oncnawan ðæt …
    By that, we may   very clearly perceive   that …
    By that, we may perceive very clearly that …'   CP 26.181.16

The third position (Vf3) is unrelated to the V2 property: it is not restricted to main clauses and can in fact be more easily distinguished in subclauses (in which we can abstract from the V2 property). Examples such as (10) illustrate a subclause in which the verb particle *ongean* is stranded by V-movement of the finite verb *ferde*, whose position in turn is separated from the pronominal subject in Subj1 by the modifier *fulfremod*.

(10) oþ   þæt he fulfremod ferde eft   ongean.
      Until that he perfected went again back
      'until he, perfected, went back again.'   ÆLS_[Cecilia]:187.7227

I assume here that Vf3 represents T: the status of T in Old English is not undisputed (see e.g. Biberauer & Roberts 2010), even though in some treatments, like e.g. Pintzuk (1999); Taylor & Pintzuk (2012), it plays a key part in their argument for the Double Base Hypothesis. Others, like Haeberli (2000); van Kemenade (2012), largely assume it on the basis of word order diagnostics. I should emphasise here that its distinctness becomes more robust over the ages, and I add it here primarily because of its clear relevance at later stages.

The late Middle English period heralded a sequence of syntactic changes that had a pervasive effect on the syntax of finite verbs: the Vf1 position as in (7) came to be restricted to main clause questions, and clauses introduced by focused negatives such as *Never would I do such a thing*! The Vf2 position was lost over the late Middle and early Modern periods (Haeberli 2002; Fischer et al. 2000; van Kemenade 2012). English became a strict SVO language as a result. This led to a clause structure in which the subject position was Spec,TP, with the finite verb in T, as in (11): even when there is some non-subject in initial position, the subject is assumed to be in Spec,TP; and the finite verb could appear on the left of *not*:

(11) (XP) [TP subject [T Vf] not … V̶]]

A further major syntactic change took place over the 16th to 18th centuries; it was in fact a sequence of changes that was kick-started by the auxiliation of the modals, which became fixed T-elements (Lightfoot 1979; Warner 1993, 1997); finite main verbs ceased to undergo V to T movement (they no longer appeared on the left of *not*), and this went hand in hand with the rise of *do*-support (Roberts 1985; Kroch 1989; Warner 2006), leading to the structure generally assumed for present-day English:

(12) (XP) [TP subject [T Aux] not … V]]

I will show that the development of the use of *then* as a temporal adverb and a discourse particle demonstrates a clear interaction with these syntactic changes, affecting each of the clause types I consider here in different ways.

2.   Discourse particle *then* in Old English

This section outlines the results and analysis of van Kemenade & Links (2020), which serves as the starting point for the chapter's research on the Middle English and later periods. Van Kemenade & Links's (2020) treatment extends the earlier work by e.g. van Kemenade & Los (2006); van Kemenade & Milicev (2012) on the position and discourse-structuring character of OE particles in subclauses to their meaning and discourse-pragmatic use in different types of main clauses. The latter is based to a large extent on the literature on German discourse particles (often also called modal particles), which they resemble quite closely in many respects.

Grosz (2016: 336) characterises German discourse particles as "a closed class of functional (= grammatical) elements that contribute to Common Ground management in the spirit of Krifka (2008)". This means that they encode pragmatic instructions to the addressee on the relation between the propositional content of the clause and the Common Ground between speaker and hearer. They are presuppositional in the sense that they express the speaker's response to shared knowledge with the audience. This treatment meshes well with the approaches of Schiffrin 1987; Brinton 1996, 2017; Lenker 2010; Haselow 2011, 2012; Fraser 2009;[1] Traugott 2016 and many others) on discourse markers in English, present-day as well as historical: the meaning of discourse markers cum particles is pragmatic, and refers to the context, as discussed in the previous section. The literature on German particles perhaps puts more emphasis on the form of particles: they form a closed word class, they have an uninflected, invariant form. They are typically unstressed, and they occur in fixed positions in the clause. Particles in Dutch and German are generally considered a middle field phenomenon (where the middle field is defined as the part of main clause that occurs between the finite and the non-finite verb). This means that they are related to the verb second (V2) property of the Germanic languages: V to C movement as discussed in the previous section renders the position of Vf distinct from that of the nonfinite verb (see e.g. Zwart 2011 for a comprehensive overview for Dutch). The middle field, in OE as well, is generally characterised by a fair amount of word order flexibility, but the position of particles is assumed to be fixed.

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1.   Another contribution is van Gelderen (2001), but the term modal particle is taken very liberally there to include a range of adverbs.

Particles are optional in the sense that they can be left out without causing un-grammaticality, but their use does add pragmatic meaning (cf. Bayer & Struckmeier 2017). A key observation on discourse particles (Thurmair (1980) and much sub-sequent literature, e.g. Abraham (1991); Coniglio (2011)) is that the choice of par-ticle interacts with clause type and illocutionary force. German *denn* 'then' is, for instance, typically used in questions (e.g. Bayer 2012). This too is related to the V2 property: The illocutionary force of the clause is encoded in the C-domain and is presumably activated by V to C movement.

Van Kemenade & Links (2020) put Old English particles on the particle map, following up on and adapting the approach of Thurmair (1980), for three sections of the *York Corpus of Old English* (YCOE, Taylor et al. 2003): the O2, O23 and O3 periods (the reader is referred to van Kemenade & Links for details).

For OE, and throughout this chapter for the other periods as well, we have used the parsed prose texts, not necessarily restricting the search to the text genres as-sumed to be closer to the spoken language, the favoured context for particles in the modern languages. Particles are abundant in the Old English texts under study here, which is not surprising given that quite a few of them are stories (e.g. *Appollonius of Tyre*, saints' lives, chronicles), some of them consist largely of dialogue (the Old English translation of Boethius' *De Consolatione Philosophiae*), and there is a large number of homilies and instructional texts that are rhetorical in character. This is less true for the Middle English and early Modern parsed corpora, but these still serve well enough to identify the properties of particles, and the interaction of their shifting position with the syntactic changes identified in the previous section.

The clause types considered here are special illocutions such as questions and imperatives. In addition, preposed adverbial and conditional clauses are of special interest because they famously feature *þa* and *þonne*, the two temporal adverbs of interest here, on a large scale. Subject-initial clauses declarative clauses are included for the sake of comparison, as a pragmatically relatively neutral clause type, which in Old English presumably do not involve V to C movement, unlike in present-day Dutch and German.

The two temporal adverbs *þa* and *þonne* are etymologically related and have identical literal meanings. According to the OED (entry *thenne, then*, adv.), the base form is the demonstrative pronominal stem *þa; þonne* (and related Germanic forms) is derived by the addition of particles such as *ne*. The added particle con-tributes a further deictic meaning component (cf van Kemenade & Links 2020).

Tables 1 and 2 below (adapted from van Kemenade & Links 2020) show that *þa* and *þonne* are largely complementary across clause types: *þa* occurs dominantly in pre-posed adverbial clauses and *hwæt* exclamatives, whereas *þonne* occurs in questions, imperatives and in the protasis of conditionals. Van Kemenade & Links (2020) hypothesise that the *–ne* part of *þonne* relates to a negative element, or was perhaps at some point reinterpreted as a negative element; this would make

semantic sense as the clause types in which *þonne* occurs are negative polarity contexts, including questions, conditionals, and imperatives, that is, contexts in which truth conditions are unrealised. This in turn suggests that the key semantic property shared by *þonne* contexts is non-factuality. *Þa* finds its origin in an exclusively temporal meaning which was perhaps grammaticalized to an exclamative meaning. Its temporal origin implies that the events that it sequences have actually happened; they are factual. *Þa* is, by the same token, descriptive, and it structures narrative discourse, in line with observations about *þa* as an adverb in e.g. Enkvist (1986); Wårvik (2011, 2013); Links et al. (2017).

Table 1 gives the number of particles per clause type.[2] Table 2 gives the same number normalised to their occurrence per 100 clauses, to allow a comparison across clause types. The cells in Table 2 are shaded in those cases where there are clear matching preferences between particles and clause types: questions, imperatives and pre-posed conditional clauses clearly favour *þonne*; exclamatives, pre-posed temporal adverbial clauses and subject-initial clauses show a marked preference for *þa*.

Table 1. The use of particles in specific clause types in Old English texts 850–1050

Clause type\particle	Total	*þa*	*þonne*
Question	2,235	3	166
Imperative	3,479	0	182
Preposed temporal adverbial[a]	2,285	256	15
Preposed conditional[b]	2,369	5	349
Subject-initial clauses[c]	14,724	1807	294

a. The number of examples here comprises pre-posed adverbial CP-clauses in which the conjunction (coded as P) is *þa* or *þonne*.
b. The number of examples here comprises pre-posed adverbial CP-clauses in which the conjunction (coded as P) is *gif* 'if'.
c. The query includes subject-initial main clauses with a lexical subject

Table 2. The use of particles in specific clause types in Old English texts 850–1050, normalised to occurrence per 100 clauses

Clause type\particle	Total	*þa*	*þonne*
Question	2,235	0,1	7,4
Imperative	3,479	0	5,2
Preposed temporal adverbial	2,285	11,2	0,7
Preposed conditional	2,369	0,2	14,7
Subject-initial clauses	14,724	12,3	2

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2. I left out out exclamatives (which almost exclusively feature *þa* as a particle), since they are hardly attested beyond the Old English period.

Let us first discuss some examples with their particle of preference, starting with *þonne*. Questions with *þonne* were already exemplified in (3) above, with *þonne* in an exclusively clause-internal position. This is true even for a minority pattern that corresponds to (4d) in present-day English; it features with a modest three examples in the YCOE corpus:

(13) Forhwy **ðonne** sceal ænigum menn ðyncan to reðe   oððe to unieðe
       Why   PRT   shall (to) any men   seem   too severe or   too hard
       ðæt he Godes suingellan gædafige for his yfelum dædum,
       that he God's castigation endure for his evil   deeds, …?
       'Why then shall it seem to any man too severe or hard to endure the castigation
       of God for his evil deeds, …'   CP:36.261.19.1707

An imperative with *þonne* is (14):

(14) [But what do you think about those who have no good, and have some evil?
       Why, you will say he is even more unhappy than the other, because of the added
       evil. Am I not bound to think so?]
       Ongit **þonne** mid innewearde mode   þæt ða yflan habbað symle
       see   PRT   with inner   mind that the evil have   always
       hwæthwugu godes on gemong hiora yfle
       something good in among   their evil
       'Mark then with your inner mind that the evil always have something good
       among their evil.'   Bo:38.119.9.2371

Þonne quite predominantly follows the imperative verb, as in (14), but it sometimes occurs in first position. This is particularly the case when the imperative is the apodosis of a conditional pair, as in (15)[3]

(15) &   þonne gif hwylc gelyfe on God, **þonne** æthrin þu heora eagan
       And then   if anyone believe on God, then   touch you their eyes
       mid Þysum palmtwige þe   þu her onfenge on þine hand,
       with this   palmtwig which you here receive in your hand,
       'And if anyone will believe on God then touch thou their eyes with this palmtwig,
       which thou receivedst here in thy hand, …'
                                        LS_20_[AssumptMor[BlHom_13]]:153.278.1913

Ðonne is also attested in subject-initial clauses, on a limited scale, and it is much less clear that *þonne* in this context has a pragmatic function: a typical example is (16), in which it is purely temporal. There are no examples in the corpus where *þonne* occurs in final position.

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3.   An anonymous reviewer observes that they interpret *þonne* here as a pure correlative adverb. Note however, that the paraphrase 'in that case' is fully applicable here.

(16) [First, the tempter said, 'Do as I bid you two, then shall ye two be as God.' Now likewise he tempted God's son through vainglory when he said, 'If thou be the Son of God cast thyself down.']

Halige men **þonne** ongeaton þæt he wæs soþ Godes Sunu; forþon þe
Holy   men then   perceived that he was true God's Son,   because that
God Fæder stemn wæs gehyred æt his fulwihte, þus cweþende:
God Father voice was heard   at his baptism, thus saying: …
'Holy men then knew that he was the true Son of God, because the voice of God the Father was heard at his baptism, thus saying, ...'

Þa is robustly attested in *hwæt* exclamatives and in preposed temporal adverbials, and its meaning in that context is derived from its temporal meaning: (17) on the one hand shows the temporal sequencing, but it also highlights the new information that is the result of the message of the Magi:

(17) [Then came from the east three magi to the city of Jerusalem, thus asking: Where is the king of the Jewish people, who was born? We truly saw his star in the east and we have come to pray for him.]

Hwæt **ða** Herodes cyning þis gehyrende wearð micclum astyred   &
Lo   PRT Herod   king   this hearing   was   greatly disturbed and
eal seo burhwaru samod   mid him.
all the citizens   together with him
'Lo, King Herod, hearing this, was greatly troubled, and all the citizens with him.'   ÆCHom_I,_5:217.13.897

Subject-initial clauses also feature a substantial use of *þa*. Example (18) illustrates its primarily temporal use, as with *þonne* in (16).

(18) [Then he said to them: "Why are you afraid, and think various things of me? Behold my hands and my feet, which are pierced with nails. Grasp and behold: if I were a ghost, I should not have flesh and bones,…]

Se   Hælend wearð **þa**   gelomlice ætiwed   his leornung-cnihtum
The Lord   was   then frequently shown (to) his disciples (D)
'The Lord then frequently appeared to his disciples'   ÆCHom_I, 15.220.21

Particles thus largely occur in a fixed position: the Prt position in questions, following a pronominal subject and preceding a nominal subject in particular when it is discourse-new. The Prt position is the vastly preferred option in imperatives as well. Imperatives occasionally feature the particle in initial position (Spec,CP), in particular when used as a resumptive adverb in the apodosis of a conditional as in (7). This, of course, is fully in line with the paraphrase 'in that case'. Subject-initial clauses primarily feature the temporal adverb use.

2.1   The syntax of particles

Let us outline a syntactic analysis of the clause-internal position of *þa* and *þonne* in the contexts discussed so far (cf. van Kemenade & Links 2020). The default position of the particle is the fixed clause-internal one, which I analyse as the head of the Particle Phrase in (19). The (discourse-new) subject is on its right, in a lower specifier of ʋ; the pronominal subject on its left is in a topic position in the C-domain:

(19)   [CP [C0 Vf] [FP pro subject [PrtP [Prt0 *then*] […. V̶f̶]]]

In questions and imperatives, the finite verb is in C, as defined by the V2 character of Old English. V-movement to C activates the relation between the particle and the illocutionary force of the clause; a *wh*-question features the *wh* constituent in the specifier of CP. We now return to the rare word order in (4d) and Old English (13). This pattern is also attested in varieties of the continental West-Germanic languages, as discussed i.a. in Bayer and Obenauer (2011) for varieties of German featuring *denn* in this position:

(20)   [Wer denn] soll   befehlen?
       who   DENN   should command
       "Who is supposed to command then?"

In this variant pattern, according to Bayer & Obenauer, the Prt head as in (19) has an unvalued emphasis feature (assuming that the *wh*-phrase immediately preceding *denn* receives emphasis) which may attract an emphatic XP over which it has scope to its specifier and form a constituent with it. This constituent subsequently moves to SpecCP if it is a *wh*-phrase. This accounts for the alternative pattern in Old English. We will see in the next section that this pattern is stable at modest frequencies in the further history of English.

The particle reading in imperatives receives a very similar account: V to C movement activates the special illocution and this triggers the pragmatic reading of the particle.

Subject-initial clauses do not involve a special illocutionary type – they are usually part of a pragmatically neutral third person narrative, and may be assumed to be factual accounts. The pragmatic reading of *then* is therefore not generally available. Subject-initial clauses are also not V to C contexts: they involve V movement, but presumably to the lower position Vf2 in the C-domain.

We now turn to the clause-initial position attested in imperatives, primarily in adverbial and conditional correlative pairs. We will devote a brief subsection to these.

2.2   Preposed adverbial and conditional clauses

The particle can occur in the protasis of the conditional, or in a pre-posed temporal adverbial clause introduced by either *þa* or *þonne*. We will take these together under the term correlative constructions. They are illustrated in (21)–(23) (from Links et al. 2017). These constructions show three uses of *þa* and *þonne*: *Gif$_1$*, *þonne$_1$* and *þa$_1$* are regarded as conjunctions, *þonne$_2$* and *þa$_2$* as particles; *þonne$_3$* and *þa$_3$* as resumptive adverbs.

(21) Gif$_1$ he **ðonne$_2$** sie idæges   dead, ðonne$_3$ sitte sio scyld on him.
       if   he PRT   is on the same day dead, then   set   the guilt on him.
       'If he should be dead that same day, the guilt rests on him.'   LawAfEl:17.44

(22) þonne$_1$ hio **Þonne$_2$** ymbe hire scippend smeað, Þonne$_3$ bið hio ofer
       then   she PRT   about her Creator thinks then   is   she above
       hire selfre;
       her self
       'When it thinks of its creator, then it is above itself.'   Bo:33.81.29.1549

(23) Þa$_1$ he þa$_2$ in þæt ealond cwom, þa$_3$ getimbrede he þær   mynster
       then he PRT in that island came, then built   he there monastery
       'On coming to that island, he erected a monastery there.' Bede_4:4.272.28.2779

We focus on the conditional context (21): *þonne$_2$* in the conditional protasis does not have the same context-contingent reading as *þonne* in questions: note in (22) that it is part of the context, and that it is the resumptive adverb of the following V2 clause that has the reading 'in that case'. Correlative pairs of this type are generally abundant, as Tables 1 and 2 show, and they look like a heavy case of establishing and "overcoding" reference to the context: the pre-posed conditional clause introduces the context, which is reinforced by the particle contained in it, and subsequently resumed by the resumptive adverb. This makes it clear that the particle serves a rather explicit discourse-structuring function: Links et al. (2017) show that the presence of the particle (*þonne$_2$*) significantly increases the use of a resumptive adverb.

Turning back to imperatives, the reader will note that the clause-initial position for *þonne* in imperatives is primarily used as a resumptive adverb, when the imperative is the apodosis of a conditional. It is syntactically an adverbial phrase in Spec,CP here, and the pragmatic, context-contingent reading associated with discourse particle status is presumably triggered by the conditional protasis. This kind of context may well be the one facilitating the introduction of final *then*. We will come back to this observation in the discussion on Middle English and later periods.

2.3   Interim conclusion

We have established distinct meaning contributions for *þa* and *þonne* then: *þa* is an affirmative particle, presupposing the truth value of the preceding context, and draws attention to following context, hence its use in temporal correlatives. *Þonne*, on the other hand, occurs in clause types whose truth conditions are open: questions, imperatives, and conditionals, with a minor number of temporal correlatives (Table 1 lists 15 examples (with particle uses in all). Another point addressed is that the particle use of *þa* and *þonne* in Old English is almost completely restricted to the Prt position in V to C contexts, except for some 'in that case' readings in the Spec,CP of imperatives that are in the apodosis of conditionals.

The readings discussed here, in conjunction with those in (4)–(5), make it clear that the historical origin of present-day English *then* is in all likelihood *þonne*. This will be further confirmed in the next section on later periods.

3.   The Middle English and later periods

The transition from Old to Middle English saw some dramatic changes in the use of our particles. *Þa* was a highly multifunctional word in Old English (see also e.g. Fischer 1992), featuring, as we saw above, as a conjunction, a particle, and a temporal and a resumptive adverb. It also functioned as a demonstrative pronoun/determiner (Nom and Acc plural) of the *se* paradigm, and as such was used extremely frequently. A pronoun as well as a clause linker, it was probably the single most important word to carry discourse-cohesion in Old English texts. *Þa* was lost almost completely, both as a pronoun and as an adverb/particle, over the early Middle English period. *Þonne* was much less frequent in Old English, and dips until 1250, but then steadily gains ground over the Middle English period as *then*. Since *Þa* was lost, its semantic and pragmatic contribution, which was quite distinct from that of *þonne* in Old English, could not straightforwardly be replaced. Thus, *þonne* in all likelihood replaced the temporal adverbial *þa*, but not the discourse particle *þa*. This would explain the booming use of *then* as a temporal adverbial, especially over the late Middle English period. A further factor that must have contributed generally to the reduced use of both *þa* and *þonne*, is noted by Links et al. (2017): *þa* was replaced by *when* in the initial position of pre-posed temporal adverbial subclauses and both the resumptive adverb use and the particle use of *þa* in temporal and conditional correlative clauses were largely lost as well. The element that survives this carnage is clearly *þonne/then*, with its pragmatic function intact, as we will see below.

We saw in the previous section that the discourse particle use of *þonne* was restricted to particular clause types in Old English: questions and imperatives (with a discourse-structuring use in adverbial and conditional correlatives). This latter use, in which *then* would be considered syntactically as a resumptive adverb, crept into the initial position of a conditional apodosis as well, as illustrated above in (15).

Over the Middle English and later periods, we see three key developments:

1. Continuation of the discourse-particle use in the Prt position in questions, broadening to other positions in the clause in questions and imperatives, including, at different stages for different clause types, the clause-initial position Spec,CP (as in present-day English (4a)); and, from early Middle English onward, the clause-final position as in (4c). I will take this to show that the discourse-particle use was still largely restricted to V to C contexts, where the middle field continues to be in evidence in Middle English. In the case of imperatives, there is a strong positional shift over the late Middle English and early Modern English periods, to a very robust preference for the clause-initial position.

2. In S-V clauses, *then* (*þonne*, which in that context was relatively rare in Old English) occurs as a discourse particle in our corpus from early Middle English onward (following the loss of *þa*).

3. From the late Middle English period onward, the pragmatic use of *then* in all clause types began to occur more broadly in available alternative positions in the clause: initial and final. The Prt position must have been lost eventually, but we will see below that this was not completed by the end of the late Modern period.

The pragmatics of the particle system was thus maintained from Old English onward, but let go of a number of contextual restrictions it was subject to at the time: where Old English discourse particles were largely restricted to V to C contexts and occurred only in the Prt position in the middle field, the use of *then* was broadened to other, non-V to C, contexts and to other positions in the clause. One would be inclined to consider such a broadening process as a case of grammaticalization. What is of particular interest, however, is that this whole sequence of change did not include the semantic bleaching that is typical of grammaticalization processes, or, as far as we can tell, any phonetic reduction: the particle pragmatics of *then* changed very little as we will see. It looks as though the pragmatic use of *then* was so robust that it was adapted to changes in the syntax, and speakers found positional niches beyond the middle field and in a broader range of clause types.

3.1   The data in ME, eME and LME

For the Middle English, early Modern English and late Modern English periods, the data presented here result from searches in xml versions of the Penn parsed corpora for these periods: the *Penn Parsed Corpus of Middle English*, version 2 (PPCME2, Kroch & Taylor 2000), the *Penn Parsed Corpus of early Modern English*. (PPCEME, Kroch et al. 2004), and the *Penn Parsed Corpus of Modern British English* (PPCMBE release 1, Kroch et al. 2016). The searches were done in *Xquery*, making use of *CorpusStudio* (Komen 2013), querying for clause type and for *then*, in its various positions, followed by some manual correction in Excel databases. The next step was to distinguish (manually) the cases of *then* with a temporal reading from those of the discourse particle reading. The criterion for distinguishing the discourse particle use was the diagnostic for discourse marker status discussed in the introduction: the paraphrase of *then* as 'in that case'.

I did not make a special effort to restrict myself to genres close to the spoken language: Traugott (2016) notes that discourse markers occur in a variety of text types. The particles under study here occur abundantly in most Old English text types, as discussed above, and they are robust in the other periods as well, though not in all texts and most often in quoted dialogue. I also queried the *Parsed Corpus of Early English Correspondences* (PCEEC, Nevalainen et al. 2006), whose letters supposedly represent a genre closer to the spoken language since they are intended as interactive, but this did not yield an increased number of examples. This was further confirmed by a pilot study in the *Corpus of English Dialogues* (CED, Kytö & Culpeper 2006), which can only be searched lexically. We nevertheless see in retrospect that the examples found of the discourse particle use in the corpora included here all appear in interactive language: plays, courtroom transcriptions, or in rhetorical prose such as moral instructional texts. The fact that the numbers per period and subperiod vacillate is therefore in all likelihood a sampling effect, a spin-off of the choice of texts in the corpora.

3.2   From Middle English to late Modern English

This section will consider the data from Middle English, early Modern English and late Modern English. The data show that the Prt position that was the almost exclusive position for particles *þa* and *þonne* in Old English becomes far less exclusive over time. I will discuss this per clause type, first with the division of *then* in its overall numbers for the various positions, followed by some examples of particle use. I will first discuss the structural positions involved here.

3.2.1 *Alternative positions for* then *from Middle English onward*

We will see that the Prt position and the *wh*-incorporated position were maintained in questions, but that two new positions became available for *then*: clause-initially and a clause-finally. Let us first briefly consider the nature of these positions.

Considering that particles primarily feature in V to C contexts, the first position in V to C contexts can reasonably be assumed to be Spec,CP. This position is occupied by a *wh*-constituent in a *wh*-question, and we do not find initial *then* in that context. As we will see in the next subsection, initial *then* first occurs in yes/no questions, which involve V to C movement, and Spec,CP is available to accommodate other material, as long as this material is compatible with the illocutionary status of the clause. (25)–(26) below show examples of this.

We saw a similar case for this in imperatives in the examples discussed above that feature *then* introducing an imperative in the apodosis of a conditional clause: (15) and (21), and we will see another example (29) below. One could thus argue that the (lexically empty) Spec,CP of a V to C context, whether a question or an imperative, is available for initial *then*, which, depending on the context, may receive a particle reading.

The final position is a different matter: this should correspond to a "newly created" clause-final position, and it is an interesting question how and why this happened, and what the status of that position is. Haselow (2012) argues that final *then* is a typical feature of unmonitored spoken language, and may have been introduced in the spoken language as an afterthought that retrospectively adds the 'in that case' reading, referring to the context. There are no examples of this in Old English, but it is a clear possibility in present-day *spoken* Dutch, as (24) shows (from van der Wouden & Foolen 2015). Middle field *then* and final *then* are both perfectly fine:

(24) Dutch *dan* (discourse particle and cognate of *then*).
  a.   Heb jij   wel een kattenbak? Waar heb je   die (**dan**)
       Have you WEL a   dickey?   Where have you that (then)
       staan (**dan**)?
       stand (then)?
       'Oh, you do have a dickey? Where do you keep it then?'
  b.   Wat   ga je   (**dan**) buiten doen (**dan**)?
       What go you   outside do   then?
       'what are you going to do outside then?'
  c.   Daar moet je   (**dan**) ook niet over zeuren (**dan**).
       There must you   also not about nag   then
       'Then don't nag about it'
  d.   Maar goed uhm ja   dus dat is (**dan**) geregeld (**dan**)
       But   ok   ehm yes so that is   settled then
       'Ok, so that's settled then'

Haselow surmises that final *then* was introduced from early Middle English onward as part of unmonitored speech, as confirmed by the data here, even in the very small M2 corpus, and more robustly in the M3/M4 periods. Haselow hypothesises that it is part and parcel of a broader development of introducing clause-final linkers, or connectors as Lenker (2010) calls them. Another question is what the syntactic status of final *then* is. Traugott (2016) lists further final pragmatic markers that derive historically from adverbs such as *though, anyway, after all* and *actually*, arguing that, like final *then*, they are construed as afterthoughts creating reference to the context. We have seen here that this is not a privilege of final *then*, any more than that of initial or medial *then*, as long as the context invokes the 'in that case' paraphrase, which will often be a conditional environment. A hypothesis I would like to pursue here is that the rise of final *then* was motivated, to varying degrees in different clause types, by the fact that the Prt position became so entrenched in the development of verbal periphrastic constructions that the initial position, or the final position, which was "newly created" for the purpose, took over. I assume that *then* was added as clause-final adverb/particle. This idea is reinforced by the fact that the examples of final *then* as discussed below, do have a dominantly pragmatic reading. We will now turn to the various clause types.

3.2.1.1   *Questions*

Table 3 gives the numbers for the cases of *then* overall per subperiod, from the M3 period onwards.[4]

Table 3. The number of questions with *then*, per position and subperiod, from 1350–1914

	M1	M2	M3	M4	E1	E2	E3	MB1	MB2	MB3	Total
initial	0		3	3	2	0	0	1	0	1	10
Prt	7	1	20	13	6	2	1	14	5	0	69
final	2		2	1	0	3	9	8	0	0	25
Wh-incorp.	1		2	1						2	6
Total	10	1	27	18	8	5	10	23	5	3	110

Questions feature *then* from the earliest Middle English onward. *Then* primarily occurs in the Prt position that was categorical in Old English. This position is still robust in the early and late Modern periods, although the numbers might suggest that it is declining in the last two subperiods of Late Modern English. We cannot

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4. *Legend for the time periods*

    M1   1150–1250 M2   1250–1350 M3 1350–1420 M4   1420–1500
    E1   1500–1570 E2   1570–1640 E3 1640–1720 MBE1 1700–1769
    MBE2 1770–1839 MBE3 1840–1914

quite tell then, when the felicitousness of that position became degraded, as it is in present-day English (4b). One way to account for its continuing robustness over the early Modern period would be to say that questions continued to feature V to C movement, later Aux to C movement, right into present-day English, so that they maintain what one might call a relic middle field for longer than other clause types. We will come back to this below.

There are some Middle English and early Modern English examples of *then* in initial position in questions as in (25). The pattern is relatively well-represented in late Modern English as well, as in (26), in the apodosis of a conditional:

(25) a. [Then sir Launcelot made his complaint to the king, how he was betrayed; and how he was a brother to sir Lyonell, who had left him for an unknown place, and how his daughter had delivered him from prison. 'Therefore, while I live, I shall be in her service and of all her kin.']
        '**Than** am I sure of your helpe,' seyde the kyng, 'on Tewysday next commyng?'
        'Then can I count on your help next Tuesday?' said the king.' Malory.1.872.678
     b. [it is for lacke of witte. / R. Royster: Yea, for were not I an husbande for hir fitte? Well what shoulde I now doe? / M.M: In faith I can not tell. / R. Royster: I will go home and die.]
        M.M: **Then** shall I bidde toll the bell?   udall,L911.210-E1

(26) [Was it before or after you shot by the Conquistador that you fired at the Enemy's Stern-most Ships. Before.]
      If you had bore away round, **then** would you not have come much nearer the Enemy's Sternmost Ships, and been sooner up with them?
                                                        HOLMES-TRIAL-1749.49.845.845

Initial *then* in questions occurs primarily in yes/no questions, i.e. those that do not involve a *wh*-constituent, and where *then* can be assumed to be in Spec,CP.

The pattern in questions with a *wh*-incorporated particle is attested in small numbers up to the end of the late Modern period. In all cases, the *wh*-constituent is emphatic, as observed above in connection with the Old English Example (13). A late Modern English example is given in (27):

(27) [If a don is crusty and silent he is held to be arrogant, if he talks he is a bore.]
      What the devil **then** is he to do?   BENSON-190X.113.263.263

The earliest cases of final *then* in questions in the corpora studied here are from the M1 period, as in (28a); (28b) is from Late Modern English:

(28) a. Þe   sari   sunfule þus biset. Hu   schal him stonde þenne
          The   sorry   sinful   thus beset. How shall him stand   then?
          'The sorry sinner thus beset: how will things stand for him then?'
                                                            ancriw-1.II.226.3267

b.   ['But you will not,' answered Mrs. Western,' turn this Daughter, whom you love better than your own Soul, out of Doors, before you know whether you shall approve her Choice. Suppose she should have fixed on the very Person whom you yourself would wish,]
I hope you would not be angry **then**?'   fielding-1749, 2,9.142

On the basis of questions alone, we might conclude that from Middle English onward, all the positional options are open. It does seem to be the case that the initial position in (16a) is more closely associated with *yes/no* questions, which involve V to C-movement, but no *wh*-constituent preceding the finite verb.

3.2.1.2   *Imperatives*

Table 4 first lists the number of imperatives in our search:

Table 4. The proportion of imperatives with *then*, per position and subperiod, from 1350–1914

	M1	M2	M3	M4	E1	E2	E3	MB1	MB2	MB3	Total
initial	8	1	32	61	47	147	57	13	15	14	395
	29.6%	100%	32.9%	79.2%	94%	98.7%	87.7%	72.2%	88.2%	93.3%	76.3%
Prt	16	0	65	16	3	2	6	5	2	1	118
	59.3%		67%	20.8%	6%	1.3%	9.2%	27.8%	11.8%	6.7%	22.8%
final	3	0	0	0	0	0	2	0	0	0	5
	11.1%						3.1%				0.9%
Total	27	1	97	77	50	149	65	18	17	15	518

Imperatives feature *then* from early Middle English onward. The particle position clearly dominates over the M1-M3 periods; there are three cases of final *then* in an imperative:

(29)   ["certainly," said I, "there is no doubt that it is right worthy to be reverenced."]
 "Lat us," quod sche," adden **thanne** reverence to suffisaunce and to power,
 'Let us, said she, add   then   reverence to sufficiency and to power,
 so that we demen that thise thre   thynges be al o   thyng."
 so that we deem   that these three things   be all one thing.'
 'Then let us, said she, add reverence to sufficiency and power, so that we judge that these three things are all one thing.'   Boece, 429.C1.26

The M4 period seems to be a watershed for imperatives, witness the sharp positional shift between the M3 and M4 periods: initial *then* starts to substantially outnumber the particle position. Here are some examples of initial and final *then*:

(30)   [Oates: I do not value any Witnesses you can bring against my Credit. Mr. At.
Gen: Well, for the present, we do not design to call any more Witnesses.]
L.C.J. **Then** let us hear what you say to it.   oates-e3 4.89.444

(31)   [we shall examine him by and by, there he stands. Being a very lusty Man.
L.C.J.: Sure that was not the little Man thou spokest of? Dunne: No, my Lord.
L.C.J. Pray thee let me understand thee **then**, if I can.   lisle-e3, 4,110.348

The late Modern period sees a continuing strong preference for the initial position
in imperatives. This shift between M3 and M4, and the increasing preference for
then-initial imperatives from the M4 period onward is a clear reflex of ongoing
syntactic change: It is generally assumed that Old English imperatives are a V to
C movement context. This is reflected in the fact that *þonne* in Old English very
robustly occurred in the Prt position, implying that the imperative verb was moved
over the particle to the C-position. The exceptional cases where *then* is clause-initial
are in the apodosis of a conditional pair: a resumptive adverb with particle pragmat-
ics. There is considerable evidence that V to C movement in imperatives was lost
over the late Middle and early Modern period. Han (2000) traces this development
according to the rate at which *do*-support was introduced in negative imperatives:
do-support developed in this context, along with other negation contexts, because
the imperative main verb could no longer undergo V to C movement. Han (2000)
argues for a two-step development in the case of imperatives, but this is primarily
motivated by the shifting position of Vf with respect to negation and does not
seem to affect the position of *then*. Thus, the verb no longer moved to the left of
then, hence the increasingly dominant first position for *then* in imperatives, as in
the structures in (32):

(32)   Imperatives
M3: [$_{cp}$ C-Vimp [… *then* V̶   …] V to C movement
M4   onward [$_{cp}$ [… *then* Vimp …] V to C movement lost

This process set in over the M4 period, concurrently with the more general loss of
verb movement of lexical finite verbs, and the rise of *do*-support (see e.g. Kroch
1989; Roberts 1993; Warner 1997, based on Ellegård 1953 and other work). Another
position that became available for *then* in imperatives, albeit sporadical, was the
final one, as exemplified in (31).

3.2.1.3   *Subject-initial clauses*
The discussion in this section excludes SVO clauses introduced by *then*. *Then*-SVO
clauses, with *then* as a discourse-sequencing temporal adverb, are prolific in late
Middle English, although not quite as prolific as *then*-V2 clauses. It is generally

accepted that V2 in *then*-initial clauses in Old and Middle English involves V to C movement. The proportion (though not the number) of *then*-SVO clauses increases as V to C movement following *then* is lost over the early Modern period (van Kemenade 2012). Including this context in the discussion here would inextricably link it to the position of *then* in subject-initial clauses, which in all likelihood is a largely separate issue that must be decided elsewhere. Table 5 first gives the number of examples of subject-initial clauses with *then*.

Table 5. The number of subject-initial clauses with *then*, per position and subperiod, from 1350–1914

	M1	M2	M3	M4	E1	E2	E3	MB1	MB2	MB3	Total
prt	14	4	25	23	32	21	29	59	64	41	312
final	0	2	1	0	0	3	4	5	2	5	22

We see in Table 5 that the Prt position dominates, with a handful of cases of final *then* over the early and late Modern periods:

(33)   It is certain that the man or woman are in a state of weakness and folly **then**, when they can be troubled with a trifling accident;   jetaylor-e3

(34)   [It may likewise be said, That the wisest men have been in their Youth, immoderately fond of Pleasure.]
I answer, They were not wise **then**.   FIELDING-1749.2.19.314.314

It is striking that *then* in the Prt position is temporal without exception, whereas the discourse particle reading is typical of final *then* in this clause type. I take this to be a reflection of the fact that declarative SVO clauses do not involve a special illocutionary type, and they are not V to C contexts.

The development in SVO clauses is again related to syntactic change: the middle field position in subject-initial clauses shows an emerging sensitivity to whether the finite verb is an auxiliary (including copula BE and possessive HAVE which can still occupy an auxiliary position in present-day English) or a lexical verb, which in turn shows that it interacts with the position of the finite verb in T, precluding a particle reading and inducing a temporal reading. Where in early Middle English the finite verb would generally be on the left of *then*, (having undergone V to T movement (+ perhaps V to F movement)), the development that we see over the early Modern period is that finite auxiliaries precede *then*, and lexical finite verbs follow it. Let's look in more detail at the clause-medial examples as listed in Table 5; this is given in Table 6.

Table 6. The distribution of *then* in subject-initial clauses, in relation to finite auxiliaries and lexical verbs, from 1350–1914

	M1	M2	M3	M4	E1	E2	E3	MB1	MB2	MB3	Total
Total prt *then*	14	4	25	23	32	21	29	59	64	41	312
Vf-then	5	0	14	7	2	2	5	0	2	1	38
	41.7%		66.7%	53.8%	0.8%	16.7%	29.4%		5.7%	4.5%	20.3%
Then-Vf	7	3	7	6	23	10	12	27	33	21	149
	58.3%	100%	33.3%	46.2%	92.2%	83.3%	70.6%	100%	94.3%	95.5%	89.7%
Aux-then	2	1	3	10	6	9	10	29	28	17	115
	100%	100%	75%	100%	83.8%	100%	83.3%	97%	96.6%	89.5%	92%
Then-Aux	0	0	1	0	1	0	2	3	1	2	10
			25%		16.2%	0%	16.7%	3%	3.4%	10.5%	8%

The relative position of *then* and Vf in Table 6 over the ME period obscures some variation beneath the surface. Over the early Middle English period (M1, M2), it hides some relic "verb-late" orders. These will not concern us here. The preferred order of Vf and *then* is Vf-then in M3, and is balanced in M4, but the lexical finite verb robustly follows *then* from early Modern English onward. The converse is the case for auxiliaries, which increasingly precede *then*. The date of this development meshes well with the loss of V to F movement (Haeberli & Ihsane 2016, in their terminology V to Fin) and the loss of V to T movement for lexical finite verbs, following the auxiliation of modals and the rise of *do*-support (see e.g. Kroch 1989; Roberts 1993; Warner 1997, based on Ellegård 1953 and much other work).

(35) M3/M4   [TP Subj T-Vf]   then [V̶ …] V to T movement
      M4 onward [TP Subj T   then [V …] V to T movement lost
      M3/M4   [TP Subj T-Aux] then [V …] Aux to T movement
      M4 onward [TP Subj T-Aux   then [V …] Aux = T

I conclude that *then* in subject-initial clauses shows particle pragmatics only in the final position. The Prt position is entrenched with that of the finite verb, which induces a temporal meaning for *then*.

4.   Discussion and conclusion

Let us first briefly summarise the historical development documented in this chapter, which has considered the history of the discourse marker *then* in English, disentangling it from its use as a temporal adverb. The discourse marker use is defined by its pragmatic reference to the context: the use of *then* is contingent on whether the condition or situation stated in the context obtains. I started from the observation, based on the literature on discourse particles in present-day Dutch and German, that the discourse marker use of *then* in OE was restricted to a designated head position in the middle field of V to C constructions that involve special illocutionary types such as questions and imperatives. I then traced the development of *then* as a discourse marker over the Middle, early Modern and late Modern periods. The pragmatic use of *then* was broadened to other positions: an initial position in Spec,CP, originally available in *yes/no* questions and imperatives in the apodosis of conditional and temporal correlatives, lost its restrictions and became generally available. A clause-final position arose, presumably in the spoken language, in which pragmatic final *then* could be added as an afterthought, creating a reference to context in retrospect. The clause-final position was extended to other clause types that did not have a special illocutionary force, such as subject-initial clauses. The actual expanding use of these positions was constrained by major syntactic changes: the loss of V2, the auxiliation of the modal verbs and the rise of *do*-support, and the loss of V to T movement. The effect of these changes was that English developed a rigidly organised verbal periphrastic system that precluded the earlier flexibility associated with the middle field. These changes had differential effects on the clause types under discussion here: Questions maintained their V (Aux) to C movement syntax and maintained the clause-medial position longest (it is in fact not clear when this was lost), but they also developed the initial and final positions; imperatives lost the Prt position as they lost V to C movement, and feature the initial and final positions from late Middle English onward; subject-initial clauses lost any Prt position as a result of the rise of auxiliaries and the loss of V to T movement, and developed the final position for the pragmatic use of *then*.

The pragmatic use of *then* is usually associated with grammaticalization. In the literature on discourse particles in German, particles are generally regarded as function words: they are invariant in form, monosyllabic, unstressed, and it is often emphasized that they are functional heads. It is, from there, an easy step to say that the broadening use of *then* over the Middle English and later periods represents a grammaticalization process: generalization to a pragmatically neutral clause type, and broadening to other positions in the clause. It is important to observe however, that the development is not accompanied by the syntactic, phonological

and semantic reduction usually associated with grammaticalization. It could in fact make good sense to say that *then*, even in Old English, was a temporal adverb that could receive a pragmaticalised interpretation if the context was right: a V to C movement context in which a special illocutionary force is activated, with the particle in a middle field position in early English (the Prt position), or the Spec,CP of a question, or of the apodosis of a conditional correlative). This would account for the fact that the discourse marker reading is hardly in evidence in the 'prt' position of subject-initial clauses even in OE: *then* usually has a temporal meaning there, as it is associated with the position of the finite verb. It is striking, however, that the pragmatic use of *then* after the Old English period "created" its own path: although the initial position was presumably one in which *then* "piggy-backed" on a position that was available, it does look as though the clause-final position was created for the purpose, since final *then* seems to always have the pragmatic reading. I suggest that this was possible because of the powerful discourse-linking function of *then*, which was maintained and expanded in spite of pervasive syntactic change. Its position was expanded as the middle field position was recruited for verbal periphrastic constructions.

Acknowledgements

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CHAPTER 7

Final *though*

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Starting out from observations in English linguistics, the paper makes a case that
final *though* is an English particle. An experimental study is conducted indicat-
ing that *though* is permissive outside of concessive contexts as well. The focus
of this study is placed on corpus examples which have remained unaccounted
for in previous approaches. A descriptive generalization is proposed in terms of
noteworthiness and an initial modelling in terms of a split notion of Common
Ground following Bar-Asher Siegal & Boneh (2016) is pursued.

Keywords: English particles, Common Ground managment, mirativity, concessivity

1.   Introduction

The goal of this paper is to have a closer look at final *though* in English. To this end,
we refine corpus inquiries started by Haselow (2012) and add initial experimental
steps drawing on methods from the literature on not-at-issue content (Bade 2016).
Against the prevalent view (cf. e.g. Zimmermann 2011), we will suggest that English
still has discourse particles in modern usage (similar to so-called modal particles
in German) if its syntactic skeleton is factored in, namely the absence of a fully
functional middle field. Focusing on aspects of meaning, we analyze instances of
final *though* that do not find a natural explanation in previous studies. We propose
a descriptive generalization capturing such uses in terms of a notion of notewor-
thiness. Moving on towards a modelling of the phenomenon, we will propose that
final *though* can be analyzed as a particular type of discourse management device
similarly (though not identically) to other phenomena recently considered (cf. es-
pecially Bar-Asher & Boneh 2016). After the introductory first section, the paper
contains a brief discussion of previous research in Section 2, followed by a consid-
eration of targeted issues pertaining to concessiveness under the inclusion of pilot
experimental results in Section 3. Such results will already indicate a watered-down
concessive character at best, and further motivate our analysis as a developing
Common Ground managing device in Sections 4 and 5.

1.1   Discourse particles in English

English does not have discourse particles, at least according to many researchers, such as Abraham (1991), Lenker (2010) or Zimmermann (2011). This claim is founded on one specific property of discourse particles: their restriction to the middle field. Since this position is not available in English, it follows that English cannot have discourse particles. However, while the middle field is the most common position for discourse particles in German, they can also appear outside the middle field in some cases (Bayer & Obenauer 2011). Fischer & Heide (2018) discuss the similarity of German discourse particles and pragmatic markers in English, but do not factor in their syntactic position. Our view here is, following, among others, Haselow (2012) and Hancil et al. (2015), that discourse particles exist in English as *final* particles. These final particles share the majority of features with discourse particles, with the exception of the middle field restriction (Haselow 2012). Final particles exist in many languages, including English, German and Dutch (Hancil et al. 2015). One example of an English final particle is final *though*, as in (1).[1]

(1)   B: My grammar is really dodgy, **though**.   (ICE-GB S1A-069 95)

A typical property of particles (from a semantic point of view) is that they are hard to paraphrase (Zimmermann 2011). Attempts to paraphrase the meaning contribution of final *though* show that finding a suitable paraphrase is, indeed, hard if at all possible. Barth-Weingarten & Couper-Kuhlen (2002), among others, claim that final *though* functions as an abbreviated subordinate clause of concession, as in the radio show excerpt in (2) and the schematic summary in (3), which yields a paraphrase of *though*.

(2)   S: but uh back to these uh protesters.
       L: yeah.
       S: they do no good,
            they won't change a damn thing;
            excuse the language
       L: it's their right to be heard **though**; isn't it,
       S: it's their right to be heard but not quite that way
                  (modified from Barth-Weingarten & Couper-Kuhlen 2002: 348)

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1.   The corpus examples used in this paper are from the International Corpus of English Great Britain (Survey of English Usage 1998), specifically sections S1A (private dialogues), S1B (public dialogues) and S2A (unscripted monologues). Other examples are from the Old Bailey Corpus (Huber, Magnus, Nissel, Magnus & Karin Puga. 2016. Old Bailey Corpus 2.0). Notice also that we only deal with mainstream English here, and not e.g. with Singapore English final particles, as an anonymous reviewer remarks.

(3) S: The protesters do no good, they won't change a damn thing

    L: It's their right to be heard, **though** (=though they do no good and won't change a damn thing).

              (modified from Barth-Weingarten & Couper-Kuhlen 2002: 348)

As is indicated in (4) and (5), there are many counterexamples to this type of paraphrase. (5) is not a suitable paraphrase for what is meant by final *though*.

(4) A: They're building up a corpus of uhm conversations in English so that they can

        uhm

        I don't know

        I have no idea

        Uhm a study of the grammar and structures of English so

    B: My grammar is really dodgy **though**

        I get the words in the wrong places.   (ICE-GB S1A-069 91–96)

(5) A: They're building a corpus to study the grammar and structures of English

    B: My grammar is really dodgy **though** (# =though they're building a corpus).

Another property of particles is that they do not contribute to the at-issue content of the clause (Zimmermann 2011). According to Potts (2012), the 'Hey, wait a minute'-test can be used to identify all kinds of not at-issue content, not just presuppositions. A similar test has the template 'W, what do you mean W?' which challenges the non-at-issue part of the meaning contribution of the word or structure W it highlights (Potts 2012: 2521). This test is more suitable for final *though* than the 'Hey, wait a minute'-test, as is shown in (6) and (7).

(6) A: But she started talking to Phil

        Yeah and it sort of happened from then

        But she's really nice **though**   (ICE-GB S1A-081 165–167)

(7) Though, what do you mean though? Of course, she's nice.

The test in (7) highlights the word *though* which makes an, at least partly, non-at-issue meaning contribution, which is then challenged, as the continuation "of course, she's nice" shows.

2.   Final *though*

The final particle *though* occurs at the end of a turn construction unit, i.e. at the end of what could have been a turn on its own (Haselow 2012). From a syntactic point of view, we may expect it to attach not only to sentential but also to fragmentary material (cf. e.g. Merchant 2004; Dvořák & Gergel 2004; Winkler 2005; Gergel 2007, 2008; Reich 2011 for discussions of different elliptical processes).

(8)   A: Good tackle **though** by Adams.   (ICE-GB S2A-015 229)

As (8) shows, compared to (1), *though* does not have to occur sentence-finally. It also becomes evident from such an example that further phrases can be added, even if the reversed relative linearization of *though* and *by Adams* would be have been possible as well.

There are many different uses of *though* besides the subordinating conjunction and the final particle, as illustrated in (9) through (12) below. These other uses play a minor role as their meanings are closely related. Only (1) and (8) are of interest here.

(9)   A: The best parts of this building are seven hundred years old **though** there has been worship there for a great deal longer.   (ICE-GB S2A-020 105)

(10)   B: It sounds **as though** you've been attacked or something.
                 (ICE-GB S1A-050 246)

(11)   A: But on the other hand if we're advancing, **even though** that be quite slow, quite different attitudes prevail   (ICE-GB S2A-021 055)

(12)   Interventionist **though** she was she know her limits of power
                 (Drabble 27, in Rudolph 1996: 400)

(9) shows *though* as a subordinating conjunction, (10) and (11) are examples of *even though* and *as though* and (12) is another kind of concessive construction with *though*.

2.1   Previous research on final though

The two predominant topics in previous research on final *though* are the functions of final *though*, and the question whether or not final *though* can be concessive proper. The latter is controversial: while some authors (e.g. Quirk et al. 1985; Altenberg 1986) appear to view final *though* as concessive proper, others (e.g. Rudolph 1996) claim that final *though* is too weak for proper concessive meaning (Lenker 2010). Barth-Weingarten & Couper-Kuhlen (2002) also appear to view final *though* as

concessive proper because they claim that the function of final *though* is that of an abbreviated subordinate clause of concession. (13) and (14), repeated from (2) and (3), illustrate their view on final *though*: (13) is the original dialogue and (14) includes the abbreviated subordinate clause of concession in a schematic form.

(13) S: but uh back to these uh protesters
      L: yeah
      S: they do no good, they won't change a damn thing. excuse the language
      L: it's their right to be heard **though**, isn't it

(14) S: the protesters do no good, they won't change a damn thing
      L: it's their right to be heard **though** (=though they do no good and won't change a damn thing)   (Barth-Weingarten & Couper-Kuhlen 2002: 348)

For Haselow (2012), the concessive pattern seems to be a starting point. He states that final *though* does not follow the concessive pattern *Although p, q*. However, the rest of Haselow's paper is not dedicated to whether this means that proper concessive meaning can be achieved with final *though* or not.

Regarding the functions and uses of final *though*, there are different approaches. As illustrated above, final *though* functions as an abbreviated subordinate clause of concession for Barth-Weingarten & Couper-Kuhlen (2002). They also show that final *though* can function as a discourse marker for topic change. This use is illustrated in (15), which is an excerpt of a geology lecture.

(15) A: You get all these things like Wenlock limestone and all these uh uh shallow water local <unclear word> which have become so important in correlation. Uhm the Devonian **though**
          What is the Devonian in Britain.   (ICE-GB S1B-006 123–125)

In (15), the speaker uses *though* to highlight the topic change from Wenlock limestone to the Devonian in Britain.

Lenker (2010) views final *though* not as a particle but as an adverbial connector. Following a three-level approach, Lenker (2010) distinguishes the propositional, interpersonal and textual level and specifies uses of *though* at each level. On the propositional level, i.e. the level of semantic content, uses of *though* include expressing counter-expectancy or contrast. On the interpersonal level, on which social functions are expressed, uses include self-correction and other-correction. On the textual level, i.e. the discourse organization level, the functions include topic management or discourse management, as in (15) above. The predominant use she identifies is the marking of contrast at the interpersonal level, such as self-correction or other-correction (Lenker 2010). An example of other-correction is given in (16).

(16) C: BBC
          It was through the BBC wasn't it
      A: no it was through Lubbock
      C: I thought it was through the BBC that you did that uhm music for the BBC
          <unclear>
      A: Yes, but not through the BBC, **though**
          because Lubbock couldn't do it so they passed it onto me
                        (ICE-GB S1A-058 168–173 in Haselow 2012: 193)

Haselow (2012) compares the schematics of final *though* with other concessives. The standard concessive pattern has the form *Although p, q.* and for final *though*, the form is *p. q, though*. Haselow (2012) claims that final *though* retrospectively modifies *p* into backgrounded information that is somehow incompatible with *q*. To illustrate this, consider (17).

(17) B: I was at a job for three and a half days. (*p*)
          I didn't put it down on my CV **though**. (*q, though*)
                        (ICE-GB S1A-017 204–205 in Haselow 2012: 187, modified)

Haselow's claim is that *p* (being at a job for three days) is retrospectively modified into backgrounded information that is somehow incompatible with *q* (not putting it down on the CV). Haselow (2012) identifies two functions of final *though* under a specific condition of use, see (18) below.

(18) [though] = Modify *p* in CG
                  Eliminate *p* from CG, add *q*
          Condition of use: *p* does not include or implicate *q*
                        (adapted from Haselow 2012: 194)

An example of the first function (Modify *p* in CG) is in (17); the second function (Eliminate *p* from CG, add *q*) applies to those examples where *q* is a correction of *p*, such as (16). Haselow's analysis is the basis of the descriptive generalizations in Section 4 below.

2.2   Unsolved questions

There are two unsolved questions with respect to final *though*: the first concerns its contribution as concessive proper. This is an important point because most analyses of final *though* are based on concessive relations or, at least, view them as a starting point.[2] The second question involves examples that cannot be explained by the approaches described above, such as (19).[3]

(19)   B: But she's actually my half sister.
              She's got the same father.
         C: Mmm
         B: And so she really looks like my dad **though** and so does his other daughter
              who is eight.   (ICE-GB S1A-042 354–357)

In (19), it is not possible to interpret *though* as concessive proper. Sharing one parent and looking like the parent two half-siblings share is not uncommon. Similarly, *though* as an abbreviated subordinate clause of concession does not work here, as in (20).

(20)   And so she really looks like my dad though (# =though we share the same
         father).

Regarding retrospective modification of *p*, in this case "she's got the same father", is also odd. Uttering that the sister looks like the father does not in any way background the fact that the two sisters have the same father. Topic management in the sense of topic change is also not on point here. The preceding discourse is about the half-sisters' features. The fact that she and her father look alike is just one more feature of the sister.
      The example in (21) makes the difficulty even clearer.

(21)   A: But this time Dixon's taken a short throw to
              Rocastle but he has it once again the England fullback
              Swings it in right-footed
              Smith goes up
              Good header there by Sedgely **though**   (ICE-GB S2A-015 192–195)

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2.   Lenker (2010) is an exception. She bases her analysis of *though* on the discourse uses of *but*, which, just like *though*, can be used to indicate counter-expectancy, (self-)correction, topic management, etc. (Lenker 2010).

3.   An anonymous reviewer pointed out to us that these odd examples might be performance errors. We asked several native speakers of English who confirmed that the sentence sounds natural to them.

In (21), it is hard to even identify a *p*, meaning a proposition that is either potentially incompatible with *q* (concessive proper and abbreviated subordinate clause of concession), or retrospectively modified (Haselow's (2012) and Lenker's (2010) approaches).

The following sections are dedicated to addressing these two unsolved questions, starting with whether or not final *though* is, or can be, concessive proper.

3.   Concessive final *though*

3.1   Experiment

Final *though* is treated as a variation of 'regular' concessives (e.g. Haselow 2012; Barth-Weingarten & Couper-Kuhlen 2002). Others claim that final *though* is too weak for proper concessive meaning (Rudolph 1996). This experiment aims to determine to what extent final *though* can have proper concessive meaning by comparing final *though* to other concessives. The methods of this experiment are similar to methods from the literature on not-at-issue content (Bade 2016).

3.1.1   *Methods*

The experiment used a 4×3 design with a Latin square and 12 context sentences. Four concessive constructions were tested: final *though, nevertheless, despite*, and *however* (concessive condition). For each of the 12 context sentences, there was a [+], [0], and [−]-version (context version condition). The [+]-version provided an adversative context, the [−]-version a non-adversative context and the [0]-version an unrelated context. For each context sentence, there were 12 conditions (3 context conditions × 4 concessive conditions). To illustrate the design, (22) through (27) show the same context sentence with [+], [0], and [−]-versions for final *though* and *despite*. The full list of target items is provided in the Appendix.

(22)   John is good at sports. He's bad at running, **though**.   ([+], *though*)

(23)   John is good at sports. He loves to travel, **though**.   ([0], *though*)

(24)   John is good at sports. He's good at running, **though**.   ([−], *though*)

(25)   John is good at sports despite being bad at running.   ([+], *despite*)

(26)   John is good at sports despite his love of travel.   ([0], *despite*)

(27)   John is good at sports despite being good at running.   ([−], *despite*)

A Latin square was used to distribute the target items onto 6 lists with 24 target items. Every condition was shown twice with different context sentences. An expectation from such a set-up (raising from studies on other not-at-issue meanings;

cf. Bade 2016 for ample discussion) is that an item providing a supportive context should be rated comparatively high. Similarly, without further enriched context, an item with a [−] context should be significantly worse. In the current case, however, notice that we are testing multiple items with (roughly) similar meanings. It will hence also be relevant to pay attention to the way items compare to one another, and in particular in the [−] contexts (i.e. the seemingly 'anti-concessive' ones), as this could be informative concerning how different items are allowing alternative (i.e. not strictly concessive) interpretations.

The 36 fillers were constructed from the target items using the (potential) duality of concessives and causals. The context sentences were mostly the same as for the target items, but with causal expressions instead of concessives. Three fillers functioned as attention tests because they were ungrammatical and were the same for every list.

Fillers and target items were randomized in order, but every experiment started with the same two fillers. Items were rated on a scale from −3 (unnatural and hard to understand) to +3 (natural and easy to understand). Participants were asked to rate the items based on their intuition of what sounds good and makes sense quickly. They were asked not to overthink their choices because for some of the [−]-versions, it is possible to think of an uncommon, but possible, scenario where the construction would make sense.

The questionnaire was distributed as a link, which, when activated, assigned participants randomly to one of 6 lists. The randomizer used ensured an even distribution of participants to the six lists. 48 participants took part in the experiment. 37 participants remained after the elimination of those who did not give consent, whose native language was not English, or who admitted to meaningless response(s). Three participants were also excluded from the analysis because their response to 2 or more of the 3 attention tests was more than one standard deviation above average, leaving 34 participants for the analysis. The elimination of participants means that not all items are rated an equal number of times.

3.1.2 *Results*

Figure 1 shows histograms of each concessive and context version. The ratings for the [+]-versions are similar for *though, however*, and *despite*. For *nevertheless*, they are lower in general, and have a different distribution than the other concessives tested. For [0] and [−]-versions, *though* and *however* interestingly receive higher ratings compared to *despite* and *nevertheless*.

Figure 2 shows the median ratings of each concessive in the different conditions. [+]-versions have a triangle shape. The median ratings also show that *nevertheless* behaves differently from the other three concessive items. *Despite, however*, and *though* have median ratings of 3, 2 and 2, while the [+]-condition for *nevertheless*
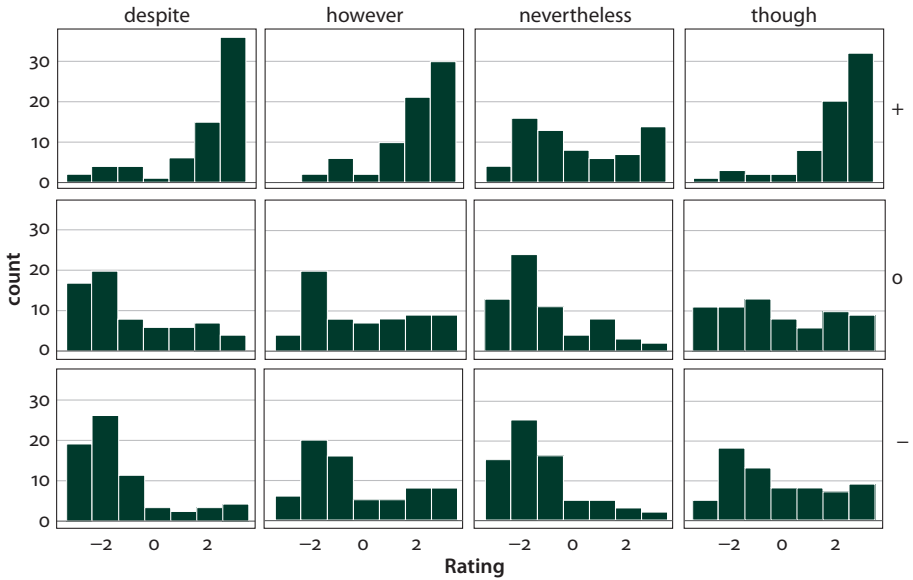
Figure 1. Histograms of concessive and context conditions

received a median rating of 0. [0]- and [−]-versions have the same median ratings for *though, despite*, and *nevertheless* but the median ratings for *though* (−1) are higher than for *despite* and *nevertheless* (−2). Median ratings for the [0]-context for *however* are higher (0) than for the [−]-version (−1).
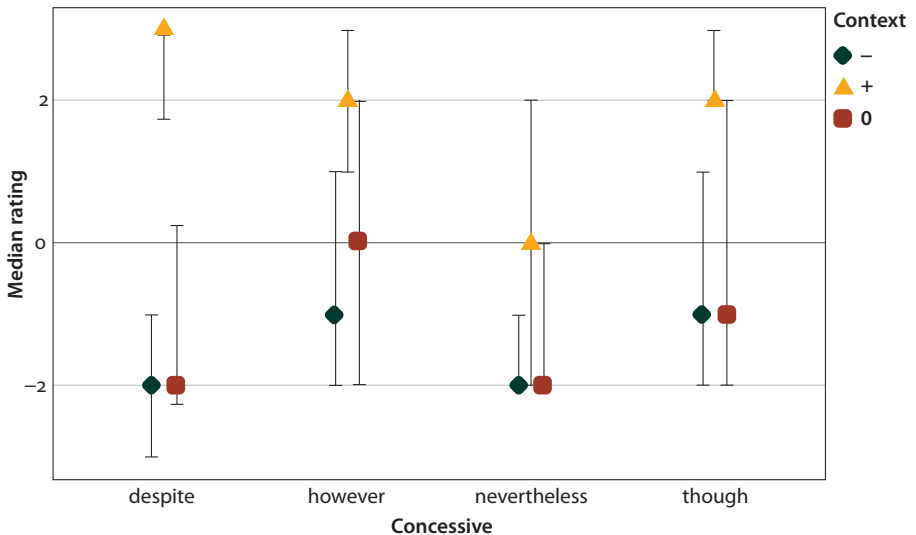

Figure 2. Boxplot of Concessive ~ Context

A two-way repeated ordinal regression with CLMM was conducted taking into account the context version, the concessive, the interaction between the two and context sentences (item) as random effects (Rating ~ Context + Concessive + Context:Concessive + (1|Item)) (R: ordinal package, version 2019.4–25 (Christensen 2019)). Context and Concessive are both highly significant ($p < 0.001$), the interaction was also significant ($p = 0.002$). Post-hoc tests for pair-wise comparisons were conducted using the Tukey method and revealed highly significant differences for all concessives between their [+] and [−]-contexts ($p < 0.001$ for *though, despite* and *however*; $p = 0.004$ for *nevertheless*). The differences between the respective [+] and [0]-contexts are also significant for all concessives with $p < 0.001$ for *though, however* and *despite*, and $p = 0.0059$ for *nevertheless*. No effect was found for the differences of each concessive between [0] and [−]-contexts for all concessives ($p = 1$ for all of them). Within the [+]-condition, *nevertheless* received significantly lower ratings than the other concessives ($p < 0.001$ in all three cases). *Nevertheless* was also significantly different from *though* in the [−] and [0]-context ($p = 0.035$ and $p = 0.046$, respectively). The pairwise comparison yielded no other significant differences.

3.1.3   *Discussion*

An important point is that final *though* can have proper concessive meaning. This is evident from the high ratings of *though* in the [+]-condition (median rating 2). It follows that the concessive meaning contribution is an appropriate starting point for other meaning contributions. At the same time, we repeat the point that final *though* also has higher ratings in the negative condition compared with a stricter concessive such as *despite*.

The results of *nevertheless* are interesting because even though *nevertheless* is clearly a concessive element, it behaves very differently from the other concessives in the experiment, as the significant differences in the [+]-context show. This suggests that *nevertheless* is used in different contexts than *though, however*, and *despite*. The precise differences in conditions of use of *nevertheless* and other concessive elements will have to be the topic of further research.

The other concessive elements behave as expected. *Despite*, as expected of a concessive proper, receives the highest ratings for the [+]-condition, but very low ratings for [0]- and [−]-conditions. *However*, like *though*, appears to be more flexible. This is also expected due to its use as a discourse marker.

To sum up the important points for final *though*, it can take proper concessive meaning, but it is far more flexible than other concessives like *despite*. Final *though* can be used in adversative contexts and in unrelated contexts (and in some non-adversative contexts).

3.1.4   *Corpus findings*

While the results of the experiment show that final *though* is acceptable not only in adversative/concessive contexts, but also more acceptable than concessives proper such as *despite* in some non-adversative and unrelated contexts, they cannot make any claims regarding the frequency of either context. For this reason, a brief corpus study was conducted using sections S1A, S1B, and S2A of the British component of the International Corpus of English, i.e. unscripted private and public dialogues as well as monologues, and a simple word search for "though". Of the 271 cases of *though* in these sections, 97 cases were excluded because *though* was not the final particle, leaving 174 cases for the analysis. These 174 instances of final *though* were categorized according to the same three contexts as in the experiment: [+]-, [0]-, and [−]-contexts, by first identifying a preceding proposition p in the context and then determining the relation of p to q, *though*. If p & q normally co-occur, the example was categorized as [−], if p & q do not normally co-occur, the example was categorized as [+] and if p & q are unrelated, the example was categorized as [0]. As is shown in Figure 3, 44% of all instances have an adversative [+]-context, another 44% have an unrelated [0]-context, and 12% show a non-adversative [−]-context.
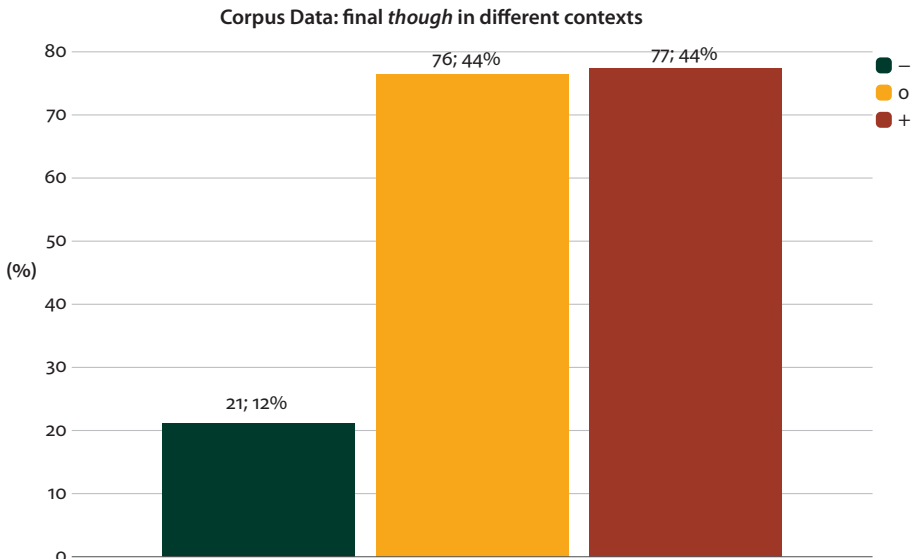
Figure 3.   Final *though* in corpus ICE-GB S1A, S2A, S1B

This data further supports the results of the experiment above by showing that final *though* can occur in adversative, non-adversative and unrelated contexts. Final *though* occurs in unrelated contexts as frequently as it does in adversative contexts. Final *though* is less frequent, but also possible, in non-adversative contexts.

3.2   Final though as projective content

Concessives of the form *Although p, q.* trigger the presupposition (PSP) *normally ¬ (p & q)*.[4] On this, we believe to be close to König's (1988) prose intuition, who classifies such effects as presuppositions (even though we explicitly do not follow his suggested implementation as a conditional). Final *though* typically follows a different pattern: *p. q, though.* Given that *p* is not necessarily found in the linguistic context, it seems appropriate to suggest that a concessive expression of the form *q, though* triggers (28).

(28)   There is a salient *p* such that normally ¬ (*p & q*).

To determine whether final *though* triggers the effect described in (28), a first intuition would be to use the "family of sentences" diagnostics known from the classical literature on presuppositions. The dialogue in (29) is a starting point to this end.

(29)   A: I'm going for a walk.
        B: It's raining, **though**.

"It's raining, though" arguably triggers the PSP that there is a salient *p* (A's going for a walk) such that normally ¬ (*p & q*) (normally ¬ (going for a walk & rain). (30) shows the family of sentences diagnostic applied to the example.

(30)   A: I'm going for a walk.
   a.   B: It's raining, though.
               normally ¬ (going for a walk & rain)
   b.   B: It's not raining, **though**.
               normally ¬ (going for a walk & no rain)
   c.   B: It might be raining, **though**.
               normally ¬ (going for a walk & might rain)

As can be seen in (30b), the classic diagnostic using negation seems to fail the diagnostic. We suspect this is due to the fact that, as a discourse managing device, *though* outscopes negation (cf. Bar-Asher & Boneh 2016, among others, for similar effects). However, the epistemic modal *might* confirms the diagnostic. It can be concluded that final *though* triggers at least some form of projective content.

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4.   The discussion of *though* as projective content is based on this PSP, but it does not depend on it. Gast's (2019) probabilistic definition of concessivity and concessive PSP, which expresses that the probability of (*p & ¬q*) is higher than the probability of (*p & q*), is a feasible, albeit less intuitive, alternative.

3.3   Final *though* as a trigger in corpus examples

While constructed examples seem to show final *though* as a PSP trigger, the situation is less clear for corpus examples. Some of our retrieved corpus examples such as (19) and (21), repeated in (31) and (32) below, were not accounted for in the approaches to the function of final *though*.

(31) B: But she's actually my half sister.
         She's got the same father.
      C: Mmm
      B: And so she really looks like my dad **though** and so does his other daughter
         who is eight.   (ICE-GB S1A-042 354–357)

(32) A: But this time Dixon's taken a short throw to
         Rocastle but he has it once again the England fullback
         Swings it in right-footed
         Smith goes up
         Good header there by Sedgely **though**   (ICE-GB S2A-015 192–195)

If they trigger the same PSP as described above, the PSP is the following.

(33) "And so she really looks like my dad though" triggers the PSP: There is a salient
      p (having the same father?) such that normally ¬ (having the same father & (at
      least) one sibling looking like the father).

The PSP in (33) is odd. It is possible that the selected p is not the correct one. It could have been non-linguistic, e.g. that the speaker looks very much like her mother and not like her father at all. In this case, there would seem to be a contrast of sorts between the looks of one sister and the looks of the other, but the "normally" condition of the PSP is still not appropriate.

Example (31) is similar to (32) in the respect that p is hard to identify. (34) is an attempt to show a putative presupposition triggered in (32).

(34) "Good header there by Sedgely, **though**." Triggers the PSP: there is a salient
      p (hard to identify, game situation?) such that normally ¬ (this type of game
      situation & good defense headers).

This example works better as a PSP trigger than (31), but they have one thing in common, which makes such an example easier to account for. The use of *though* highlights that what is described by q is somehow noteworthy in light of p. We will discuss noteworthiness of q in more detail below. A more specific PSP could, therefore, be:

(35)   *q, though*. triggers the PSP: there is a salient *p* such that normally ¬ (*p* & *q*) where *q* describes an event/state such that the occurrence of *q* is noteworthy in light of *p*.

While what is described in (35) would fit both Examples (31) and (32), it is essentially König's presupposition, which takes *p* as a starting point and judges *q*'s occurrence as unexpected or noteworthy in light of *p*. This is problematic for examples such as in (36) below. (36) is not a corpus example, but an item in the experiment and received a median rating of +2 (scale −3 to +3).

(36)   A: Joe won the karate tournament.
        B: He's been training for years, **though**.

Notice that the rating is particularly high for a putative negative context (from the perspective of pure concessiveness). Following the PSP above, "He's been training for years, though." would trigger the following PSP:

(37)   There is a salient *p* (Joe's win) such that normally ¬ (*p* (winning) & *q* (training)).

From the perspective of an athlete, this is simply not the case. It is also not what intuitions tell us about the meaning. A native speaker commented on the dialogue that *though* takes away some of the worth of the win, and indicated further that it would only have been noteworthy had Joe not won the tournament. This is quite the opposite from what (37) predicts.

A potential solution comes from a very different direction. Barth-Weingarten & Couper-Kuhlen (2002), who based their research on Couper-Kuhlen & Thompson (1998), describe a cardinal concessive pattern, and several variations of this pattern, including one for final *though*. The pattern is provided in (38).

(38)   A: X (claim)
        B: Y (counterclaim)
            X′ (acknowledgement of claim)
            where X and Y are understood by participants to be potentially incompatible   (Barth-Weingarten & Couper-Kuhlen 2002: 347)

The use of 'potentially' is important, but 'winning' and 'training hard' are very compatible, and not "potentially" incompatible. König & Siemund (2000) adapt Couper-Kuhlen & Thompson's pattern by including conversational implicatures. Their adaptation is given in (39).

(39)   X (therefore Z)
        X′
        Y (where Y is contradictory to Z)   (König & Siemund 2002: 356)

Note that this is the 'cardinal concessive pattern', i.e. not the pattern for the variation with final *though*. For this variation, Y and X′ (signifying the conceding move, which is realized with final *though*) are exchanged. There are two differences (besides the order or X′ and Y) between (38) and (39): the loss of the word 'potentially' and the inclusion of Z as a conversational implicature of X. Adapting this pattern to the triggered presupposition would mean judging *q* against implicatures of *p* instead of whether or not it normally co-occurs with *p*. Applying this pattern to the example, and using the implicature within the triggered presupposition, this would mean the following:

(40)   A: Joe won the karate tournament (which is great, special, surprising, …)
       B: He's been training for years, **though**.

(41)   "He's been training for years, though." triggers the PSP: there is a salient *p* (the great, special, surprising, … win) such that normally ¬ (*p* (surprising wins) & *q* (hard training)).

Again, an athlete might disagree with (40) and (41), but this is much closer to what intuitions tell us about the meaning of *though*. In this case, the win is less special/surprising because of the hard training. What this example shows is simply that *p* is much more versatile and not necessarily obvious or easy to identify.

To sum up, *though* as some sort of PSP trigger appears to account for the majority of examples. However, it is not a satisfying straight-forward approach for all examples. In the next section, we will seek to sharpen a descriptive generalization to shed more light on the meaning contribution of final *though*.

4.   Descriptive generalization of the uses of final *though*: Balancing noteworthiness

One notion, that has come up frequently in the discussion of the examples above, was that of *noteworthiness*. The fact that the sister looks like the father (19)/(31) was somehow noteworthy in the context, the header by Sedgely in (21)/(32) was special, or noteworthy, in the game situation, and the fact that Joe won the tournament (36) was less noteworthy, but rather expected because of his hard training. This notion of noteworthiness is at the core of the descriptive generalization of the functions of final *though*.

The descriptive generalization below is a modification of Haselow's (2012) approach. Haselow (2012) summarizes the functions of final *though* (in *p. q, though*) as retrospectively i. modifying *p* in CG, ii. eliminating *p* and adding *q*. As conditions of use, he states that *p* can neither implicate nor include *q*. In the following, we will show, first, that the second function is redundant because it is included in the first, and second, that the conditions of use can be broadened to say *p* cannot include

q, but that the relevant implicature is fine, and third, specify how *p* is modified in CG or what is added with *q*.

Haselow's (2012) second function of final *though* supposedly describes examples such as (16), repeated in (42).

(42)   C: BBC
            It was through the BBC wasn't it
      A: no it was through Lubbock
      C: I thought it was through the BBC that you did that uhm music for the BBC
            <unclear>
      A: Yes, but not through the BBC, **though**
            because Lubbock couldn't do it so they passed it onto me
                            (ICE-GB S1A-058 168–173 in Haselow 2012: 193)

Haselow (2012) claims, that 'it was through the BBC' is eliminated from the Common Ground and that 'it was not through the BBC' is added. However, the negation of *p* is not the same as an elimination. It is also a modification, in this case a negation. This means that examples such as (42) are included in the first of the two functions of *though* and, thus, the second function is obsolete.

Haselow (2012) further claims that the conditions of use for final *though* are that *p* does not include or implicate *q*. Consider (43) and (44) (a corpus and an experimental item, as mentioned):

(43)   A: Well she'd been down there. Had a very good day.
      B: Uhm.
      A: She'd been down there on Saturday
      B: Oh had she
      A: Yeah
      B: What. Down to see him
      A: Yeah
      B: Oh. Gosh. That's good of her
      A: Yes, Yeah. Well she's a very good-hearted girl **though**[5]
                            (ICE-GB S1A-023 129–143)

(44)   A: Joe won the karate tournament.
      B: He's been training for years, **though**.

If the speaker states that the action was 'good of her', this might implicate that she is, indeed, good-hearted. In (44), if Joe won the tournament, it stands to reason that he has been training for it. This could, therefore, be implicated by *p*.

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5.   A German translation of (43) and (44) would most likely include the particle combination "aber auch", which does not seem possible in concessive contexts.

Returning to the notion of noteworthiness: there are two general observations with respect to noteworthiness and final *though*. For the structure, *p. q, though.*, there are two potential cases: either *q* itself is noteworthy, or *p* is not so noteworthy. We have seen examples of both already. Consider (45), repeated from (21), and (46), repeated from (15).

(45) A: But this time Dixon's taken a short throw to
          Rocastle but he has it once again the England fullback
          Swings it in right-footed
          Smith goes up
          Good header there by Sedgely **though**   (ICE-GB S2A-015 192–195)

(46) A: You get these things like Wenlock limestone and all these uh
          uh shallow water local <unclear> which have become so
          important in correlation
          Uhm the Devonian **though**
          What is the Devonian in Britain   (ICE-GB S1B-006 123–125)

As discussed above, there seems to be something noteworthy about Sedgely's header in the present game situation. (46) is a little bit different. Barth-Weingarten & Couper-Kuhlen (2002) discuss how final *though* has developed into a discourse marker for topic change. (46) is an example of this use. New topics, in this case the introduction of the Devonian, are inherently noteworthy.

Examples such as (47) and (43), repeated in (48), have a noteworthiness downgrading of *p* through *q, though*.

(47) A: I followed her into the shop, and said, "Now I will see what you have" – she
          shifted her legs – I said, "Let me see what you have dropped" – I moved her
          on one side, and there was the dress – she immediately said, "You did not
          see me take it, **though**," and said I did it through spite, because she would
          not buy the shawl.   (OBC2 1841-0823)

(48) A: Well she'd been down there. Had a very good day.
      B: Uhm.
      A: She'd been down there on Saturday
      B: Oh had she
      A: Yeah
      B: What. Down to see him
      A: Yeah
      B: Oh. Gosh. That's good of her
      A: Yes, Yeah. Well she's a very good-hearted girl **though**
                                              (ICE-GB S1A-023 129–143)

In (47), the discovery of the dress between the woman's legs, and proof of theft, is weakened by her statement that the theft was not witnessed by the interlocutor. Similarly, in (48), the good deed of the girl (going down to see him) is weakened by the fact that she is a good-hearted girl and consequently, good deeds are expected and not noteworthy.

While noteworthiness as a concept seems to attach nicely to the uses of *though*, the question arises how it can be connected to its concessive component. In concessive relations, two propositions *p* and *q* both hold although they are usually incompatible. This means that *p* and *q* do not usually intersect (in other, slightly more formal words: there are usually no possible worlds in which both *p* and *q* are true). If *p* and *q* do occur together (and intersect), this fact is functionally then already noteworthy. For final *though, p* and *q* do not necessarily have to be usually incompatible, as was seen in (43), where *q* was even implicated by *p*. It is sufficient if *q* is noteworthy, or, at least, more noteworthy than *p*, because the intersection of *p* and *q* is noteworthy if *q* is noteworthy on its own. In other words, final *though* has retained a presumed property of 'noteworthiness' that can be derived – as we have just argued – from the use of its concessive origin and is used in a greater variety of contexts than concessives proper.[6]

Taking one step back to the discussion of Haselow's (2012) functions of final *though*. It was argued that only one function is applicable: to retrospectively modify *p* in the Common Ground. What Haselow (2012) did not specify was what is modified. As was discussed above, final *though* modifies *p* by making it less noteworthy than *q*. There are two possible ways of achieving this: either by adding a *q* that is so noteworthy (as marked by *though*) that previous utterances are automatically less noteworthy (e.g. topic change (the Devonian), Sedgley's header, …) or by weakening the noteworthiness of *p* (e.g. Joe's win of the karate tournament, the good-hearted girl, …). A schema of the function of final *though* is summarized in (49), as modified from Haselow (2012: 194).

(49)   Final *though*: modify *p* in CG by
    a.   adding noteworthy *q*
    b.   downgrading noteworthiness of *p*
          condition of use: *p* does not include *q*.

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6.   While our current inquiry is primarily synchronic, we believe that the logical relationship informally described between the different uses (if noteworthiness is indeed a relevant factor as we are claiming), could also lead to diachronic results. Example (47) above is thus from 1841 and was retrieved from the *Old Bailey Corpus*. Caution is, however, in order, given the oral character of the construction. We leave it to further research to establish whether particle uses are systematically also available at earlier stages of English.

Final *though* indicates that the present utterance is noteworthy compared to the previous utterances by highlighting the noteworthiness of *q* and potentially downgrading the noteworthiness of *p*.

5.   Common Ground management (with side-effect mirativity)

In this section, we propose to treat final *though* as a Common Ground managing device (Krifka 2008), specifically in the spirit of Bar-Asher Siegal & Boneh (2016). Bar-Asher Siegal & Boneh (2016) begin with an analysis of discourse datives in Hebrew, and suggest a splitting of the Common Ground into the more classical part containing asserted propositions CG_A and one that rather confirms to generalizations, which they dub CG_G. We cannot go into a full motivation of this step in this contribution for space reasons, and we refer the interested reader to the data and literature reviewed in Bar-Asher Siegal & Boneh (2016), in order to present our current take next.

Two main adaptations are necessary. First, instead of CG_G, we propose to use CG_E, which we define as that part of the Common Ground, which roughly confirms to hearer expectations in the particular situation and at the particular time of the conversation, as well as notably their anticipation of the speaker. The motivation of the first adaptation lies in the fact that speakers do not only present conclusions as based on genuine rule-based generalizations, but often take recourse e.g. to zero or default expectations. Moreover, sometimes expectations may not be the result of any (inferential) generalizations at all, but rather appear as less rational (or even irrational for that matter), which, nonetheless, are still in need of being addressed and potentially marked as such in conversations. Such expectations are then propositions in CG_E (and in turn, propositions are sets of possible worlds, in the usual way). While we do not dispute the usefulness of CG_G for other phenomena, our current point is simply to use an adaptation of it that we submit to be more to the point for the case study at hand. To be precise: we take a superset of the Common Ground of generalizations CG_G, as defined above. A fortiori, we assume generalizations that are usually made by speakers largely fall within the domain of what can be expected.

Speakers may signal that certain states of affairs observed in the actual world (which are themselves added to the classical CG_A, updating it in the usual way) have a higher divergence from the propositions in CG_E, which makes them, using the descriptive terminology of Section 4, noteworthy. Second, the specific phenomenon of the discourse dative (available in Hebrew, and distinct e.g. from the more widely known ethical datives available in several languages), as analyzed by Bar-Asher Siegal & Boneh (2016), explicitly signals that the proposition in question is not in

the CG_G. This is not something that is signaled by final *though*, as will be shown below. We will also show that mirativity appears as a side-effect of the analysis.

The utterance in (50) raises the expectation that the next utterance is going to be a fact about the sun.

(50) A: I'm going to tell a fact about the sun.

CG_E comprises propositions with facts about the sun, possibly on a very unspecific level. Speaker A is aware, or can at least reasonably assume, that the hearer expects a fact about the sun. Note that expectations in this case are not necessarily what the speaker assumes this specific hearer expects, but rather, what is commonly expected. Regardless of the individual speakers involved, the default expectation after (50) is a fact about the sun. (51) falls perfectly into this set of possible propositions with facts about the sun.

(51) A: I'm going to tell a fact about the sun.
           The sun is the center of our solar system.

If final *though* signals that a proposition p_0 are noteworthy because it has a higher divergence from the propositions p_E, a proposition such as in (51), which has no, or only a low divergence from, propositions p_E should be infelicitous with final *though*. (52) shows that this is, indeed, the case.

(52) A: I'm going to tell a fact about the sun.
           #The sun is the center of our solar system, **though**.

It follows that a proposition that has a high divergence from propositions p_E should be felicitous with final *though* because they are noteworthy. A topic change to the moon as in (53) falls into this category and is felicitous with final *though*.

(53) A: I'm going to tell a fact about the sun.
           First, the moon, **though**.

However, not all propositions with a high divergence from p_E are felicitous with final *though*. Consider (54) and (55).[7]

(54) A: I'm going to tell a fact about the sun.
           #The moon orbits around the earth, **though**.

(55) A: I'm going to tell a fact about the sun.
           #A volcano erupted and covered an entire village in ashes, **though**.

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7. *Though* and *however* are interchangeable in these examples. While this is not in our current focus, the result is convergent with the results of the experiment presented in this paper.

Both are completely out of the blue topic changes and are not felicitous with final *though*. It follows that for a proposition to be felicitous with final *though*, two criteria need to be met: First, the proposition p_0 needs to have a higher divergence from p_E, in other words, p_0 needs to be noteworthy. Second, the proposition p_0 needs to be accessible in CG_E. A topic change that is announced as such ("First, …") is conceivable but an 'out-of-the-blue' change of topic without any overt indication, (54) and (55), is not. This fact motivates our second adaptation of Bar-Asher Siegal & Boneh's (2016) model. The discourse dative as analyzed by Bar-Asher Siegal & Boneh (2016) explicitly signals that the proposition in question is not in the CG_G. This is not signaled by final *though*. Propositions need to be at least marginally in CG_E to be felicitous with final *though*.

It follows that there are three possible logical relations between CG_A and CG_E: CG_E can be a subset of CG_A, CG_E and CG_A can be disjoint, or they can partially overlap. The latter is not an option for Bar-Asher Siegal & Boneh's (2016) analysis of the discourse dative. A proposition either conforms to norms, in which case CG_G is included in CG_A, or it does not conform to norms, in which case CG_G and CG_A are disjoint. With expectations, there are three options: A proposition can meet expectations (cf. (51)), it can fail to meet expectations but be a conceivable alternative at the same time (cf. (53)), or it can fail to meet expectations and also not be a conceivable alternative (cf. (54) and (55)). Final *though* is felicitous when CG_A and CG_E partially overlap.

We formulate the semantic representation for the CG management device final *though* in (56).

(56) $[\![$final though$]\!]^{sp} = \lambda p_{<s,p>} \lambda w \forall w' \in Epi_{sp}(w)(p \not\subset_{\approx} CG_E w').p(w)$
   In all the speaker's epistemically accessible worlds w' that conform to the speaker's knowledge in *w* (and assumed by her to be part of the common knowledge), it holds that the proposition in question is only marginally in CG_E. In other words: it is almost not in CG_E.

Final *though* is a CG management device that signals a proposition p_0 is not a proto-typically expected proposition p_E, but rather a conceivable, only marginally expected alternative. We use ≈ here, the approximation sign, as one way to semi-formally represent marginality in reminiscence of the wider research on approximators such as *almost*.[8] The expected proposition p_E is in the inner part of CG_E (crosshatched in Figure 4), i.e. the more accessible possible worlds and the default expectation. The outer part of the CG_E contains less accessible possible worlds that are conceivable but at odds with the default expectation. This is the equivalent of saying that such

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8.   An alternative could be to find a metric (e.g. via an ordering source) to identify those possible worlds that are only marginally within the CG_E.
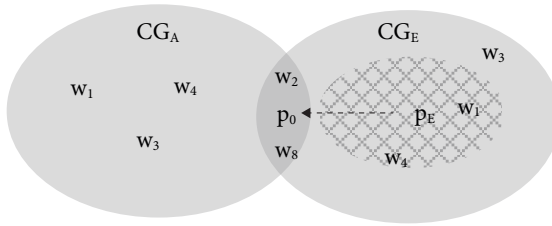
Figure 4. Final *though* in the system of split CG

worlds are ranked as more distant. The divergence of p_0 from p_E is indicated by the arrow. Crucially, p_0 is true in CG_A and in CG_E.

The example in (57), repeated from (21), illustrates the model. The default expectation of every football commentary on radio is that an offense should ideally lead to a goal.

(57)   A: But this time Dixon's taken a short throw to
             Rocastle but he has it once again the England fullback
             Swings it in right-footed
             Smith goes up
             Good header there by Sedgely **though**   (ICE-GB S2A-015 192–195)

In this specific instance, after "Smith goes up", the audience 'expects' Smith to head the ball into the goal. The expected proposition p_E in this example is a goal or, at least, a continuation of the offense. All possible worlds in which the offense continues or leads to a goal are in the inner part of CG_E. Instead of a goal or continued offense, Sedgely's defense header stops the offense. All possible worlds in which the offense is stopped are less expected and in less accessible possible worlds in the outer part of CG_E.[9] There is a partial overlap between CG_E and CG_A because the expected p_E, the continuation of the offense, is not part of CG_A but the actual p_0 is true both in CG_A and in the outer (less accessible) parts of CG_E.

This is where a mirative side-effect comes in. Mirativity refers to "the grammatical marking of unexpected information" (DeLancey 1997: 33) and Sedgely's defense header is arguably unexpected. Whether, for mirative markers in general, the information is new/unexpected to the speaker, or the hearer depends on the point of view of the author. For DeLancey (1997, 2001), the speaker signals that the information was new or unexpected to themself. For Beaver & Clark (2010), the 'expecting' (by default) is done by the hearer, and information is marked as mirative if the information is expected (by the speaker) to be unexpected for the hearer. According to Aikenvald (2012), the range of mirative meanings includes all of the

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9.   Needless to say, a notion of perspective is also involved.

above and more: sudden discovery, surprise, unprepared mind, counter-expectation or, simply, information new to either speaker, hearer, or main character (Aikenvald 2012: 437). There is a line of research (e.g. Lau & Rooryck 2017; Mexas 2016; Adelaar 1977, 2013), according to which "the core meaning of mirativity is that of sudden realization or discovery: a punctual change of epistemic state" (Lau & Rooryck 2017: 113).

For the example in (57), all of the above apply: it is a sports commentary, so the speaker comments on the game as it happens, and any unexpected events (such as a good defense header) will be unexpected to the speaker. This is even more so to the hearer listening to the radio broadcast of the game who 'sees' the game through the eyes of the commentator – any developments will be unexpected to the hearer. In this scenario, there is even a sudden change of knowledge, but this is true for the whole game as it is a live commentary. For the broad range of instances with final *though*, the punctual change of epistemic state, which is at the core of mirative meaning for Lau & Rooryck (2017) and others, is not part of mirative component. However, despite unexpectedness often coinciding with a sudden change of epistemic state, this sudden change is not a necessary prerequisite to unexpectedness in itself. Therefore here, 'mirativity' is viewed as the grammatical marking of information as new, unexpected, or surprising to either speaker or hearer.

The above model can be applied in a similar way to (58) but in this case, it is not possible to make a claim as to what expectations might be.

(58)   A: But she's actually my half sister.
             She's got the same father.
       B: Mmm
       A: And so she really looks like my dad **though** and so does his other daughter
             who is eight.   (ICE-GB S1A-042 354–357)

There is no default expectation in this case, and any special fact about the sister or their relationship is in the outer part of CG_E, as is demonstrated in (59).

(59)   A: But she's actually my half sister.
             She's got the same father.
       B: Mmm
       A: And so she has really long hair, **though**. / And so she doesn't live with us,
             though. / …

Again, mirativity occurs as a side-effect. It was argued above that the similarities of the sister to the father are noteworthy because they are unexpected (in light of *p*, e.g. that the speaker does not look like her father at all). Final *though* here signals this information is unexpected, and therefore meets the criteria for a mirative marker.

(60) shows final *though* as a marker for topic change. This property of final *though* can be straight-forwardly integrated into the model because one can

reasonably assume the speaker to stay on topic. A topic change is, consequently, not the default expectation. New topics, in this case, the Devonian, are not necessarily unexpected but they are new. In consequence, *though* as a marker for topic change can also be viewed as a mirative marker if the wide definition is used, which includes new information in general.

(60) A: You get these things like Wenlock limestone and all these uh uh shallow water local <unclear> which have become so important in correlation Uhm the Devonian **though**
What is the Devonian in Britain   (ICE-GB S1B-006 123–125)

Example (61) was analyzed above as a downgrading of noteworthiness of the first proposition.

(61) A: Joe won the karate tournament.
B: He's been training for years, **though**.

The line of reasoning here is slightly different. By telling B of Joe's win, the expected reaction is for B to be happy for Joe or have a positive reaction to the win. Instead, B downgrades the win. This downgrading is not what was expected, hence the highlighting of this with final *though*.

Regarding a potential mirative side-effect, it was argued that the use of *though* weakened the noteworthiness of the win. The utterance *though* accompanies is inferable from the preceding utterance, albeit not being the expected reaction. These uses of *though*, which downgrade the noteworthiness of *p*, are clearly not mirative. They are anti-mirative because they signal that the utterance they accompany, which contains inferable information, weakens the unexpectedness of the preceding utterance. In (61), *though* in combination with the hard training, which is inferable from the win, signals that the win is less unexpected (or more expected) than it would have been, had *q*, *though* not been uttered.

This means that final *though* is both a mirative and an anti-mirative marker, depending on whether it is used with new or inferable information. If the utterance *though* accompanies contains new information, *though* is used as a mirative marker, which further highlights the unexpectedness, surprise or noteworthiness of the utterance. If the utterance *though* accompanies contains inferable information,[10] *though* is used as an anti-mirative marker, which signals that the preceding

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10. In this context, an anonymous reviewer asked why in the half-sister example in (58), final *though* is analyzed as a mirative marker, even though the use of "so" ("and so she really looks like my dad though") indicates that the information is inferable. However, as is demonstrated in (59), the content can be exchanged without any problems. It is not inferable that the sister has long hair, that she lives with the family, etc. In other words, "so" does not seem to mark the information as inferable in this situation.

utterance is less unexpected, surprising or noteworthy because of the information in *q, though*.

Final *though* as both a mirative and anti-mirative marker, depending on the information status of the utterance it accompanies, does not contradict the model because the model is based only on the divergence of p_0 from p_E. The model makes no assumptions regarding the information status of the expected or unexpected propositions, but only on whether or not they are expected. Whether these propositions contain new or given information is immaterial to the model itself, but it is precisely where the mirative side-effect comes into play. If the unexpected propositions contain new information, there is a mirative side-effect. If the unexpected propositions contain given or inferable information, the effect is anti-mirative.

6.   Conclusion and outlook

This paper has started out from more general insights based on Haselow (2012) and presented an analysis for previously unaccounted uses of the final particle *though*. A new descriptive generalization of the uses of final *though* surrounding the concept of noteworthiness showed that final *though* marks the proposition it accompanies as noteworthy, at times via downgrading of the preceding (and often implicit) utterance. Initial evidence for the CG-managing status of the particle has been drawn from an experimental study. By theoretically adapting an analysis of a discourse dative by Bar-Asher Siegal & Boneh (2016), we have argued that final *though* is a CG management device that signals only marginal conformity to the currently entertained expectations in a conversation. We have pointed out potential mirativity effects of final *though*, but we have argued that they are best treated as a side-effect of the analysis in terms of noteworthiness or counterexpectation.

Finally, from a cross-linguistic perspective, the question remains whether English has discourse (so-called 'modal') particles of the type German and Dutch have. If such particles are defined syntactically, then the answer has to be 'no'. Even though the syntax has not been in the focus of our current inquiry, final *though*, by definition, is disjoint from the classical middle-field position claimed for such particles. However, if the pragmatic import of a CG-managing device is taken into account, then final *though* – so we have claimed – merits the benefits of membership to the club. While we have not discussed the relationship of *though* to its German cognate *doch* within present scope (as their meanings and conditions of use are quite distinct), Gergel (2020) and Gergel, Kopf-Giammanco & Puhl (2021) provide certain theoretical and methodological considerations how such comparisons could be conducted. A key step towards further inquiries, we believe, is to ascertain how exactly particles of the final type current English possesses have developed as a class from their ancestors in Old and Middle English (cf. van Kemenade 2022, this volume).

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Appendix.   Experimental items

John is good at sports.	+	though	He's bad at running, though.
		nevertheless	Nevertheless, he's bad at running.
		however	However, he's bad at running.
		despite	despite being bad at running.
	0	though	He loves to travel, though.
		nevertheless	Nevertheless, he loves to travel.
		however	However, he loves to travel
		despite	despite his love of travel.
	−	though	He's good at running, though.
		nevertheless	Nevertheless, he's good at running.
		however	However, he's good at running.
		despite	despite being good at running.
Mary loves to dance.	+	though	She doesn't own any dancing shoes, though.
		nevertheless	Nevertheless, she doesn't own any dancing shoes.
		however	However, she doesn't own any dancing shoes.
		despite	despite not owning any dancing shoes.
	0	though	She can't cook, though.
		nevertheless	Nevertheless, she can't cook.
		however	However, she can't cook.
		despite	despite her inability to cook.
	−	though	She bought a new pair of dancing shoes, though.
		nevertheless	Nevertheless, she bought a new pair of dancing shoes.
		however	However, she bought a new pair of dancing shoes.
		despite	despite having a new pair of dancing shoes.
Jill and Jane are sisters.	+	though	They don't look alike, though.
		nevertheless	Nevertheless, they don't look alike.
		however	However, they don't look alike.
		despite	despite them not looking alike.
	0	though	Jane looks like Serena Williams, though.
		nevertheless	Nevertheless, Jane looks like Serena Williams.
		however	However, Jane looks like Serena Williams.
		despite	despite Jane looking like Serena Williams.

	−	though	They look very much alike, though.
		nevertheless	Nevertheless, they look very much alike.
		however	However, they look very much alike.
		despite	despite them looking very much alike.
Mary is making dinner for a friend.	+	though	She doesn't have a lot of time, though.
		nevertheless	Nevertheless, she doesn't have a lot of time.
		however	However, she doesn't have a lot of time.
		despite	despite not having a lot of time.
	0	though	She decided to wear jeans, though.
		nevertheless	Nevertheless, she decided to wear jeans.
		however	However, she decided to wear jeans.
		despite	despite deciding to wear jeans.
	−	though	She has a lot of free time, though.
		nevertheless	Nevertheless, she has a lot of free time.
		however	However, she has a lot of free time.
		despite	despite having a lot of free time.
Jim bought a brand-new BMW convertible.	+	though	It was rather cheap, though.
		nevertheless	Nevertheless, it was rather cheap.
		however	However, it was rather cheap.
		despite	despite it being rather cheap.
	0	though	It is red, though.
		nevertheless	Nevertheless, it is red.
		however	However, it is red.
		despite	despite it being red.
	−	though	It was expensive, though.
		nevertheless	Nevertheless, it was expensive.
		however	However, it was expensive.
		despite	despite it being expensive.
Sandra went to church on Sunday.	+	though	She doesn't believe in God, though.
		nevertheless	Nevertheless, she doesn't believe in God.
		however	However, she doesn't believe in God.
		despite	despite not believing in God.
	0	though	She has blond hair, though.
		nevertheless	Nevertheless, she has blond hair.
		however	However, she has blond hair.
		despite	despite having blond hair.
	−	though	She's very religious, though.
		nevertheless	Nevertheless, she's very religious.
		however	However, she's very religious.
		despite	despite being very religious.
Joe won the karate tournament.	+	though	He had a bad hangover, though.
		nevertheless	Nevertheless, he had a bad hangover.
		however	However, he had a bad hangover.
		despite	despite having a bad hangover.

	0	though	He drank coffee after his last fight, though.
		nevertheless	Nevertheless, he drank coffee after his last fight.
		however	However, he drank coffee after his last fight.
		despite	despite drinking coffee after his last fight.
	−	though	He has been training for years, though.
		nevertheless	Nevertheless, he has been training for years.
		however	However, he has been training for years.
		despite	despite having trained for years.
The bathroom floor is very clean.	+	though	I haven't cleaned it this week, though.
		nevertheless	Nevertheless, I haven't cleaned it this week.
		however	However, I haven't cleaned it this week.
		despite	despite not having cleaned it this week.
	0	though	The towels are fresh, though.
		nevertheless	Nevertheless, the towels are fresh.
		however	However, the towels are fresh.
		despite	despite the towels being fresh.
	−	though	I cleaned it this morning, though.
		nevertheless	Nevertheless, I cleaned it this morning.
		however	However, I cleaned it this morning.
		despite	despite having been cleaned this morning.
This blueberry muffin looks delicious.	+	though	It doesn't taste good, though.
		nevertheless	Nevertheless, it doesn't taste good.
		however	However, it doesn't taste good.
		despite	despite it not tasting good.
	0	though	It's gluten free, though.
		nevertheless	Nevertheless, it's gluten free.
		however	However, it's gluten free.
		despite	despite it being gluten free.
	−	though	It tastes good, though.
		nevertheless	Nevertheless, it tastes good.
		however	However, it tastes good.
		despite	despite it tasting good.
There is no hot water in the shower.	+	though	The plumber was here this morning, though.
		nevertheless	Nevertheless, the plumber was here this morning.
		however	However, the plumber was here this morning.
		despite	despite the plumber being here this morning.
	0	though	Jane took a bath instead, though.
		nevertheless	Nevertheless, Jane took a bath instead.
		however	However, Jane took a bath instead.
		despite	despite Jane taking a bath instead.
	−	though	The shower has been broken for a week, though.
		nevertheless	Nevertheless, the shower has been broken for a week.
		however	However, the shower has been broken for a week.
		despite	despite the shower being broken for a week.

A company has advertised a new drug to treat asthma.	+	though	It is not on the market yet, though.
		nevertheless	Nevertheless, it is not on the market yet.
		however	However, it is not on the market yet.
		despite	despite it not being on the market yet.
	0	though	The drug is for children over the age of 3, though.
		nevertheless	Nevertheless, the drug is for children over the age of 3.
		however	However, the drug is for children over the age of 3.
		despite	despite it being for children over the age of 3.
	−	though	Studies showed promising results, though.
		nevertheless	Nevertheless, studies showed promising results.
		however	However, studies showed promising results.
		despite	despite studies showing promising results.
Palm trees grow in southern Ireland.	+	though	They are not native to the island, though.
		nevertheless	Nevertheless, they are not native to the island.
		however	However, they are not native to the island.
		despite	despite not being native to the island.
	0	though	Jane finds them beautiful, though.
		nevertheless	Nevertheless, Jane finds them beautiful.
		however	However, Jane finds them beautiful.
		despite	despite Jane finding them beautiful.
	−	though	The winters are mild enough, though.
		nevertheless	Nevertheless, the winters are mild enough.
		however	However, the winters are mild enough.
		despite	despite the winters being mild enough.

A comparative study of German *auch* and Italian *anche*

Functional convergences and structural differences

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In this paper we carry out a systematic comparison between the German and Italian particles *auch* and *anche* (meaning "also") and provide a formal account of the data couched within the cartographic approach to syntax (Cinque 1999; Rizzi 1997; Cinque & Rizzi 2010). Based on the available literature and on novel data, we show that in both languages this particle exhibits three main functions: (i) additive particle; (ii) connective adverb (residual in Italian) and (iii) modal particle – which correlate with a different syntactic status of the particle (head or maximal projection) and with a different position within the clause. When used as an additive particle, *auch/anche* lexicalize a head in the lower portion of the clause and function as focalizers (in the sense of Kayne 1998, 2005). When they are connective adverbs, they are maximal projections hosted in a functional projection dedicated to adverbs. Finally, when used as a modal particle *auch/anche* are heads found in the higher portion of the IP layer. German *auch* and Italian *anche* are however not identical, since when used as an additive particle, German *auch*, but not Italian *anche*, is compatible with discontinuous constructions in which a given XP in the scope of *auch* can be moved to Spec,CP leaving *auch* within the clause. Moreover, German *auch* is compatible with a variety of illocutionary types in its use as a modal particle, whereas *anche* can only be used in declarative clauses. We show that the former fact follows from asymmetries in movement options between the two languages (topics move in German but not in Italian) and the latter results from the nature of *anche* as a polarity item.

Keywords: additive particle, connective adverb, focalizer, verum focus, Common Ground management, polarity item, concessive clause

1.   Introduction

In this paper we carry out a systematic comparison between the German and Italian particles *auch* and *anche* meaning "also". We will show that in both languages *auch/anche* exhibit three functions: (i) additive particle; (ii) connective adverb and (iii) modal particle which are exemplified in (1).[1]

(1)   Additive particle:
a.   Ich fühl' mich leer und verbraucht,
alles tut mir weh
hab' Flugzeuge in meinem Bauch.
Kann nichts mehr essen,
kann dich nicht vergessen
aber **auch das** gelingt mir noch!
'I feel empty and worn out, I have pain everywhere, I have airplanes in my stomac. I can eat nothing, I can forget nothing, but this too I can still do.'
(https://www.songtexte.com/songtext/herbert-gronemeyer/
flugzeuge-im-bauch-33dcf495.html)
a′.   "**Anche Gesù** fu migrante" scrivono i ragazzi della quarta classe della scuola Guttuso di Villagrazia di Carini. "Il suo viaggio non fu piacevole, come non lo è per i tanti migranti"
'"Jesus was also a migrant" wrote the students of the fourth class of the Guttuso school in Villagrazia di Carini. "His journey was unpleasant, as it is for many migrants".   (La Repubblica – 23 luglio 2019
https://ricerca.repubblica.it/repubblica/archivio/repubblica/
2019/07/23/anche-gesu-fu-migrante10.html?ref=search)

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1.   The German written data discussed in the paper is taken from the literature, from the web or from DeReKo (Deutsches Referenzkorpus), the German Reference Corpus, the largest collection of electronic corpora of written texts which can be searched using COSMAS 2. In particular, our DeReKo data is taken from newspaper texts. The German spoken data stems from the Database for Spoken German DGD (*Datenbank für Gesprochenes Deutsch*), in particular from the subcorpus FOLK (*Forschungs- und Lehrkorpus für Gesprochenes Deutsch*) which covers a broad range of conversation types (private, institutional and public).

The Italian data is taken from the literature, from the web and from the authors' competence as native speakers of Italian. Note that the three authors are speakers of different Northern Italian varieties (Trentino, Lombardo, Veneto), and this might have an effect on the grammaticality judgments they provided, especially as far as the usages of *anche* as a modal particle are concerned. As discussed in Cognola & Schifano (2018 a, b), Italian modal particles are in fact subject to a high degree of regional variation involving the TAM (the system of Tense, Aspect and Mood) contexts allowing for the presence of the modal particle.

Connective adverb:

b.   War John Maynard Keynes mutig, als er 1936 die "General Theory" ver-
öffentlichte? Das Buch stellte eine große theoretische Leistung dar, die in
sehr kurzer Zeit erarbeitet wurde und ein Leitstern bleibt. […] **Auch** war
er von einer exzellenten Schülerschar umgeben, deren Mitdenken ihm den
Erfolg erleichterte.

'Was John Maynard Keynes corageous when he published the "General
Theory" in 1936? This book represents a great theoretical contribution,
which was elaborated in a short time and remains a milestone. […]
Moreover he was surrounded by excellent students whose collaboration
contributed to his success.'   (Süddeutsche Zeitung – 02.01.2018, S. 17;
Eine Meinung, einer Meinung U18/JAN.00055)

b′. Preparati per tempo a una professione; anche, evita la compagnia dei
perdigiorno.

'Prepare yourself for a profession in time; also, avoid the company of wast-
rels.'   (Sabatini/Coletti 1997)

Modal particle:

c.   Und sei **auch** brav!

'You be good, okay?'   (Thurmair 1989: 158)

c′. Può **anche** darsi che siamo noi dei media che non aiutiamo la politica

'It may well be, that we in the media are the ones who don't help politics.'
https://www.facebook.com/175880409625831/posts/866665190547346/

We show that these three functions correspond to three different underlying struc-
tures in which the particle is either a head or a maximal projection (connective
adverb). Additive particles are heads of a functional projection in the lower portion
of the clause in both languages and function as focalizers (Kayne 1998, 2005). We
will show that when used as focalizers *auch* and *anche* can both be analyzed along
the lines proposed by Kayne (1998, 2005), Munaro (2012) and Cognola & Schifano
(2018c) according to which *anche* is a head which attracts the constituent in its
scope to its specifier and then moves to a higher head (lowFocus^0 in our account).
The presence of discontinuous constructions involving *auch* in German only, which
are characterized by fronting of the given/topicalized XP in the scope of *auch* which
remains in its base position, will be shown to follow naturally from the movement
properties of German in which all topics move. Therefore, when fronted the given
constituent in the scope of *auch* leaves a trace in its base position – an option that is
ruled out in Italian since in this language fronted topics never undergo movement
(Cinque 1990).

When used as a connective adverb with the meaning of "moreover", *auch/anche*
are maximal projections and lexicalize the Spec position of a functional projection
in the IP area. This usage is characterized by the possibility of fronting *auch/anche*,

which is possible due to its status as a maximal projection (see Cardinaletti & Starke 1999). This option is residual in Italian (high registers, as it is in German, as our results show, see Section 2.2 below), and we propose that *anche* only exhibits the status of a head in the present-day language.

The last function of *auch/anche* is that of a modal particle. In this function we propose that it lexicalizes a head (like modal particles in general, see Thurmair 1989 among others) in the higher portion of the IP area (like modal particles in general, see Coniglio 2011 among others). When used as a modal particle *auch/anche* contributes to the expressive meaning of the proposition it appears in and characterizes the utterance as a mitigation/explanation of a preceding utterance. According to Thurmair (1989) this meaning emerges from the feature "expected" and the basic meaning of the lexical element *auch*, i.e. addition. The function of *auch* as a modal particle is therefore that of adding (basic meaning of *auch*) the proposition in which it appears to the Common Ground / context, putting it into relation with a previous utterance. In German, *auch* as a modal particle is compatible with a wide range of illocutionary types, which points to a high level of grammaticalization of this function. In Italian, on the contrary, the usage of *anche* as a modal particle is restricted with respect to (i) the TAM contexts in which the particle can show up (*anche* is only compatible with epistemic TAM contexts) and (ii) the proposition's illocutionary types (*anche* is only compatible with declaratives only). This finding, far from indicating an idiosyncratic behaviour of *anche*, confirms the results of research on Italian modal particles in contrast to their German counterparts (Cognola & Schifano 2018 a, b, c). Based on Cognola & Schifano's (2018 b) account for Italian *ben* we show that these differences in the distribution between German *auch* and Italian *anche* follow from (i) the fact that *anche* is a polarity item in Italian but *auch* is not a polarity item in German (therefore, when *anche* or its negative counterpart *neanche* appear in the proposition, PolarityP in the left periphery is activated) and (ii) different structures of the left periphery (it hosts several FPs in Italian and it is more reduced in German).

The last function of the particle, which is broadly attested in Italian and more restricted in German, is that of a concessive element. We propose for Italian that the particle expresses a *verum focus* reading in this usage, i.e. a focus on the truth value of the whole proposition rather than on a single constituent (Höhle 1988, 1992). This meaning follows directly from its usage as a modal particle licensed by PolarityP. More specifically, we suggest that *anche* functions like a Common Ground managing operator (Krifka 2008, Repp (2013)) and is connected with a VERUM operator in the left periphery whose function is to signal that the proposition in which it appears should be added to the Common Ground. The concessive meaning emerges here through a concessive argumentation in which the stressing

of the truth value of a proposition implies the need of a correction in the following sentence (like the *zwar… aber* construction in German roughly corresponding to the English construction *it can well be that…but*).

The account proposed in this paper demonstrates that *auch/anche* are elements with identical functions in the languages, and the differences found in their syntax emerge from language-specific properties, such as the properties of movement (topics move in German but not in Italian) or the structure of the left periphery (multiple FPs in Italian but not in German). Moreover, in all functions in both languages the basic additivity meaning of *auch/anche* is always present: what varies is the environment in which the particle operates.

(2) *Addition:*
    a.   Additive particle (head):   adds the XP in the scope of the particle to the sentence;
    b.   Connective adverb (Spec):   puts the sentence in which it appears in relation to the previous sentences;
    c.   Modal particle (head):   puts the proposition in which it appears in relation to the previous utterance;
    d.   Modal particle (head, Italian): Common Ground management element licensed by the operator VERUM.

The paper is organized as follows. In Section 2 we illustrate and account for the usages of *auch/anche* as an additive particle and as a connective adverb. Section 3 is devoted to the function of *auch/anche* as a modal particle. In Section 4 we summarize the paper's main goals.

2. *Auch* and *anche* as additive particles and adverbs

2.1 Additive particle

2.1.1 *Main properties*

The prototypical function of *auch/anche* is that of an additive particle. This function is exemplified in (3) and (4) for both languages. The particles appear within the clause or in the sentence-initial position with no restrictions. In these configurations the pragmatic interpretation of the particle and the XP in its scope is that of a focus.

(3)   **Auch** Sie   können wieder jünger   werden
      also   you can.3PL again   more   younger become
      'You too can get younger again'   (Book title, Noman W. Walker, 2015, *Auch Sie können wieder jünger werden*. Goldmann)

(4)   A: Hans und Anna haben   bei Lucie angerufen
           Hans and Anna have.3PL at   Lucie phoned
      B: **Auch** Peter hat   bei Lucie angerufen.
           Also Peter has.3SG at   Lucie phoned
           'Hans and Anna called Lucie. Also Peter called Lucie'

                                              (Pasch et al. 2003: 139)

(5)   Gianni e   Anna hanno   telefonato a Lucia. **Anche** Pietro ha
      Hans   and Anna have.3PL phoned   to Lucie. Also   Peter   has.3SG
      telefonato a   Lucia
      phoned   to Lucia
      'Gianni and Anna called Lucie. Also Pietro called Lucie'

When used as an additive particle *auch* and *anche* typically precede the constituent in their scope. For German the order XP-*auch* is judged ungrammatical by Pasch et al. (2003: 577) as in (6):

(6)   *[Meine Freundin in Australien] **auch** hat davon gehört
      'My friend in Australia has also heard about that.'   (Pasch et al. 2003: 577)

As for Italian, the order XP-*anche* is in general less felicitous than the order *anche*-XP (De Cesare 2015: 37–38). This also seems to hold for Northern Italian dialects (see Munaro 2012 on *anche* in Veneto dialects):

(7)   a.   A: Mario ha comprato quaderni e penne
           B: ?[il LIBRO]$_{DA}$ **anche** ha comprato
           'A: He has bought notebooks and pens.
           B: He has bought the book also'
      b.   *Toni **anca** vien   Veneto dialects (Munaro 2012: 108)
           Toni also   comes

Such a word order would be felicitous in a context such as (8) with a break between the XP and *anche* and a focus interpretation of the XP preceding *anche* (see Munaro 2012 for a similar observation for some Veneto dialects).

(8)   (*Mother playing with his son who keeps on bringing her toys from a box:*)
      a.   UNA MACCHININA, **anche**, mi   hai   portato?!
           a   car   also   to me have.2SG brought
           'You have brought me a car?!'
      b.   TONI, **anca**, vien   Veneto dialects (Munaro 2012: 108)
           Toni   also   comes
           'It is Toni who also arrives.'

2.1.2 *Discontinuous constructions*

In German (as in Dutch and other Germanic languages, see Benazzo & Dimroth 2015: 12 and Altmann 1976: 261, Sudhoff 2010: 109, 2011) *auch* with an additive function can be separated from the constituent in its scope giving rise to a discontinuous construction.

This is illustrated in the example in (9) (taken from Benazzo & Dimroth 2015: 12). In this sentence *auch* scopes over the syntactic subject *Johannes*, even though they are not contiguous and *auch* bears nuclear accent whereas *Johannes* can bear a secondary accent (see Reis & Rosengren 1997: 241–246).

From the point of view of information structure, *Johannes* is part of the background information and realises presupposed information (Krifka 1999). According to the classification proposed by Frascarelli & Hinterhölzl (2007: 88), *Johannes* can be analysed as a contrastive topic since it induces alternatives such as *Paul*. Following standard practice, we indicate stressed *auch* with capital letters.

(9) (*Paul went on holiday*)
Johannes ist AUCH in den Urlaub gefahren
Johannes is   also   in the holiday gone
'Johannes also went on holiday.'

According to Reis & Rosengren (1997: 249) and Sudhoff (2008: 455, 2010: 64), the XP in the scope of *auch* can also be dropped in discontinuous construction. This holds for a subject (see 10a) as well as for an object (see 10b).

(10) a. Ist AUCH schon   fertig
is   also   already finished
'It is also already finished.'   (Sudhoff 2010: 64)
b. Hab ich AUCH schon   erledigt.
have I   also   already finished
'I have already finished this, too.'   (Reis & Rosengren 1997: 249)

In this case, the dropped constituent in the scope of *auch* refers to a presupposed, given element that has already been mentioned, as shown in the following example that we constructed:

(11) A: Im Sommer werde ich Urlaub machen und den Aufsatz fertig schreiben.
B: Und wie sieht es mit deinem Buch aus?
A: werde ich AUCH fertig schreiben.
'A: In summer I will go on holiday and finish the paper.
B: And what about your book?
A: I will also finish it.'

In Italian it is not possible to separate *anche* from the constituent over which it has scope.[2]

   (12)   A: Peter è andato in vacanza
                 Peter is gone   on holiday
            B: Gianni è **anche** andato in vacanza
                 Gianni ist also   gone   on holiday
           Reading 1:   he did not stay at home: *anche* scopes on the VP
           ?Reading 2: Gianni as well

If *anche* and the constituent on which it has scope are separated, reading 2 is reached by inserting a pronoun coindexed with the fronted XP in the scope of *anche* (Kolmer 2012: 191, De Cesare 2015: 40, Andorno 2008) in what looks like a clitic left dislocation or hanging topic constructions (see Benincà 1988; Cinque 1990).

   (13)   A: Peter è andato in vacanza
                 Peter is gone   on holiday
            B: Gianni$_j$ è **anche lui**$_j$ andato in vacanza
                 Gianni ist also   he gone   on holiday
           *Reading 1: he did not stay at home: scope on the VP
           Reading 2:   Gianni as well

The facts illustrated in (12) and (13) pattern with the ungrammaticality of the discontinuous construction in the absence of an overt strong pronoun in the scope of *anche* in a construction which should be analyzed as a hanging-topic construction.

   (14)   A: Quest'estate durante le vacanze finirò finalmente l'articolo
            B: Ma non dovevi finire il libro?
            A: Finirò **anche quello**! / Il libro, finirò **anche quello**/ *Lo finirò **anche**
           'A: In summer I will go on holiday and finish the paper.
            B: And what about your book?
            A: I will also finish it.'
   (15)   [Stella]$_i$ legge **anche lei**$_i$
           Stella   reads also   she
           'Stella also reads'   (De Cesare 2015: 40)

2.1.3   *Derivation*

The data discussed in Sections 2.1.1 and 2.1.2 are summarized in Table 1.

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2. Note that our judgments on the sentences in (11) are also shared by speakers of Southern Italian varieties (Silvio Cruschina, pers.comm.).

Table 1. Syntactic distribution of *auch/anche* used as an additive particle

	Additive particle			
	Sentence-initial position		Within the clause	
	Word order	Info structure	Word order	Info structure
German	auch + XP	Focus	auch + XP	Focus
			Ø/XP … auch	Topic Ø …AUCH *Focus … AUCH
Italian	anche + XP	Focus	anche + XP *Ø/XP … anche	Focus –

We see that both languages pattern together with respect to the properties of *auch/anche* used as an additive particle in the sentence-initial position. The preferred word order is *auch/anche* + XP whereas the inverted order is marginal. The two languages differ with respect to the properties of *auch/anche* within the clause. In this position both allow for the sequence *auch/anche*+XP; in German only a discontinuous structure featuring an XP in the sentence-initial position and *auch* within the clause is possible. The fronted XP in the scope of *auch* is always a topic in German; when a familiar topic is involved, topic-drop can take place.

In order to account for the symmetries and asymmetries between German *auch* and Italian *anche* we start out from the idea that both elements function as focalizers. With "focalizers" we refer to adverbial elements such as *even, only* which have the capability of focalizing a constituent and have scope on a constituent or on the whole sentence. In the literature there is no agreement on the fact that "focalizers" are always connected with a focus reading. De Cesare (2010) argues that in Italian focalizers do not always take foci in their scope. A similar objection also appears to hold for German, as the following examples show:

(16) a. Hier sind Profis am Werk aber **auch** Profis haben Gefühle, denen sie an diesem besonderen Tag mehr Raum gewähren als üblich.
'Here professionals work, but professionals also have feelings, which in this special day play a more importan role than usual.'
(U18/JAN.00031 Süddeutsche Zeitung, 02.01.2018, S. 27; Die 13-Uhr-Familie)

b. Qui ci sono dei professionisti al lavoro, ma **anche** i professionisti hanno un cuore.
'Here professionals work, but professionals also have feelings.'

In the Romance languages, the construction in (16) is characterized by the fact that the fronted phrase must either directly resume an identical phrase in the

immediately preceding discourse or be inferentially linked to such a phrase (Cinque 1990), a property that Leonetti and Escandell-Vidal (2009) call "emphatic value". In Spanish, this construction is analysed as involving the fronting of an operator, whereas in Italian it is assumed to involve a kind of topicalization (Benincà 1988; Cinque 1990, see also De Cesare 2010 for a similar claim). In our view the constituents associated with *auch/anche* are always foci, i.e. by saying *anche i professionisti* the speaker implies that "the professionals" should be added to the list of items for which the sentence holds true. In our view, from this follows that "the professionals" has to be taken as a focus constituent. The same holds for the constituents in the scope of German *auch* with nuclear stress discussed in Section 2.1.2. Let us now provide a formal account of the syntax of *auch/anche* as focalizers.

Following Munaro (2012) on *anche* in some Veneto dialects and Cognola & Schifano (2018 c) on *ben* and *mica*, we propose that the syntactic behavior of Italian *anche* can be accounted for through Kayne's (1998, 2005) analysis of focalizers according to which *anche* is a head which attracts the constituent in its scope and then moves to a higher head. After this movement has taken place, the focalizer and the XP in its scope can be fronted to left periphery, whose structure for Italian is the one given in (17), following Benincà 2001; Rizzi 1997; Rizzi & Bocci 2017 among many others. We assume that the left periphery is composed of hierarchically ordered FPs. Force is the highest head and it is connected with illocutionary force and clause-type (see Truckenbrodt 2006). Fin is the lowest head whose function is "to expresses the finite or non-finite character of the clause, agreeing in finiteness with the finite or non-finite morphology of the clause-internal predicate." (Rizzi and Bocci 2017: 3). Like Benincà & Poletto (2004) and Frascarelli & Hinterhölzl (2007), we assume that the different types of topics are hosted in dedicated hierarchically ordered FPs. Shift/Aboutness topics (hosted in ShiftP) are constituents which are "newly introduced, newly changed or newly returned to" (Givón 1983, in Frascarelli & Hinterhölzl 2007: 87–88); contrastive topics (hosted in ContrP) are constituents which introduce "alternatives which have no impact on the focus value and creates oppositional pairs with respect to other topics (Kuno 1976; Büring 1999)" (Frascarelli & Hinterhölzl 2007: 88); a familiar topic (hosted in FamP) is a "given or accessible (cf. Chafe 1987) constituent, which is typically destressed and realized in a pronominal form; when a familiar topic is textually given and d-linked with a pre-established aboutness topic, it is defined as a continuing topic (cf. Givón 1983)" (Frascarelli & Hinterhölzl 2007: 88). Only familiar topics can be multiple (starred). FocusP is the position hosting focussed constituents (and possibly other operators); this position is generally unique (see the ban on two foci in most languages) (Rizzi 1997, Benincà 2001). We propose that the PolarityP encodes polarity and it is hosted below FocusP in the left periphery (Laka 1990; Hernanz 2010 and Battllori & Hernanz 2013; Cognola & Schifano 2018 b). Unlike wh-elements and foci, which are moved to the left periphery in Italian, all topics are merged there (see Cinque 1990).

(17) [$_{\text{FORCE-P}}$ [$_{\text{SHIFT-P}}$ [$_{\text{CONTR-P}}$ [$_{\text{FAM-P}}$* [$_{\text{FOCUS-P}}$ [$_{\text{POLARITY-P}}$ [$_{\text{FIN-P}}$ [$_{\text{IP}}$ finite verb]]]]]]]]]

In (18)–(19) we illustrate how the derivation works. Let us start with the case in which *anche* modifies the direct object appearing after the past participle. In this word order the direct object is typically a new-information focus. For this context we assume (unlike Kayne's original analysis) that *anche* lexicalizes the head of an FP below the lowFocusP of the vP periphery (Belletti 2004). *Anche* attracts its scope to its Spec position and then moves higher to the head of LowFocusP in order to be focussed. The past participle moves to the edge of the vP phrase above the vP periphery.[3]

(18) Ho   incontrato **anche** Mario
       have.1SG met   also   Mario
       'I have also met Mario.'

(19) a. the direct object moves to Spec,FP
          [$_{\text{Spec,FP}}$ Mario [$_{\text{F°}}$ anche [$_{\text{V°}}$ incontrato ~~Mario~~]]]
      b. *anche* moves to lowFocus°
          [$_{\text{LowFocus°}}$ anche [$_{\text{Spec,FP}}$ Mario [$_{\text{F°}}$ ~~anche~~ [$_{\text{V°}}$ incontrato ~~Mario~~]]]]
      c. the past participle moves to the edge of the lower phase
          [$_{\text{F°}}$ incontrato [$_{\text{LowFocus°}}$ anche [$_{\text{Spec,FP}}$ Mario [$_{\text{F°}}$ ~~anche~~ [$_{\text{V°}}$ ~~incontrato~~ ~~Mario~~]]]]]

For the case in which *anche* and the direct object in its scope are fronted (in this case they are typically contrastively focussed) we propose the derivation in (20). The only difference between (19) and (20) is in the position of *anche* and of the constituent in its scope: in (19) *anche* moves to LowFocus° in order to have the object in its scope, whereas in (20) *anche* and the object in its scope are moved as a remnant to Spec,FocusP of the high left periphery.

(20) **Anche** Mario ho   incontrato
       also   Mario have.1SG met
       'I have also met Mario.'
      a. the direct object moves to Spec,FP
          [$_{\text{Spec,FP}}$ Mario [$_{\text{F°}}$ anche [$_{\text{V°}}$ incontrato ~~Mario~~]]]
      b. *anche* moves to lowFocus°
          [$_{\text{Low-Focus°}}$ anche [$_{\text{Spec,FP}}$ Mario [$_{\text{F°}}$ ~~anche~~ [$_{\text{V°}}$ incontrato ~~Mario~~]]]]
      c. the past participle moves to the edge of the lower phase
          [$_{\text{F°}}$ incontrato [$_{\text{Low-Focus°}}$ anche [$_{\text{Spec,FP}}$ Mario [$_{\text{F°}}$ ~~anche~~ [$_{\text{V°}}$ ~~incontrato~~ ~~Mario~~]]]]]

---

3. We assume that this movement can have the form of head movement or of remnant movement. When *anche* has wide scope, as in cases like *Ho anche incontrato Mario*, we assume that the whole VP is attracted to the scope of *anche*. We thank an anonymous reviewer for pointing this out. Note that in our approach we do not adopt Kayne's WP projection, i.e. the projection responsible for linear word order.

    d.   remnant of the lower phase to Spec,FocusP via the edge of the lower phrase (through the Spec of the FP hosting the past participle) due to the cyclicity of movement (see Chomsky 2001 and Cognola 2013):
$[_{Spec,FP}$ anche Mario $[_{TP}$ pro ho $[_{Spec,FP}$ ~~anche Mario~~ $[_{F°}$ incontrato $[_{Low-Focus°}$ anche $[_{Spec,FP}$ ~~Mario~~ $[_{F°}$ ~~anche~~ $[_{V°}$ ~~incontrato Mario~~$]]]]]]]]$

According to the proposed structure the sequence *anche + XP* moves as a remnant when fronted to a FocusP of the high left periphery. The prediction of the analysis based on the structure of the left periphery given in (17) is that the fronted *anche+XP* sequence is compatible with a preceding topic. As shown in (21) this prediction is borne out.

(21)   Il   libro$_j$ **anche** Mario lo$_j$ ha   comprato
         the book also   Mario it   has bought
         'As for the book, Mario has also bought it.'

As discussed in Section 2.1.2 above, discontinuous constructions with *anche* are always instances of the hanging-topic construction. So, discontinuous constructions are only possible when a strong pronoun appears within the clause in the scope of *anche*, as repeated in (22).

(22)   Mario$_j$, ho   incontrato **anche** lui$_j$
         Mario have.1SG met   also   him
         'As for Mario, I have also met him.'

We propose that the nature of discontinuous constructions with *anche* follows from general properties of movement of constituents in Italian, more specifically from the fact that topics are never moved to CP but always merged there (Cinque 1990). Therefore the sentence-initial XP in a hanging-topic construction like (22) cannot be in the scope of *anche* in any step of the derivation and would not be interpretable as part of its scope. The additive reading can only be reached via the insertion of a pronoun within the clause in the scope of *anche*.

(23) $[_{Spec,TopicP}$ Mario $[_{TP}$ pro ho $[_{F°}$ incontrato $[_{LowFocus°}$ anche $[_{Spec,FP}$ lui $[_{F°}$ ~~anche~~ $[_{V°}$ ~~incontrato lui~~$]]]]]]]$

Let us move to German. This language is characterized by the V2 rule: a head of the left periphery attracts the finite verb and needs an XP in its Spec in all main clauses (den Besten 1983; Holmberg 2015). In German the V2 rule corresponds to a linear restriction since this language is a strict V2 language. We assume the following structure for the German CP, which is composed of two FPs: ForceP connected with illocutionary force and clause-type (see Truckenbrodt 2006) and a lower FP encoding Topic and Focus interpretations.

(24)　[_FORCE-P_ Operator [_FP_ XP finite verb [_IP_]]]

We propose that *auch* also functions as a focalizer in German and that it should receive the same analysis given for Italian *anche*. In (25) we show the derivation of a sentence in which *auch* and the XP in its scope appear in the lower portion of the clause and are typically focussed. We propose that the linear word order results from the movement of the scope of *auch* to its Spec and further movement of *auch* to the head of lowFocus° (see Hinterhölzl 2006 for the presence of a lowFocusP in German).[4]

(25)　Ich　habe　　**auch** Peter getroffen
　　　　I　　have.1SG　also Peter　met
　　　　'I have also met Peter.'
　　　a.　the direct object moves to Spec,FP
　　　　　[_Spec,FP_ Peter [_F°_ auch [_V°_ getroffen ~~Peter~~]]]
　　　b.　*auch* moves to LowFocus°
　　　　　[_Low-Focus°_ auch [_Spec,FP_ Peter [_F°_ ~~auch~~ [_V°_ getroffen ~~Peter~~]]]]

When *auch* and the XP are fronted we propose that they move as a remnant like in Italian. Crucially, the XP in the scope of *auch* is focussed like in Italian.

(26)　**Auch** Peter habe　　　ich getroffen
　　　　also　Peter have.1SG I　　met
　　　　'I also met Peter.'
　　　a.　the direct object moves to Spec,FP
　　　　　[_Spec,FP_ Peter [_F°_ auch [_V°_ getroffen ~~Peter~~]]]
　　　b.　*auch* moves to LowFocus°
　　　　　[_Low-Focus°_ auch [_Spec,FP_ Peter [_F°_ ~~auch~~ [_V°_ getroffen ~~Peter~~]]]]
　　　c.　the past participle moves to the edge of the lower phase (higher FP)
　　　　　[_FP_ [_F°_ getroffen [_Low-Focus°_ auch [_Spec,FP_ Peter [_F°_ ~~auch~~ [_V°_ ~~getroffen Peter~~
　　　　　]]]]]]
　　　d.　remnant of the lower phase to Spec,FocusP via the edge of the lower phrase (through the Spec of the FP hosting the past participle) due to the cyclicity of movement (see Chomsky 2001; Cognola 2013):
　　　　　[_Spec,CP_ auch Peter [_C°_ habe [_TP_ ich [_Spec,FP_ ~~auch Peter~~ [_F°_ getroffen [_Low-Focus°_
　　　　　auch [_FP Spec,FP_ ~~Peter~~ [_F°_ ~~auch~~ [_V°_ ~~getroffen Peter~~]]]]]]]]]

4.　Following Kayne's (1994) Universal Base Hypothesis we assume that German is an underlying VO language. We are aware that this claim is not uncontroversial (see Haider 2010 among many others for arguments for an analysis of German as underlying OV). Note that the OV/VO status of German is tangent here and does not play any role in the proposed analysis.

In German it is possible to have discontinuous constructions involving *auch* and the XP in its scope. In these constructions the fronted XP is a presupposed/given constituent in the scope of *auch* appearing within the clause. The possibility of having discontinuous constructions of this type in German but not in Italian follows straightforwardly from the proposed account. As shown in (27) what happens in discontinuous constructions in German is that instead of moving *auch* and the XP in its scope to Spec,CP, the scope can move independently. Crucially, when this happens, the moved XP is interpreted as a topic. We thus propose that an XP in the scope of *auch* can only be fronted to the left periphery in the case it is presupposed and can potentially be topicalized in CP via movement (Holmberg 2015 among others for the idea that topics move in strict V2 languages like German). Therefore, in these discontinuous constructions the XP in the scope of *auch* escapes before getting focussed in order to be topicalized. However, after moving to Spec,CP the scope of *auch* will leave a trace in the lower phase thus making impossible the insertion of a pronominal copy.

(27) Peter habe   ich **auch** getroffen
      Peter have.1SG I   also   met
      'I also met Peter.'

  a. the direct object moves to Spec,auch
      $[_{\text{Spec,FP}}$ Peter $[_{\text{F}°}$ auch $[_{\text{V}°}$ getroffen ~~Peter~~ $]]]$

  b. *auch* moves to LowFocus°
      $[_{\text{Low-Focus}°}$ auch $[_{\text{Spec,FP}}$ Peter $[_{\text{F}°}$ ~~auch~~ $[_{\text{V}°}$ getroffen ~~Peter~~ $]]]]$

  c. the past participle moves to the edge of the lower phase (higher FP)
      $[_{\text{Spec,FP}}$ $[_{\text{F}°}$ getroffen $[_{\text{Low-Focus}°}$ auch $[_{\text{Spec,FP}}$ Peter $[_{\text{F}°}$ ~~auch~~ $[_{\text{V}°}$ ~~getroffen Peter~~ $]]]]]]$

  d. remnant of the lower phase to the edge of the lower phrase:
      $[_{\text{Spec,FP}}$ auch Peter $[_{\text{F}°}$ getroffen $[_{\text{Low-Focus}°}$ ~~auch~~ $[_{\text{Spec,FP}}$ ~~Peter~~ $[_{\text{F}°}$ ~~auch~~ $[_{\text{V}°}$ ~~getroffen Peter~~ $]]]]]]$

  e. Peter is extracted from the edge of the lower phase and moved to Spec,Focus in the CP layer:
      $[_{\text{Spec,CP}}$ Peter $[_{\text{C}°}$ habe $[_{\text{TP}}$ ich $[_{\text{Spec,FP}}$ auch ~~Peter~~ $[_{\text{F}°}$ getroffen $[_{\text{Low-Focus}°}$ ~~auch~~ $[_{\text{Spec,FP}}$ ~~Peter~~ $[_{\text{F}°}$ ~~auch~~ $[_{\text{V}°}$ ~~getroffen Peter~~ $]]]]]]]]]$

2.2   Connective adverbs

Auch/anche function as an adverbial element with the meaning *moreover* appearing in the sentence-initial position or within the clause.

We illustrate this for German first. As shown in (28) and (29) we see that *auch* can appear within the clause and its function is to connect two clauses.

(28) (UD is suggesting JO to install a roof hatch in his cellar in order ventilate it)

0094 UD ja (.) müsste man halt dann (…) eine Dachluke einbauen, ne? 0095 JO hm_hm 0096 UD (.) das würde gehen 0097 (1.3) 0098 UD wär **auch** nicht die erste Dachluke. Wir haben da auch Dachluken, ich glaube nicht, dass das überhaupt auffällt, wenn ich da eine Dachluke einbaue.

'0094 UD well (.) you just have to install a roof hatch 0095 JO hm_hm 0096 UD (.) it would be ok 0097 (1.3) 0098 UD **moreover**, that wouldn't be the first roof hatch either, we also have roof hatches, I don't think that's flashy if one installs a roof hatch'   (FOLK_ E_00066 trascript 2)

(29) (AM tells his friend what he found when he went to his old flat)

0658 AM: [es hat [**auch** noch niemand ein neues Namensschild]$_{\text{middle field}}$ reingemacht] und [mein Zimmer war [**auch** leer.]$_{\text{middle field}}$]

'0568 AM: There was no new name on the door and, moreover, my room was empty.'   (FOLK_E_00049 Studentisches Alltagsgespräch/
conversation among students)

With this function *auch* can also appear in the sentence-initial position as shown in (30). However, we believe that this option belongs to a written formal register, since no occurrence of this use of *auch* was found in 100 randomly extracted tokens of *auch* in the FOLK-corpus.

(30) https://pensexpert.de/ueber-pensexpert/das-team/
C.W. Geschäftsführer PensExpert GmbH
Der diplomierte Betriebswirt ist seit 1998 im Finanzwesen tätig und für die Entwicklung, Konzeption und Umsetzung unserer Vorsorgemodelle für Unternehmen verantwortlich. Auch ist er Vorstand der Treuhandgesellschaft PensTrust.
C.W. manager PensExpert GmbH
I have a degree in Economics and I have worked since 1998 in finance, as a manager responsible for the development, creation and realization of pension model for companies. I am also a board member of the trust company PensTrust.

The adverbial function of Italian *anche* in the sentence-initial position is ruled out in present-day Italian and belongs to a high/literary register (De Cesare 2004: 193):

(31) preparati per tempo a una professione; **anche**, evita la compagnia dei perdigiorno   (Sabatini & Coletti 1997, in De Cesare 2004: 193)
'Prepare yourself for a profession in time; also, avoid the company of wastrels!'

(32)   "Ma smettila", disse brutalmente, "ora, **anche**, mi vuoi fare male"

    (Moravia, in De Cesare 2004: 193)

    '"Stop it!", s/he brutally said, "now you also want to hurt me"'

(33)   "I signori fanno le iniezioni. E lei si è abituata con loro. Ma forse ha un po' di tisi, **anche**."   (Vittorini, in De Cesare 2004: 193)

    'The lords give injections. And she got used to them. But, maybe she has consumption, as well.'

We propose that German exhibits two heterosemous forms of *auch* (see Diewald 2015): the additive particle analysed above (with head status) and the connective adverb, which we suggest has the status of a maximal projection and thus functions like an ordinary maximal projection in allowing for fronting (Cardinaletti & Starke 1999).

    Present-day Italian, on the contrary, exhibits only in a residual form a heterosemous form for *anche* with the function of a connective adverb and the status of a maximal projection, given its grammaticality in high/literary registers and the presence in Old Italian of examples such as ((34a) taken from Franco et al. 2016: 247 and (34b) from Poletto (2014: 9)).

(34)   a.   **Anche** sono l'anime   tormentate nell'inferno di dolorosi pensieri.
            also   are the souls tormented in.the hell of painful   thoughts
            «Also the souls are tormented in the hell by painful thoughts.»

    (Giamboni, Trattato, 31, p. 152)

    b.   **Anche** dovresti   avere a memoria   (VeV 95)
            also   should.2sG have   to memory
            'You also should remember.'

We propose that when *auch/anche* are used as connectives, they are hosted in the highest Functional Projection of the left periphery, ForceP, in the C-layer. Adopting a strict cartographic approach, we would have to assume that the position hosting *auch/anche* used as connectives is the highest within ForceP, with the connective element scoping over FPs encoding the Speech act (see Coniglio & Zegrean 2012 for the idea that ForceP should be split up and Giorgi 2010; Hinterhölzl & Munaro 2015 and Badan 2020 for Speech act projections). We leave the exact cartography of *auch/anche* within ForceP for further research since this issue goes beyond the scopes of this paper.

3.   *Auch/anche* as modal particles

3.1   *Auch* as a modal particle

Since Bublitz (1978: 118) it has been known that German *auch* can also be used as
a modal particle, as in the following example:

(35)   Ali: Ich hab von dem Text nicht alles verstanden.
      Max: Naja, Deutsch ist *auch* nicht einfach
      'Ali: I didn't understand everything about the text.
      Max: Well, German is not easy at all.'   (Thurmair 1989: 155)

In the example (35) *auch* is not the connective adverb "moreover" nor an additive
particle meaning "also" but it exhibits a more faded meaning typical of modal parti-
cles, i.e. it expresses the speaker's attitude towards the proposition (see Weydt 1979,
König 1989, 1991, Abraham 1991, Coniglio 2011, Waltereit 2006, Diewald 1997,
2007 and Bayer, Hinterhölzl & Trotzke 2015; Bayer & Struckmeier 2017 for recent
works on the formalization of these elements within current syntactic theory). The
meaning of *auch* in (35) as a modal particle is that of indicating cause or mitigation.
According to Thurmair (1989) this meaning emerges from the feature "expected"
and the basic meaning of the lexical element *auch*. The function of *auch* as a modal
particle is therefore that of adding (basic meaning of *auch*) the proposition in which
it appears to the Common Ground / context putting it into relation with a previous
utterance (see also Diewald 1997 for a similar idea on the role of modal particles).
Since the propositon featuring *auch* is expected within the pragmatic context, its
final effect is that of mitigation.

     When used as modal particle, *auch*, like all modal particles, must appear within
the clause (middle field), does not bear nuclear accent, and scopes over the entire
clause.

     Importantly, when *auch* does not appear within the middle field the interpre-
tation in (35) is not available:

(36)   Ali: Ich hab von dem Text nicht alles verstanden.
      'Ali I didn't understand everything about the text.'
      a.   Max: #Naja, **auch** Deutsch ist nicht einfach.
      b.   Max: #Naja, **auch** ist Deutsch nicht einfach.
      c.   Max: #Naja, Deutsch **auch** ist nicht einfach.
      'Max: Well, German is not easy at all.'

As is typical for German modal particles, *auch* can only appear in sentences with
specific illocutionary force. According to Thurmair (1989: 155–160, see also
Abraham 2017: 88), *auch* appears in following sentence types:

a. declarative
b. wh-interrogative
c. wh-exclamative
d. polar interrogative
e. imperative

Let us illustrate the usages of *auch* in the different illocutionary types and the pragmatic contribution of the particle.

In (37) we consider an example of spontaneous speech in which *auch* appears in a declarative clause:

(37)   0508 NL Aber des is doch mit dem Übersetzen ganz gut ge[gangen, gut des
                                                            [war jetzt]
       0509 SMA   [Ja, waren **auch**]
              relativ einfache Sätze.
       '0508 NL But that went quite well with the translation, well, that was actually
       0509 SMA Yes, they were **also** relatively simple sentences'
                                            (FOLK E_0177, Sprachbiographisches Interview)

In this case, *auch* has an epistemic meaning since participant SMA adds new information as well as his own perspective concerning what NL has already said. In contrast to *auch* as a sentence connective (see Section 2.2), the modal particle encodes the speaker's perspectivation of a previous utterance or a state of affairs (see Abraham 2017: 81). In this example, SMA's utterance has the function of integrating and confirming NL's assessment.

In the following examples, *auch* is used in wh-interrogatives and in wh-exclamatives:

(38)   Es ist bitterkalt und der Regen schüttet unentwegt auf dich herab. Warum
       hattest du **auch** den verdammten Regenschirm vergessen?! Du drückst erneut
       die Klingel mit dem Namensschild Lindner.
       'It's bitterly cold and the rain is pouring down on you. Why did you forget the
       damn umbrella?! You press the bell with the Lindner name tag again.'
                   (https://www.wattpad.com/400210375-die-palette-d-paluten-ff-prolog)

(39)   (Forum with comments on Rosi's trip to the Outer Banks)
       Oh h Rosi. Jetzt bin ich echt froh das der Titel nicht geheissen hat.
       Outer Banks sehen und sterben. Dafür wär es ja wirklich viel zu früh. Was Du
       auch alles anstellst in deinem jugentlichen Leichtsinn also weisch!
       'Oh Rosi. Now I am really glad that the title was not called.
       Outer Banks see and die. It would be really much too early for that. You and
       your youthful recklessness!'   (https://www.amerika-forum.de/t/
                            collecting-fishing-piers-shells-lighthouses-2013-cape-
                                          may-assateague-obx.190915/page-30#post-4292263

(40) (In a forum on the Tour de France, users comment on doping)
Was seid ihr **auch** für eine langweilige Truppe, immer wieder die Leier vom Doping. Geht ihr eigentlich gestärkt durch den Tag wenn ihr das wieder mal absondert?
'What a bunch of boring people you are, always complaining about doping. What is it? You feel better during the day if you do these shootouts!'
(https://forum.tour-magazin.de/archive/index.php/t-222389.html)

Examples (38) and (40) are rhetorical questions; that is, they are not produced in order to obtain information, but rather to express reproach. It might be that the rhetorical interpretation is to be connected to the "irrelevance conditional" use of *auch* found for instance in free relatives (Was auch der alte Mann sagt, keiner hört ihm zu. "Whatever the old man says, nobody listens to him, cited from Bossuyt, De Cuypere, Leuschner 2018: 99) and universal concessive clauses (Was auch passiert, ich verlass dich nicht "whatever happens, I won't leave you", https://www.dietoten-hosen.de/diskographie/songs/ich-bin-die-sehnsucht-in-dir) analogously to English *ever*, see Bossuyt, De Cuypere, Leuschner (2018).[5] By using *auch*, the speaker signals that the content of the sentence is unexpected in his opinion. In this way, he intensifies his reproach. This analysis also holds for (39) – a wh-exclamative. From an illocutionary point of view, they both convey a kind of reproach. The modal particle *auch* enhances this illocutionary value by stressing – from the point of view of the speaker – the unexpectedness of the content of the sentence.[6]

For polar interrogatives and imperative sentences, *auch* also modifies the illocutionary force that is encoded by the sentence mode. Let us look first at (41) in which *auch* appears in a polar interrogative:

(41) (Lindor chocolate advertisement)
Hast du **auch** nichts vergessen? :) Damit jeder Tag zum zartschmelzenden Genuss wird, gibt es den LINDOR Riegel für dich – dein kleiner Glücksmoment für unterwegs.
'Haven't you forgotten anything? :) So that every day becomes a melt-in-the-mouth pleasure, there is the LINDOR bar for you – your little moment of happiness on the road.'
(https://zh-cn.facebook.com/LindtSwitzerland/posts/10156976430701011)

As with the rhetorical wh-questions with *auch* discussed above, the polar interrogatives in these two examples do not convey an information request. In polar

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5. We thank an anonymous reviewer for drawing our attention to this use of *auch*.

6. When used in these kinds of sentences (that is, rhetorical questions and wh-exclamatives), *auch* can also convey a scalar interpretation, as it indicates that – from the perspective of the speaker – the people involved are not expected to behave in the way that they do. The scalar interpretation has not been considered in this paper.

interrogatives, *auch* adds the content of the request to a list of other expectations that are assumed to be typical of the situation. For example, (42) refers to the fact that every traveller is expected not to forget anything on the train. In this way, the adhortative force of the request is mitigated. The same modification of the deontic value is also conveyed in imperative sentences with *auch* such as (38), taken from Thurmair (1989: 158):

(42)   Und sei **auch** brav!
       'You be good, okay?'

Nevertheless, this kind of sentence seems to be idiomatic and to become outdated.[7]

3.2   *Anche* as a modal particle

Modal particles have long been considered to be a typical German phenomenon absent in other languages. As a consequence, the identification of the class has mostly been confined to German linguistics, with the exception of comparative work by Waltereit (2001) on German-French/Italian, Masi (1996) on a German-Italian literary corpus, or on elicited data from a single variety and on single MPs (see Coniglio 2009, Cardinaletti 2011, 2015; Hinterhölzl/Munaro 2015; Cognola & Schifano 2018a, b, Schifano & Cognola 2020).

We propose that the modal usages of *anche* which we illustrate in this section and which is traditionally labeled "emphatic" (see Visconti 2009 and Thaler 2016 on It. *mica*) or "aspectual" (Franco et al. 2016: 237 on *neanche*) can be subsumed to those of the German modal particle *auch*.

In (43) we illustrate the function of *anche* as a modal particle. In this sentence *anche* clearly does not have the function of a connective adverb nor of an additive particle, but it operates at the expressive level of the utterance, rather than the propositional one, as is typical of modal particles (Coniglio 2008; Zimmermann 2011). The expressive meaning of *anche* is fully comparable to that of German *auch* and can be paraphrased in terms of mitigation / explanation. The role of *anche* is that of introducing (basic value of addition) a new, expected proposition to the context (B) with the final communicative effect of mitigating the frustration/disappointment of the hearer (A).

(43)   A: Ho fatto fatica a capire il testo
       B: Beh, il tedesco è **anche** una lingua difficile

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7.   We searched the "Belletristik des 20. und 21. Jahrhunderts" corpus in COSMAS II for "sei/seid auch" and "sei/seid auch brav" and other verbs such as mach/macht, geb/gebt in combination with *auch* without obtaining any result.

'A: I didn't understand everything about the text.
B: Well, German is not easy at all.'

(44) A: Oggi mi sono alzato con il mal di testa
B: Per forza, vai **anche** sempre a letto tardi.
'A   Today I got up with a headache.
B: Of course, you always go to bed late.'

In (43) and (44) *anche*, like German modal particles, must appear within the clause, does not bear nuclear accent, and scopes over the entire clause. However, *anche* is not fully identical to German *auch*. As discussed by Cognola & Schifano (2018a, b) Italian modal particles exhibit a much restricted range of distribution with respect to their German counterparts. The restrictions manifest themselves in two ways. First, Italian modal particles are typically restricted in terms of TAM contexts they are compatible with. Based on a questionnaire aiming at investigating a range of fine-grained contexts involving different TAM contexts tested with 28 native speakers from 15 localities, Cognola & Schifano (2018 a, b) show for the Italian particle *ben* that complex verb forms and modal verbs favour the presence of *ben*.[8]

(45) a.   Li avrei   *ben* mangiati i   cioccolatini   → ok in several varieties
I   would well eaten   the chocolate
b.   Li mangio *ben* i   cioccolatini   → ok in Trentino only
I   eat   well the chocolate
'I eat indeed / I would indeed eat the chocolate.'

Despite no quantitative data are available for *anche* it seems that a similar pattern is also found with this modal particle. In combination with a modal verb in a past tense (*imperfetto* or *condizionale passato*), *anche* has a deontic value (see Andorno 2000: 53, 54, 81) which is restricted to these contexts:

(46) a.   Potevi   **anche** pensarci!   (Andorno 2000: 54)
could.imperfetto.2SG also   think-of-it
'You should have thought of that!'

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8. Cognola & Schifano (2018a, b) show the properties of *ben* as a modal particle vary in Italian according to varieties. Trentino is the most liberal variety, since it allows for *ben* with all verb forms in all main clauses and in embedded clauses with root properties, whereas in Central/Southern Italian varieties *ben* is present in the passive competence of speakers. Other Northern varieties exhibit a transition system with different stages of grammaticalization of *ben* between Trentino (*ben* always grammatical) and Central/Southern varieties (*ben* highly restricted). For an account of the observed variation within current parameter theory see Schifano & Cognola (2020).

b.   C'era   **anche** da aspettarselo!
     expl.was.imperfetto.3sɢ also   to expect
     'We should have expected that!'
c.   Mi   sarei **anche** aspettata una   telefonata
     to me would also   expected a phone call
     'You should have made me a phone call!'

The second restriction on the distribution of *anche*, which is in line with observations made in Cognola & Schifano (2018a, b) on Italian *ben*, is that Italian modal particles are more restricted in terms of the type of illocutionary types they are compatible with. As is the case of *ben* in Italian varieties (with the exception of the regional Italian varieties spoken in Trentino and part of Veneto), *anche* can only be used as a MP in main declarative clauses.[9]

(47) *Eh tu, perché hai {**anche**} ficcato {**anche**} tutte le mie cose nel vecchio armadio?
                                                                (wh-interrogative)
      well you! Why have you also crammed also all my things in-the old wardrobe?

(48) *Che razza di nerd {**anche**} siete {**anche**}!   (wh-exclamative)
      what kind of nerds also are-you also

(49) *Sicuro **anche** di non aver dimenticato niente?   (polar interrogative)
      sure also of not having forgotten nothing

(50) *fa {**anche**} il bravo, {**anche**}!   (imperative)
      be also (the) good, also

3.3   Analysis of *auch/anche* as a modal particle

We propose that the usage of *anche* as a modal particle can be captured by Cognola & Schifano's (2018b) analysis of *ben*.

    In order to account for the function of *ben* as a modal particle Cognola & Schifano (2018b) start out from the structure in (51). Following standard claims (Coniglio 2008; Cardinaletti 2011; Zimmerman 2004, 2011), Cognola & Schifano (2018b) suggest that all modal particles express the speaker's attitude towards the propositional content of the clause and must be licensed by an illocutionary operator in ForceP (see Repp 2013; Zimmermann 2004, 2011). Since *ben* behaves like a polarity item (Laka 1990; Zanuttini 1997), being only compatible with positive

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9.   The only Italian element exhibiting the properties of a modal particle which is compatible with different illocutionary types is *mica* (see Cinque 1991).

propositions (whereas negative ones require *mica*), Cognola & Schifano (2018b) put forth that also PolarityP is involved in the licensing of *ben* (see Hernanz 2010 and Battllori & Hernanz 2013 for a similar claim for Spanish *bien*). Since any kind of focalization is ruled out in sentences featuring the modal particle *ben* in Italian, Cognola & Schifano (2018b) propose that the activation of PolarityP also involves the activation of FocusP (see also Poletto 2008 for the idea that the activation of PolarityP also involves the activation of FocusP).

(51) [$_{CP}$ [$_{ForceP}$ ASSERT [$_{TopicP}$ [$_{FocusP}$ Focus [$_{PolarityP}$ yes [$_{IP}$ [$_{NegPresuppositionalP}$ ben]]]]]]]]

We suggest that Cognola & Schifano's (2018 b) analysis of *ben* can be applied to account for the usage of *anche* as a modal particle. We put forth that *anche* appears in the head of a FP in the highest part of the IP layer (cf. Coniglio 2011 among others), and it always involves the presence of an illocutionary Operator in ForceP and the activation of both FocusP and PolarityP (see Coniglio & Zegrean 2012 for a similar mechanism). This follows from the fact that *anche* behaves as a polarity item being only grammatical in non-negated sentences – whereas in negated ones the negative form *neanche* must show up (see Munaro 2011, Franco et al. 2016).

(52) [$_{CP}$ [$_{ForceP}$ ASSERT [$_{TopicP}$ [$_{FocusP}$ Focus [$_{PolarityP}$ yes/no [$_{IP}$ [$_{FP}$ anche/neanche]]]]]]]]

In (53) we see an example of a negative sentence in which *anche* is ungrammatical and the negative polarity item *neanche* must be used instead.

(53) A: Ho fatto fatica a capire il testo
      B: Beh, il tedesco <u>non è</u> **neanche** / *****anche** una lingua facile
      'A I didn't understand everything about the text.
      B: Well, German is not easy at all.'

Conversely, when the sentence is positive, *neanche* is ruled out and *anche* is the only option available.

(54) A: Ho fatto fatica a capire il testo
      B: Beh, il tedesco è **anche** / *****neanche** una lingua difficile
      'A: I didn't understand everything about the text.
      B: Well, German is not easy at all.'

The data above clearly indicate that PolarityP is involved in sentences featuring *anche*, as in the case of *ben*. The following data indicate that also FocusP is activated in the construction and hosts a null/silent operator, since any kind of

focalization (including wh-elements, see above) is blocked in a sentence featuring *anche* as a MP.[10,11]

(55)   A: Ho fatto fatica a capire il testo
       B: *Beh, il tedesco SICURAMENTE è **anche** una lingua difficile / non è **neanche** una lingua facile
          well German surely is also a language difficult / neg is not-anche a language easy
       B′: *Beh, PER GLI ITALIANI è **anche** una lingua difficile / non è **neanche** una lingua facile
          well for Italians is also a language difficult / neg is not-anche a language easy
          'Well, German for sure / for Italians is not easy at all.'

As expected from the above structure, topicalizations are always possible:

(56)   A: Ho fatto fatica a capire il testo
       B: Beh, il tedesco sicuramente è **anche** una lingua difficile / non è **neanche** una lingua facile
          well German surely is also a language difficult / neg is not-anche a language easy
       B′: Beh, per gli italiani è **anche** una lingua difficile / non è **neanche** una lingua facile
          Well for Italians is also a language difficult / neg is not-anche a language easy

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10. An anonymous reviewer notes that (55) is not completely ungrammatical if the focus is interpreted as contrastive:

    ?Beh, PER GLI ITALIANI è **anche** una lingua difficile (non per i norvegesi).

We do not agree with this judgement: for us, contrast on "per gli italiani" is only possible if this constituent is interpreted as a contrastive topic, and not as contrastive focus. Therefore, the improvement in (52b) follows, according to us, from the fact that the XP in the left periphery is contrasted as a contrastive topic and not as a focus.

11. According to our intuitions, the sentences in (55) would be perfectly grammatical in the absence of a modal particle (see judgments in Cognola & Schifano 2018 a, b showing an identical pattern for the modal particle *ben*). Note, moreover, that the modal-particle interpretation disappears in interrogative clauses: in the following example, in fact, *anche* can only have an additive meaning: *Il tedesco, per chi è anche una lingua facile?* [only possible if we are talking about different populations learning German and finding it easier of more difficult]. The fact that the modal-particle interpretation disappears when an overt Operator (wh-element) is present follows straightforwardly from the proposed account and further confirms that the unavailability of the FocusP in the left periphery is fed by the presence of a null operator necessary for the licensing the modal particle in the IP area.

B″: Beh, per gli italiani il tedesco / il tedesco per gli italiani è **anche** una lingua difficile / non è **neanche** una lingua facile
Well for Italians German/German for Italians is also a language difficult / neg is not-anche a language easy
'Well, German for sure / for Italians is not easy at all.'

We propose that the differences between Italian *anche* and German *auch* follow from the fact that the latter is not a polarity item. This implies that its distribution is not fed by polarity and that the only FP relevant for the licensing of the modal particle *auch* is ForceP (cf. 57). The claim that PolarityP and FocusP are not involved in the licensing mechanism of German *auch* allows us to immediately account for the fact that *auch* is compatible with several illocutionary types and, most importantly, with interrogative clauses (assumed to target FocusP, see also Coniglio & Zegrean 2012).

(57) $[_{CP} [_{ForceP} \text{ASSERT} [_{FP} \text{Focus} [_{IP} [_{FP} \text{auch}]]]]]]$

3.4 Italian *anche* in concessive clauses

In Italian another function of *anche* is found which has not been discussed yet, since it appears to be rather marginal in German.[12] We call this function of *anche* "concessive" since *anche* appears in a main clause with the same function as an embedded concessive clause.

This function of Italian *anche* is illustrated in the following examples. We see that *anche* appears in a fronted main clause:

(58) a. Ci si può **anche** risparmiare per   salvare il   quarto posto, **ma** non
one can also   spare   himself to safe the fourth place, but not
davanti a 61mila tifosi
in front of 61.000 fans
'One can also decide to spare himself for the fourth place, but not in front of 61.000 fans.'   https://bollettinomilan.wordpress.com/2019/04/24/
editoriale-ci-si-puo-anche-risparmiare-per-salvare-il-quarto-
posto-ma-non-davanti-a-61mila-tifosi/ (18 June 2019)

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12. As pointed out by two anonymous reviewers, the examples in (58) could not be translated in German with sentences featuring *auch*, which indicates that the usages reported here are typical of Italian only. However, in combination with the modal verb *mögen*, *auch* can express concessivity: "Es mag auch für manche Betriebe eine gute Lösung sein, aber für meinen Betrieb (auch für einen großteil der kleinbäuerlichen Landwirte) sehe ich nur Nachteile." (internet: https://www.ig-ge-sunde-gülle.de/2019/03/10/g%C3%Bcllefassgemeinschaft-wie-kann-es-weiter-gehen/), which indicates that *auch* partially shares with Italian this specific development. In this paper we do not consider this concessive usage of *auch* in German and leave its exact analysis for future research.

    b.   La Brexit sarà **anche** un pasticcio, **ma** la democrazia parlamentare
        the Brexit is.fut also   a mess   but the democracy parliamentary
        UK è viva e   vegeta, mentre in Italia (e nell'Ue) è muta
        UK is alive and well   whereas in Italy and in the UE is silent
        'It might well be that the Brexit is a mess, but parliamentary democracy in
        UK is alive and well, whereas in Italy and in the UE it is silent.'
                http://www.atlanticoquotidiano.it/quotidiano/la-brexit-sara-
                    anche-un-pasticcio-ma-la-democrazia-parlamentare-uk-e-
                    viva-e-vegeta-mentre-in-italia-e-nellue-e-muta/ (18 June 2019)

    c.   "Questo governo avrà **anche** la sfortuna di capitare in un momento non
        semplice, con l'economia che non sta tirando e il treno tedesco che non è
        veloce come prima. **Però** i nodi vengono al pettine: non hanno la visione
        dello sviluppo dell'economia e della capacità industriale del Paese".
        'It might well be that this government arrives in a difficult moment, char-
        acterized by economic downturn and a contraction of the German econ-
        omy. However, the chickens have come home to roost: the government has
        no vision about the economic development and the country's industrial
        potential.'   http://www.askanews.it/cronaca/
                    2019/03/28/pil-sala-sar%c3%a0-anche-sfortunato-ma-il-
                    governo-%c3%a8-senza-visione-pn_20190328_00108/

In the examples in (59) we see that in this function *anche* is only compatible with
a restricted number of TAM contexts (typically the epistemic):

(59) a.   Questo governo   ha **anche** (*MP, ok: additive) la sfortuna di
        this   government has also   the bad luck of
        capitare in un momento non semplice, ma …
        happen in a moment not easy   but

    b.   La Brexit è **anche** (*MP, ok: additive) un pasticcio, ma …
        the Brexit is also   a mess   but

    c.   Ci si   risparmia anche (*MP, ok: additive) per salvare il quarto
        one spares himself also   to save the fourth
        posto, ma …
        place, but

Moreover, as shown in (60) this special interpretation is only available with *anche*
and not with *neanche*, which indicates that the correlative correlation with *ma* can
only be built with *anche* but not with *neanche*. This will be shown to follow from
the fact that the correlative correlation follows from stressing the sentence's truth
value – which can only be done by using the positive polarity item *anche* and it is
ruled out for the negative polarity item *neanche*.[13]

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13. In German, the correlative coordination with *aber* can be built in the presence of *wohl/*
zwar … aber but not with *auch … aber* (with the only exception of the modal verb *mögen* (see

(60) a. *Questo governo   non ha **neanche** la   sfortuna di   capitare in
          this   government neg has not even the bad   luck of happen in
          un momento non semplice, ma…
          a   moment   not easy   but
     b. *La Brexit non è **neanche** un pasticcio, ma
          the Brexit neg is not even a mess but but
     c. *Non ci   si   risparmia neanche per salvare il   quarto
          neg one spares himself   not even to save   the fourth
          posto, ma…
          placed but

In order to account for these cases we propose that the concessive interpretation results from one of the possible usages of *anche* as a modal particle. As discussed in Repp (2013), modal particles have traditionally been considered modifiers of illocutionary types (Thurmair 1989 and Zimmermann 2004 among others and above). Repp (2013) proposes that some particles like *ja* and *doch* function as Common Ground managing elements (Krifka 2008). Repp (2013) proposes that VERUM and FALSUM are Common Ground managing operators whose function is to signal that a proposition should (VERUM) or should not (FALSUM) be added to the Common Ground. These operators are assumed to formalize Höhle's (1988, 1992) notion of *verum focus*.

Based on these works we propose that in the examples in (58) above *anche* is in the scope of the Common Ground managing operator VERUM, and its function is thus that of signaling that the proposition over which it scopes should be added to the Common Ground, as shown in (61).

(61)   [$_{CP}$ [$_{ForceP}$ ASSERT [$_{TopicP}$ [$_{FocusP}$ VERUM [$_{PolarityP}$ [$_{IP}$ [$_{FP}$ anche]]]]]]]

Given the structure in (61) we propose that the concessive interpretation of *anche* comes up as a textual/rhetoric strategy: the content of a proposition is presented as true (VERUM: to be added to the Common Ground) in order to make the criticism expressed in the following proposition less direct.

4. Conclusions

In this paper we have described the usages and provided a formal account of the syntax of German *auch* and Italian *anche*.

We have shown that German *auch* and Italian *anche* are functionally very close since they exhibit three main functions – additive particle, connective adverb and

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footnote 12). Whether the German facts can be accounted for through the same analysis proposed here cannot be discussed in this paper.

modal particle – and are structurally either a head or a maximal projection in both languages.

We have shown that when used as a connective adverb, both *auch* anch *anche* are maximal projection which lexicalize an Adverbial Spec position (Cinque 1999). Their structural status as maximal projections manifests itself with the possibility of being fronted. In all other functions, *auch* and *anche* are heads in both languages – a hypothesis backed up by the ungrammaticality of fronting. When used as additive particles both elements are hosted in the lower portion of the clause, they function as focalizers and their syntactic behavior is captured through Kayne's (1998, 2005) analysis of focalizers. In their function as modal particles they are syntactic heads hosted in the higher portion of the IP layer. In all three functions *auch* and *anche* share a common basic semantics connected with the notion of addition, which operates at different levels, as repeated in (62).[14]

(62)   *Addition:*
   a.   Additive particle (head)   → adds the XP in the scope of the particle to the sentence;
   b.   Connective adverb (Spec)   → puts the sentence in which it appears in relation to the previous sentences;
   c.   Modal particle (head)   → puts the proposition in which it appears in relation to the previous utterance;
   d.   Modal particle (head, Italian) → Common Ground management element licensed by the operator VERUM.

German *auch* and Italian *anche* also exhibit some differences. When used as an additive particle, German *auch* is compatible with discontinuous constructions in which the given XP in its scope can be moved to Spec,CP and, when it is a familiar

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14. In (62) we simply sum up the functions of *auch/anche* without addressing the development path which led to them. We think, in fact, that in order to contribute to our understanding of their diachronic development in an effective way a more profound knowledge of the diachrony of the two languages should be needed. Note, however, that at an impressive level it can be said that there might be a connection between the Additive Adverbial function and the modal particle function of *auch/anche*. In the first function *auch/anche* connect sentences within a text, whereas when used as a modal particle they connect sentences with the discourse. In the first function, they are Specifiers, in the latter they are heads. In this relationship between function (connection of sentences within a text vs connection between sentences and discourse) we clearly see a replication of the development path of modal particles assumed by Diewald (1997) for German modal particles. Moreover, we also see that the modal-particle function is connected to a reduced formal status (maximal projection vs head) of the connective element which might be accounted for in terms of van Gelderen's (2004) Head Preference Principle. The development paths of the other two functions appear to be more difficult to explain diachronically, and we have to leave any account for further research.

topic, it can also remain unpronounced. This option is not available in Italian, where a topic can only appear in the left periphery if it is doubled by a strong pronoun in the scope of *anche*. We have shown that this asymmetry between the two languages does not result from structural differences between the two particles (which are both heads attracting the XP in their scope to their Spec as in Kayne 1998, 2005), but from asymmetries in the movement properties between the two languages. In German topics, in fact, can move and thus can move out of the scope of *auch* leaving a trace there, whereas Italian topics are merged in CP and never extracted from the lower phase – a fact which correlates with the impossibility of moving out of the scope of *auch*. Therefore, the only option for realizing the discontinuous construction in Italian is with the Hanging Topic construction.

The second asymmetry between *auch* and *anche* is found in their function as modal particles. German *auch* is compatible with a variety of illocutionary types in its use as a modal particle, whereas *anche* can only be used in declarative clauses. We have shown that this difference relies in the nature of *anche* as a polarity item: since the distribution of *anche* is also fed by polarity which we assume is encoded in the left periphery and it is associated with a high focus, all sentences involving a focus are ruled out in the language. This does not happen in German, where *auch* is not a polarity item. From the nature of *anche* as a polarity item its compatibility with concessive constructions also follows, in which it is used to stress the truth value of a proposition.

Acknowledgements

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CHAPTER 9

Scalarity as a meaning atom
in *wohl*-type particles

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German *wohl* 'well', Norwegian *vel* 'well' and French *bien* 'well' are all known to
have a modal particle reading that roughly amounts to 'surely, probably, I guess'
(see Zimmermann 2008; Fretheim 1991; Detges & Waltereit 2009). This paper
addresses the question of how such a reading could have arisen from the source
meaning of these elements (i.e. 'well'). I propose an analysis of *wohl*-type (i.e. 'well'-
type) modal particles as scalar operators, which is based on the observation that
each of them appears to have diachronically gone through an intermediate stage
in which it was clearly a scalar modifier (namely *wohl* 'approximately', *vel* 'approx-
imately, more than', and *bien* 'very'). The core idea of my contribution is that the
modal particle variant is still a scalar operator in nature, but has emerged through
a shift in the type of scale that the particle operates on (in line with Beltrama's 2015
approach to English *totally*). *Scalarity* thus emerges as a common meaning atom
(or meaning molecule), in the spirit of von Fintel & Matthewson (2008: 154,172),
which serves as a building block in the semantic makeup of *wohl*-type particles.

Keywords: modal particle, discourse particle, German, Norwegian, French,
scalarity, approximately, meaning atom, universal inventory of functional
meanings, grammaticalization

1. Background

Deo (2014; 2015: Sect. 2.2) proposes a view on grammaticalization where humans
share a finite, universal inventory of functional meanings. Over time, languages
realize, or fail to realize, a given functional meaning by means of a particular lexical
item; grammaticalization encompasses the processes that contribute towards the
overt expression of functional meanings in a given language (e.g., by recruiting a
lexical/non-grammatical element as an expression of some grammatical function).

From such a perspective, so-called *modal particles* or *discourse particles* (cf.
Zimmermann 2011; Grosz 2021) pose a particular challenge; these particles are ele-
ments that contribute non-at-issue meaning and are often deemed "untranslatable".

To give a concrete example, consider Norwegian *vel* and German *wohl* in (1a) and (1b). Both particles roughly convey a reduced commitment on part of the speaker to the modified proposition (cf. Zimmermann 2011), which by and large corresponds to English *apparently, I suppose, I guess,* or *probably* (as in (1c));[1] *vel* and *wohl* have received a good amount of attention in the theoretical literature, based on refined introspective intuitions (see Fretheim 1991, 2018 for a discussion of Norwegian *vel*, and Eckardt & Beltrama 2019 for the most recent discussion of German *wohl* that I am aware of).

(1) a. Det var **vel** han som hadde skrevet boka.
         it   was VEL   he   who had   written book.the
                        (Norwegian original: Herbjørg Wassmo. 1992. *Dinas bok*.)
     b. Er hatte dieses Buch **wohl**   geschrieben.
         he had   this   book WOHL   written
                                    (German translation, published in 1992)
     c. That was **probably** the author of the book.
                                    (English translation, published in 1996)

While German has approximately seventeen modal particles (Thurmair 1989) and Mainland Scandinavian languages have approximately six (Andvik 1992; see also Haugen 1982: 166), English is widely assumed not to have any. This is evident from the examples in (1), which are taken from the Oslo Multilingual Corpus, a translation corpus that mainly contains literary texts and their translations into different languages. While German *wohl* and Norwegian *vel* can often be used in the same context, English does not have a comparable element. That being said, it is evident from the English translation in (1c) that *vel* and *wohl* have a modal component that can be captured by the English sentence adverb *probably*. Meanwhile, native speaker's intuitions show that there is only a partial overlap between *vel/wohl* and *probably*, and – more importantly – even the overlap between *vel* and *wohl* is not perfect – a fact that we will come back to later in this paper.

Turning back to Deo's (2014; 2015) view of grammaticalization, we observe that modal particles in German and Norwegian are closed class items, and many authors, such as Diewald (2011), have argued that their emergence is, in fact, an instance of grammaticalization. If Deo's conjecture is correct – that there is a finite, universal inventory of functional meanings –, then this raises the question of how this is reflected by the highly idiosyncratic meanings of modal particles; as we will see, even the cognates *vel* and *wohl* are not perfect counterparts of one another, in that certain contexts clearly permit one of them, but not the other.

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1.   Haugen (1982: 167) and Fretheim (1991: 182) both freely translate Norwegian *vel* by means of a sentence-final tag, 'I suppose', whereas Eckardt & Beltrama (2019: 2) freely translate German *wohl* as 'I assume'.

The core theoretical idea that I pursue (much in line with Matthewson & Davis 2018) is that what is universal in the sense of Deo's (2015) universal functional meanings are, in fact, "common semantic building blocks" (von Fintel & Matthewson 2008: 154, 172). As argued by von Fintel & Matthewson (2008), what is universal is presumably not a semantic category such as (in other domains of grammar) PER- FECTIVE or ACCOMPLISHMENT, but rather a smaller meaning component – so-called *atoms of meaning* (see Matthewson & Davis 2018); these atoms of meaning aggregate into larger categories, starting with *meaning molecules*. A useful strategy for detect- ing both the atoms of meaning and their degree of variation, following Matthewson & Davis (2018: 7), is to study "similar-but-not-identical elements", which is a core aim of this contribution. In this context, Matthewson & Davis (2018: 7) also coin the notion of "micro-parameters of variation". To cite a concrete example, they compare the St'át'imcets discourse particle *séna7* (Davis & Matthewson 2016) to the German modal particle *doch* (see Lindner 1991, among many others). Both elements have an interpretation that can be paraphrased as 'counter to expectation'; nevertheless, labels such as 'frustrative' and 'adversative', which have been discussed in connection with particles of this type, are generally too imprecise to serve as an umbrella that would capture the commonalities and/or differences between them. In other words, it is unlikely that there is a universal semantic category FRUSTRATIVE or ADVERSA- TIVE that subsumes St'át'imcets *séna7* and German *doch* in an explanatory fashion. Matthewson & Davis (2018) show that, amongst other meaning components, *séna7* and *doch* share the property of referring to a contextually given proposition q, but differ in whether q is necessarily true (in the case of *séna7*) or not (in the case of *doch*); this difference qualifies as 'micro-parametric' variation. *Atoms of meaning* for a given particle Π might draw on such generalizations and thus include 'Π refers to a salient proposition q' (contained in both *séna7* and *doch*) and 'Π requires $q(w)=1$' (contained in *séna7*, but not *doch*).

Methodologically, the aim of this paper is not to provide an in-depth syn- chronic investigation of the elements at hand (such as German *wohl*) (a reader may wish to consult Fretheim 1991 and Eckart & Beltrama 2019 for this). The goal is more programmatic (and exploratory) in that I present a small cross-linguistic study using data from a translation corpus. An approach that uses translations in cross-linguistic investigation is explicitly defended by Aijmer (2015: 176), who, in her investigation of Swedish *väl* (a cognate of Norwegian *vel* and German *wohl*) states: "If *väl* is translated in a particular way, *väl* and the translation share one or several semantic features." The working hypothesis is, then, that these *semantic features* that Aijmer aims to identify may put us on track for determining semantic atoms or molecules of meaning. To be clear, the present paper does not advocate an approach that solely relies on translation data; eventually, corpus examples must always be introspectively or experimentally evaluated and supplemented with other evidence where possible.

2.   A modal particle puzzle

In what follows, this paper aims to contribute towards an explanation of why elements that have a source meaning equivalent to English *well* are particularly prone to develop modal readings (roughly equivalent to *surely, apparently, presumably,* or *really*). Examples (2) and (3) provide further illustration of the phenomenon (in addition to Example (1) above); these examples, too, are taken from the Oslo Multilingual Corpus (henceforth: *OMC*).[2] The Norwegian originals, (2a)/(3a), contain the modal particle *vel*, which corresponds to *wohl* in the German translations, (2b)/(3b). Since English lacks a modal-particle counterpart, English translators tend to translate the respective elements by means of a tag question, (2d), or a modal adverb (e.g. *probably*), (3d), which are understood in the given contexts to have a similar function (see Aijmer 2015 on Swedish *väl*).

While Norwegian *vel* and German *wohl* are by no means synonymous or interchangeable (and I do not aim to provide a uniform lexical entry for them), (2a) and (2b) and (3a) and (3b) further show that their distribution overlaps in that both can be used to express a modal flavor in the above sense. Notably, both *vel* and *wohl* are cognates of English *well* and can be assumed to have originated from the adverbial counterpart of *good*. As shown in (2c)/(3c), we make a parallel observation for French, where the adverb *bien* 'well' has also acquired a modal particle use (Detges & Waltereit 2009).

(2) a. Det var **vel** kong Fredriks drøm?   (HW2N.2.10.s448)
         it   was VEL king Fredrik's dream
     b. Es war **wohl** König Frederiks Traum?   (HW2TD.2.10.s439)
         it was WOHL king   Frederik's dream
     c. C'était **bien** là   le rêve   du   roi   Fredrik? (HW2TF.2.10.s448)
         it=was BIEN there the dream of.the king Fredrik
     d. But this was King Frederick's dream, **wasn't it**?   (HW2TE.2.10.s452)

(3) a. Dersom Dina mente   hun kunne bo i   kårstua,   så   var det
         if   Dina thought she could live in the.cottage then was it
         vel en mening med det.   (HW2N.3.4.s58)
         VEL a   reason with that
     b. Wenn Dina meinte, daß sie im   Ausgedinge wohnen könnte, dann
         if   Dina thought that she in.the cottage   live   could   then
         habe das **wohl** einen Sinn.   (HW2TD.3.4.s58)
         has   this WOHL a   reason

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  c. Si Dina pensait pouvoir habiter l'annexe,   il devait **bien** y
      if Dina thought to.be.able to.inhabit the=cottage it must BIEN there
      avoir une raison à cela.   (HW2TF.3.4.s58)
      have a   reason for this

  d. If Dina wanted to live in the cottage, there was **probably** a reason for it.
                                                   (HW2TE.3.4.s59)

As already pointed out in Section 1, each of these modal particles has been explored in some depth within the respective language: Aijmer's (1977, 1996, 2015) description of Swedish *väl* largely carries over to Norwegian *vel*. Similarly, Zimmermann (2008, 2011), deVeaugh-Geiss (2014); Göbel (2018), and Eckardt & Beltrama (2019) present formal semantic analyses of German *wohl*. Finally, Waltereit & Detges (2007) and Detges & Waltereit (2009) trace the grammaticalization of French *bien* into the modal particle that we see in (2c) and (3c).

   In spite of the cross-linguistic orientation of many descriptive accounts (including the above), formal analyses of individual modal particles have mostly taken an (in the scope of these publications well-justified) 'isolationist' stance, aiming to analyze a given particle (such as *wohl*) within a single language. This is motivated by the fact that the overlap between related particles (such as German *wohl* and Norwegian *vel*) is always limited. For instance, Norwegian *vel* cannot occur in *yes/no*-questions (or is marginal at best), while German *wohl* can. As an illustration, Fretheim (2018: 7,14,16) points out that 41 out of 65 speakers reject *vel* in *yes/no*-questions such as (4) altogether. The remaining 24 speakers only permit a rhetorical interpretation, and no other interpretation. (The question 'Is it VEL necessary to make a reservation?' thus only admits the *rhetorical reading* 'It is **not** necessary to make a reservation.')

(4) %Er det **vel** nødvendig å forhåndsbestille?
     is it   VEL necessary to make.a.reservation
     'It is **not** necessary to make a reservation.'
     (*lit*. 'Is it VEL necessary to …?')

By contrast, non-rhetorical yes/no-questions with German *wohl* are perfectly well-formed and are typically (though not exclusively) deliberative:

(5) Manchmal denke ich: Ist es **wohl** Zeit für ein Comeback?
     Sometimes think I   is it WOHL time for a   comeback
     'Sometimes, I think: Is it time for a comeback, **I wonder / what do you think?**'
     (*lit*. 'Sometimes, I think: Is it WOHL time for a comeback?')
                                     (DeReKo: Süddeutsche Zeitung, 15.12.2012)

Moreover, in *wh*-questions, Norwegian *vel* triggers a rhetorical-question interpretation, (6c), which *schon* marks in German, (6b), while German *wohl* would trigger a deliberative-question interpretation. The German counterpart of (6c) with *wohl*, given in (7), lacks the rhetorical question reading that *vel* marks in Norwegian.

(6)   a.   Psychiatrists! What do they know?
                 (English original: Anita Brookner. 1988. Latecomers. [*OMC*])

      b.   Psychiater! Was wissen die   **schon**? (German translation, 1991 [*OMC*])
            psychiatrists what know   they SCHON

      c.   Psykiatere! Hva vet   **vel** de?   (Norwegian translation, 1990 [*OMC*])
            psychiatrists what know VEL they

(7)   (#)Psychiater! Was wissen die   **wohl**?
      psychiatrists   what know they WOHL
      intended reading as rhetorical question: 'Psychiatrists! What do they know?'
      available deliberative reading: 'Psychiatrists! I wonder what they know.'

In spite of the fact that *vel* and *wohl* are not perfect counterparts of one another, a cross-linguistic puzzle arises from patterns like (2) and (3): a semantically related modal particle use of 'well' has diachronically emerged and established itself in different languages (Norwegian, German, and French). This gives rise to the following question: which component of the meaning of *well*-type elements lends itself to their grammaticalization into elements with a modal meaning?

Before proceeding to the core proposal, it is worth flagging a potential confound with regards to Norwegian and German. Haugen (1982: 166–167) claims that the Norwegian modal particles *da, jo, nok, nå* and *vel* are loans from Low German, based on the observation that Icelandic only has one modal particle (*þó*) and Old Scandinavian had no modal particles at all. Haugen's argumentation is weakened by the fact that Burkhardt (1994: 140) argues that even Old High German only had two modal particles (*denn* and *doch*), with the majority of German modal particles (including *wohl*) emerging in the 16th century or later. It remains to be seen whether Low German differs in these respects, but there is *a priori* no reason to assume that it was different, and the most intense contact between Low German and the Mainland Scandinavian languages appears to have already been subsiding in the 16th century (see Berg 2016). Nevertheless, a reader should bear in mind that Norwegian *vel* may not have developed in complete independence from German *wohl*.[3]

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3.   Note, in this connection, that the *Norwegian Academy Dictionary* (*Det Norske Akademis Ordbok / NAOB*), which generally documents Low German origins, does not indicate a non-Scandinavian origin in its entry on *vel* (where reading 2 is the modal particle reading): https://naob.no/ordbok/vel_1.

3. The core proposal

My overarching goal is to probe for the *atoms of meaning* that are shared by elements such as German *wohl*, Norwegian *vel* and French *bien*, though I will focus on German *wohl* in the remainder (with some discussion of Norwegian *vel*). In this vein, I propose the following: what the source lexemes and the modal derivatives of such elements share is a scalar component. I propose that *wohl/vel*-type modal particles are scalar modal operators. In the spirit of Beltrama (2015), I propose that their grammaticalization involved a shift in their scale, while they have remained scalar in their very nature. My core proposal is captured by the hypothesis in (8).

(8) *The scalar hypothesis of well-type modal particles*
- i. Particles with a function similar to that of German *wohl* originate from scalar modifiers with a meaning that grammatically encodes the surpassing of a contextually given threshold on a scale (i.e. 'x exceeds a threshold θ').
- ii. Their grammaticalization involves a shift of the type of expression that they modify (before: a proposition, afterwards: the commitment to a proposition).

To be specific, my idea is that German *wohl* (and Norwegian *vel*) grammaticalized from a scalar element roughly meaning 'approximately', i.e. we can trace the diachronic trajectory in (9); see Section 4 for details.

(9) a. MANNER *wohl* 'in a good way'
   b. > SCALAR *wohl* 'approximately'
   c. > MODAL *wohl* 'surely'

The core purpose of this paper is to motivate the hypothesis in (8), rather than argue for a specific implementation. However, for concreteness' sake, the source meaning, (9b), of the modal particle *wohl* is sketched in (10), inspired by Penka's (2006: 279) analysis of *almost*.

(10) *wohl$_0$ p* ($\approx$ *approximately p*) is true in w,
   for any contextually restricted set of propositions C, iff
   $\exists q \ [q \in g(C) \ \& \ \text{CLOSENESS}(p,q) \geq \theta_P \ \& \ q(w)]$
   where: θ_P is a high threshold of *closeness* between propositions; the degree of *closeness* between p and q reflects the similarity between p-worlds and q-worlds

In words, *approximately p* means that a proposition *q* holds true, which is very close to the prejacent *p*, leaving open whether *q* is identical to *p*, or slightly distinct.

For the German modal particle *wohl*, (9c), I assume that it makes a contribution parallel to the English auxiliary *must* and adverb *surely*. However, while *must* makes a truth-conditional contribution, *wohl* operates on a non-truth-conditional

level. To be concrete, we may apply Swanson's (2006) scalar analysis of *must*, which I adapt in (11) from Lassiter (2016: 150). Note that (11) is a simplification that only captures the modal particle *wohl* in declaratives (see Thurmair 1989: 143–145 for *wohl* in interrogatives; see Zimmermann 2008 for an analysis of *wohl* in interrogatives).

(11) $wohl_M\,p$ ($\approx$ *surely p*) is felicitous iff, in view of the speaker's beliefs, $P(p) \geq \theta$ where θ is a high probability threshold.

In words, the modal particle $wohl_M$ conveys (at a level of felicity conditions) that the probability *P* of the modified proposition *p* exceeds a high threshold. A slightly more formal rendering of (11) is given in (12), which may make the parallelism between $wohl_0$ (in (10)) and $wohl_M$ (in (11)) more evident in that both involve a closeness measure between two values, which is conveyed to exceed a contextual threshold θ.

(12) $wohl_M\,p$ ($\approx$ *surely p*) is felicitous in w iff
$\forall$w'[w' $\in$ $Dox_{speaker}$(w) $\rightarrow$ PROB-CLOSENESS$_{w'}$(P(p,w),1) $\geq \theta_{prob}$]
where: θ_{prob} is a high threshold of *closeness* between probabilities, $P(p,w)$ is the probability that p holds in the evaluation world w, and *prob-closeness$_{w'}$* is a scalar 'close by' relation that compares, in w', two probability values *n* ($0 \leq n \leq 1$).

An analysis that models the semantics of the modal particle *wohl* on the basis of English *must* is independently justified: German *wohl* (and Norwegian *vel*) tend to have a strong modal flavor, equivalent to English *must*, as witnessed by the translation via English *must* in (13c) (see also Aijmer 2015). Observe that neither the Norwegian original, (13a), nor the German translation, (13b), contain the corresponding modal auxiliaries (*må* 'must' or *muss* 'must', respectively). It is thus the insertion of *vel*/*wohl* into (13a) and (13b) that has the same effect as the insertion of *must* into (13c).

(13)   a.   Æ ser at du e sloppen laus.   (HW2N.2.10.s32)
           Så   er jeg **vel** Barabbas, sa   han og   rakte   henne hånden.
           then am I   VEL Barabbas said he   and reached her   the.hand
      b.   "Ich sehe, daß sie dich freigelassen haben."   (HW2TD.2.10.s31)
           "Dann bin ich **wohl** Barabbas", sagte er und gab   ihr die Hand.
           then   am I   WOHL Barabbas said he and gave her the hand
      c.   "I see you've been released."   (HW2TE.2.10.s32)
           "Then I **must** be Barabbas," he said, and extended his hand.

Bearing in mind the usual caveats that apply to free translations (and thus to translation corpora), we also observe that translations of English *must* by means of German *wohl*, (14), occur just as much as translations of German *wohl* by means of English *must*, (15).

(14) a. Lord have mercy, I **must** be improving in his sight!   (English original,
            Gloria Naylor, *The Women of Brewster Place* 1980 [*OMC*])

  b. Barmherziger Gott, ich hab mich **wohl** in seinen Augen gebessert!
      merciful   God I   have me   WOHL in his   eyes   improved
                                   (German translation, 1996 [*OMC*])

(15) a. In seinen Augen bin ich **wohl** der letzte Wilde.
          in his   eyes   am I   WOHL the last   savage
                        (German original, Günther Wallraff, *Ganz unten*, 1985 [*OMC*])

  b. In his eyes, I **must** be a complete savage.

                                   (English translation, 1988 [*OMC*])

Concluding this brief outline of a formal implementation, I wish to empha-
size that this analysis is not designed to compete with Zimmermann's (2008),
deVeaugh-Geiss' (2014), Göbel's (2018); or Eckardt & Beltrama's (2019); instead,
my analysis is meant to complement one of these analyses, by adding a scalar op-
erator component. As far as I can see, this would be a relatively straightforward
modification, and I believe that it would also be in the spirit of Zimmermann's
(2018) approach to German *schon* (compare Section 5).

4.   Evidence for a scalar source lexeme

Recall the core idea, laid out in examples (8)–(11), i.e. that the German modal
particle $wohl_M$ 'surely, probably' has grammaticalized from a scalar particle $wohl_0$
'approximately'. This idea is well-motivated by the scholarly analysis in Jacob and
Wilhelm Grimm's *Deutsches Wörterbuch* (henceforth: *DWB*), which explicitly pro-
poses that the modal particle *wohl* derived from an affirmative particle with the
meaning 'truly, certainly, definitely, indeed', as summarized by the quote in (16).[4]

(16) *aus bekräftigendem, beteuerndem **wohl** entwickelt sich die bedeutung 'vielleicht,*
      vermutlich' […]
      <u>translation:</u> "From an affirmative, assuring *wohl*, the meaning *vielleicht* 'maybe',
      vermutlich 'presumably' emerges […]"

To illustrate the affirmative use of *wohl*, the DWB cites the Middle High German
(17), from Hartmann von Aue's *Iwein* (approx. 1203 CE).

(17) sô   bistû   **wol**   ein vrum man:
      then are.you WOHL a   valiant man
      'Then you are **truly** (= *wohl*) a valiant man.'

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4.   http://www.woerterbuchnetz.de/DWB?bookref=30,1025,1 (Section II.B, [Bd. 30, Sp. 1062]).

Moreover, the DWB observes the following: in combination with numerical phrases and measurements, affirmative *wohl* ends up having a meaning that is equivalent to the meanings of *annähernd* 'approximately', *ungefähr* 'roughly', or *reichlich* 'plentifully'.[5] The DWB shows that this scalar reading is evident in examples that date back to 1402, as illustrated by (18). From a synchronic (present day) perspective, *wol* in (18) seems ambiguous between 'probably' and 'approximately'. For speakers of Present Day German, the two readings are intuitively indistinguishable in (18), which suggests that examples like (18) may have constituted the critical context (see Diewald 2011) for the reanalysis from $wohl_0$ 'approximately' to $wohl_M$ 'surely'.

(18) […] 5m.   […] zwen   bretsnydern, die den   somer **wol**   8
      5mark   for.two board.cutters who during.the summer WOHL 8
      wochen zu Ragnith delen und bret   gesneten haben:
      weeks   at Ragnit planks and board cut   have
      '[…] 5 marks […] for two board cutters who during the summer have cut
      planks and boards in the town of Ragnit (Neman, Russia) for **approximately**
      8 weeks.'   (E. Joachim [ed.], 1402, *Das Marienburger Tresslerbuch*
                                                        der Jahre 1399–1409)[6]

Note, moreover, that the modal particle *wohl* is generally assumed to have emerged in the 16th century (Burkhardt 1994: 140), i.e. later than the 'approximately' reading. Example (19) is a representative early occurrence of modal particle *wohl* from the DWB.

(19) Pariß […] das der arm Primaso biß auff mittags zeit zu essen **wol**
      Paris   that the poor P.   until to lunch time to eat   WOHL
      erreichen meinet
      reach   meant
      'Paris […] which the poor Primaso **probably** thought to reach before having
      his lunch time meal.'   (G. Boccacio, *Centum Novella*,
                           translation from 1557, by Arigo [pseudonym])[7]

We can thus conclude that it is well-documented for German that the modal variant of *wohl* originated from its scalar modifier variant, presumably via a process of 'subjectification' (Traugott 1989), as formalized by Beltrama (2015).

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5. See also https://www.duden.de/rechtschreibung/wohl_gut_besser_durchaus.

6. http://digi.ub.uni-heidelberg.de/diglit/joachim1896/0211.

7. https://books.google.no/books?id=hBZLAAAAcAAJ&pg=RA1-PT17.
    http://digitale.bibliothek.uni-halle.de/vd16/content/titleinfo/997341.
    The identity of the translator, who went by the pseudonym *Arigo*, is unknown.

Importantly, the scalar variant is preserved in Present Day German, allowing us to isolate it as a separate reading of *wohl*. In fact, both German *wohl* and Norwegian *vel* have such a scalar homonym, and the idea that I pursue is that Norwegian *vel* has undergone a development much in line with (16)–(19) (*pace* Haugen's 1982: 166–167 claim, which I discussed in Section 2). For Present Day German *wohl*, the relevant meaning is illustrated in (20) and (21). As indicated by brackets, *wohl* 'approximately' seems to form a syntactic constituent with the numerical / measurement phrase that it operates on.[8]

(20) [**Wohl** ein Drittel aller Fahrzeuge] biegt auf die Nebenstrecke ab:
      WOHL a   third of.all vehicles   turns onto the ancillary.road v.PRT
      '**Approximately** a third of all vehicles turns onto the ancillary road.'
                                        (*DeReKo*: Süddeutsche Zeitung, 09.09.2000)

(21) [**Wohl** ein Drittel der   FDP-Wahlmänner,   die für Heinemann
      WOHL a   third of.the FDP-electoral.delegates who for Heinemann
      stimmten,] taten dies nicht aus Überzeugung, sondern aus   Parteiräson.
      voted   did   this not   from conviction but   from party.reason
      '**Approximately** a third of all FDP delegates who voted for Heinemann didn't
      do it out of conviction, but out of solidarity with their party.'
                                              (*DeReKo*: Die Zeit, 05.09.1969)

Parallel evidence for a scalar meaning of Norwegian *vel* is provided by (22) and (23) (though there are complications that I will not go into here, such as a preference to stress *vel* in this scalar reading). Note that scalar *vel* is ambiguous between an 'approximately *x*' reading, as shown by the translation in (22b), and a 'more than *x*, over *x*' reading, as in (23b). For native speakers, the 'more than *x*, over *x*' reading seems to be more prominent.

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8. An attentive reader may take this to question the analysis in (5), in which *wohl* 'approximately' operates on propositions, but the syntactic behavior of *wohl* in such examples closely mirrors that of the focus particle *nur* 'only', for which Büring & Hartmann (2001) show that it should nevertheless be treated as a propositional modifier. Compare also example (i.), where an uncontroversial sentence adverb, *wahrscheinlich*, forms a constituent with the DP *alle Schülerinnen und Schüler*.

   i. [**Wahrscheinlich** alle Schülerinnen und Schüler]   haben sich […] den Tag
       probably   all female.pupils and male.pupils have self   the day
       herbeigesehnt […]
       yearned.for
       '[**Probably** all pupils] were longing for the day […]'
                                        (*DeReKo*: Mannheimer Morgen, 23.06.2000)

(22) a. [**Vel** en tredjedel av all olje som ble fraktet fra USA til
    VEL a third of all oil that was shipped from USA to
    Storbritannia] gikk på norsk kjøl, […]
    Great.Britain went on Norwegian keel
                  (*OMC*, ID of Norwegian original: ABJH1N.2.7.s21)

    b. [**Approximately** one third of all the oil which was shipped from the USA
    to Great Britain] was on Norwegian ships.
        (*OMC*, ID of English translation: ABJH1TE.2.7.s21, ABJH1TE.2.7.s22)

(23) a. [**Vel** en tredjedel av stipendiatene] var kvinner, men
    VEL a third of the.fellows was women but
    kvinneandelen varierer mye med ulike stipendtyper.
    the.percentage.of.women varies much with different fellowship.types
                  (*OMC*, ID of Norwegian original: NFRA1N.4.s17)

    b. [**More than** a third] were women, but the female share varies widely in
    relation to the various types of scholarships.
                  (*OMC*, ID of English translation: NFRA1TE.4.s17)

Turning to the French pattern, Detges & Waltereit (2009: 57) also propose that the French modal particle *bien* originated from a scalar operator. Citing an example from 1200 C. E., Detges & Waltereit (2009: 55) state that "it is very unlikely that the [manner] adverbial *bien* 'well' is the direct diachronic predecessor of the homophonous modal particle. Rather, the latter must go back to an intermediate stage, namely the degree adverb *bien* 'at lot [sic], very much, to a large extent". They propose a grammaticalization trajectory, which I render in (24), parallel to my (9).

(24) a. MANNER *bien* 'in a good way'
    b. > SCALAR *bien* 'very, to a large extent'
    c. > MODAL *bien* 'really'

An example of scalar *bien* 'very, to a large extent' in Present Day French is found in the Oslo Multilingual Corpus, as shown in (25b); note that other languages systematically translate *bien* as 'very', (25a,c,d).

(25) a. at det han i virkeligheten lette etter var **svært** enkelt.
    that it he in reality searched after was very simple
                  (*OMC*, ID of Norwegian original: NF1N.3.s287)

    b. que ce qu'il cherchait était **bien** particulier.
    that it that=he searched was very particular
                  (*OMC*, ID of French translation: NF1TF.3.s268)

    c. daß das, wonach er in Wirklichkeit suchte, **sehr** konkret war.
    that that which.after he in reality searched very concrete was
                  (*OMC*, ID of German translation: NF1TD.3.s223)

    d.   that what he was really searching for was **very** simple.

<div align="center">(OMC, ID of English translation: NF1TE.3.s256)</div>

We can thus tentatively conclude that the trajectory in (26) is well-supported by diachronic and synchronic data, thus motivating the scalar hypothesis in (8).

(26) a.   MANNER *wohl* / *vel* / *bien* 'in a good way'
       b.   > SCALAR *wohl* 'approximately', *vel* 'approximately, over', *bien* 'very'
       c.   > MODAL *wohl* 'surely', *vel* 'surely', *bien* 'really'

Having presented the idea of a two-step trajectory for the emergence of *wohl*-type modal particles, in (26), a natural question is, of course, why the first step (from (26a) to (26b)) occurs and how it is motivated. Since the focus of this paper is on the second step (from (26b) to (26c)), I refer the reader to relevant literature such as Gehrke & Castroviejo (2016) (and references therein), who discuss adverbially used *gut* 'good, well' in Present Day German, rather than *wohl* 'well'. Crucially, *gut* productively (synchronically) gives rise to degree readings not unlike the ones that we see in (26b), as illustrated by Gehrke & Castroviejo's example (27).[9]

(27) Der Lastwagen ist **gut**   beladen.
      the truck   is   GOOD loaded
      'The truck is **well** loaded.' (≈ 'The truck is loaded **to a good/high degree**.')

The synchronic properties of German *gut* 'good, well' may also shed light on an interesting puzzle inherent in (26b): while *wohl, vel* and *bien* all go back to a word that means 'in a good way', their dominant scalar readings ('approximately', 'very', 'over') are quite varied in that counterparts of the English degree modifiers *approximately*

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9. An anonymous reviewer raises the question whether the first step (from (26a) to (26b)) is necessary to begin with, outlining an alternative where evaluative *wohl* 'well', (26a), developed into epistemic *wohl* 'surely', (26c), directly. This reviewer suggests that contexts where evaluative *wohl* co-occurred with overt modal operators may have served as critical contexts for reanalysis, as illustrated in (i.).

    i.   Das **kann gut**   sein.
       that can   GOOD be
       'That **may (very) well** be the case.'

This possibility could be addressed by investigating whether relevant combinations of *wohl* and modal operators were abundant in the period in which the discourse particle reading of *wohl* emerged. Crucially, even in (i.), the reading of *gut* 'good, well' seems to be a 'degree reading' of the type that Gehrke & Castroviejo (2016) discuss (akin to *absolutely/totally* in the sentence *That may absolutely/totally be the case.*), so this is compatible with a view where discourse particle readings of *wohl* emerge from a scalar modifier use of *wohl*.

and *very* have a fundamentally different semantics. As flagged by an anonymous reviewer, *approximately* signals that the standard is approximated, whereas *very* signals that it is clearly exceeded; the divergence in (26b) thus constitutes a puzzle. However, this ambiguity also seems to be present in the degree readings that synchronically arise from *gut* 'good, well' in German. While (27) conveys that the standard for what counts as loaded is clearly exceeded (corresponding to a 'very' reading), *gut* 'good, well' also has a use as an approximator when it combines with numerals, as illustrated in (28b). The German translators of (28a) (Georg Auerbach & Gisela Stege) chose to translate English *about two miles* with German *gut zwei Kilometer* (lit. 'well two kilometers'). In other words, the ambiguity that gives rise to diverging meanings ('approximately' vs. 'very') must already be present in degree uses of the source lexeme (as in *gut* 'well'). Note that this is also quite parallel to the documented historical development of *wohl*, in (17)–(18).

(28) a. Though he had never seen their cottage he seemed to remember that his aunt had told him that it lay **about two miles** to the south.
          (English original, P. D. James, *Devices and Desires*, 1980 [*OMC*])

     b. Er kannte ihr Cottage nicht, erinnerte   sich aber,   daß seine
         he knew   her cottage not   remembered self however that his
         Tante ihm erzählt hatte, es läge **gut   zwei Kilometer** weiter südlich.
         aunt him told   had   it lay GOOD two kilometers further south
                                              (German translation, 1990 [*OMC*])

A thorough exploration of the two degree readings of *gut* 'good, well' in (27) and (28), and how they may give rise to the divergence in (26b) is beyond the scope of this paper; however, we can observe that English *well* does not have the reading illustrated in (28b), i.e., the sentence #*it lay well two miles to the south* does not have the same interpretation (but compare *it lay **a good** two miles to the south*). This suggests that German *gut* 'good, well' has started to shift, in its degree reading, from an element that means 'very' to an element that can also mean 'approximately'.

A related issue pertains to the very set of elements that are subject to undergoing the shift in (26a) to (26b); an anonymous reviewer points out that Italian *bella*/*bello* 'beautiful' has also undergone the shift from (26a) to (26b), but not (yet) the shift from (26b) to (26c). Interestingly, as discussed by Beltrama (2016), *bella* 'beautiful' in its degree modifier reading, (29), has a positive evaluation component, which has also been proposed for the German modal particle *schon* (see Sections 5 and 7), a cognate of *schön* 'beautiful(ly)'.

(29) Abbiamo fatto una camminata **bella**   lunga!
      have.1PL made a   hike   BEAUTIFUL long
      'We went for a **very** long hike.'   (Beltrama 2016)

We can now turn, in Section 5, to a type of circumstantial evidence that I propose to call 'evidence from overlap', since it involves looking at two German particles (*wohl* and *schon*) and two Norwegian particles (*vel* and *nok*) in order to determine the common denominator in their meanings. Once again, it can be shown that a notion of *being a scalar operator* seems to be shared by all of these elements.

5.   Evidence from overlap

Having already pointed out that German *wohl* and Norwegian *vel* are no true synonyms, the plot thickens when we include German *schon* and Norwegian *nok*[10] (also in their modal particle readings). In brief, we observe an overlap in the usage of these four particles that is summarized in (30a): German *wohl* partially overlaps in its meaning and distribution not only with Norwegian *vel*, but also with Norwegian *nok*; conversely, German *schon* also partially overlaps with *vel* and with *nok*. We can thus pursue the working hypothesis that there is a meaning atom *A* that all four elements share, namely the notion of 'being a scalar operator that conveys the exceedance of a scalar threshold', which I outlined in (8). The corresponding idea is, then, that each of these particles realizes a meaning molecule $A+Z_n$, where it is the *A* component that sets them apart from modal particles / discourse particles that are non-scalar and/or non-threshold-oriented in their semantics.

(30)   a.

$wohl$ ——————— vel

German   Norwegian

$schon$ ——————— nok

b.

$wohl(+Z_1)$ $vel(+Z_2)$

A

$schon(+Z_3)$ $nok(+Z_4)$

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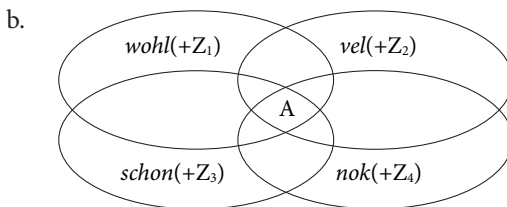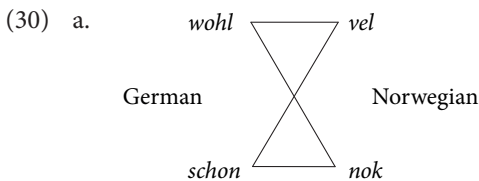
10. A potential caveat concerns, once again, the very origin of *nok*. For *nok* (more so than *vel*), it is well-established that it originated as a loan from Middle Low German *nōch* (in line with Haugen 1982: 166–167), as witnessed by the entry in the *Norwegian Academy Dictionary*: https://naob.no/ordbok/nok_3.

A comparative study of High German, Norwegian, and Middle Low German may shed more light on the diachronic consequences of this fact, but such a study goes beyond the scope of this paper.

We have already seen that German *wohl* and Norwegian *vel* overlap in examples like (31), repeated from (2).

(31) a. Es war **wohl** König Frederiks Traum?   (HW2TD.2.10.s439)
          it   was WOHL king   Frederik's dream
      b. Det var **vel** kong Fredriks drøm?   (HW2N.2.10.s448)
          it   was VEL king Fredrik's dream
      c. But this was King Frederick's dream, **wasn't it**?   (HW2TE.2.10.s452)

Looking at a wider range of examples, we observe that German *wohl* also overlaps with the Norwegian modal particle *nok*, as given in (32b); in Norwegian, *nok* and *vel* (together with *visst*, which I do not discuss here) are generally discussed as particles that have an epistemic flavor, as in Fretheim (1991: 180–184) and Andvik (1992: 2–4).

(32) a. Sie mochte es **wohl** nicht, daß die Kinder zusahen. (HW1TD.5.s26)
          she liked   it   WOHL not   that the children watched
      b. Den likte **nok** ikke at   de sto   og så på.   (HW1N.5.s27)
          it   liked NOK not that they stood and saw at
      c. She **surely** didn't like them all standing there and staring. (HW1TE.5.s26)

Moreover, both *vel* and *nok* can be shown to overlap with the German modal particle *schon* (see Egg 2012 and Zimmermann 2018 for a recent formalization of the semantics of *schon*). On the one hand, (33) and (34) illustrate this for *schon* and *vel* (and see (6) for a similar function of *schon* and *vel* in rhetorical questions).

(33) a. Doch, Herr Staatsanwalt,   das kann **schon** sein.
          indeed Mr.   district.attorney that can   SCHON be

                                                    (BHH1TD.4.5.s91)
      b. Åjo,   herr dommer, det kan **vel** være.   (BHH1N.4.5.s89)
          oh.yes Mr. judge   this can VEL be
      c. Oh yes, Your Honour, that may **very well** be.   (BHH1TE.4.5.s89)
(34) a. "[…] Es ist viel   Arbeit…" "Das stimmt   **schon**." (HW2TD.3.1.s38)
              it is much work   this is.correct SCHON
      b. […] Det e mykkje å gjør. –Det e **vel** så.   (HW2N.3.1.s38)
              it is much to do it   is VEL so
      c. "[…] There's a lot to do …" "I'm sure."   (HW2TE.3.1.s42)

On the other hand, example (35) shows that the German modal particle *schon* also overlaps with the Norwegian modal particle *nok*. Native speakers report that *nok* has the 'reassuring, comforting' effect that is often ascribed to *schon* (cf. Egg 2012), while *vel* (e.g. in (33) and (34)) lacks this effect.

(35) a. "Wir schaffen das **schon**", sagte Alice.   (DL1TD.1.s861)
         we   manage this SCHON said Alice
     b. «Vi klarer   det **nok**,» sa   Alice.   (DL1TN.1.s879)
         we manage it   NOK   said Alice
     c. "We can manage," said Alice.   (DL1E.1.s794)

Looking at the entire quadruplet of modal particles, we observe that, in fact, all four particles may be of scalar origin. Their proposed source meanings are included in the partial correspondences in (36).

(36) | **Source lexeme** | **MP** | | **MP** | **Source lexeme** |
|---|---|---|---|---|

wohl 'approximately'   *wohl*   *vel*   *vel* 'approximately'

schon 'already'   *schon*   *nok*   *nok* 'enough'

To be explicit, the German modal particle *schon* is generally assumed to have emerged from the temporal/scalar particle *schon* 'already', which still exists in Present Day German, as in (37a) (compare Zimmermann 2018).

(37) a. Ehe   die Leute in Messina begriffen, was eigentlich los   war, war
         before the people in Messina realized   what actually   loose was was
         es **schon** zu spät.   (ABR1TD.1.1.s748)
         it already too late
     b. When the people of Messina realized what was going on, it was **already** too late.   (ABR1E.1.1.s747)

Similarly, the Norwegian modal particle *nok* has emerged from the scalar modifier *nok* 'enough',[11] which still exists in Present Day Norwegian, as in (38a) (see also Andvik 1992: 4–6).

(38) a. Hadde jeg **nok**   tro   på det?   (ABR1TN.1.1.s265)
         had   I   enough faith for it
     b. Did I have **enough** faith for it?   (ABR1E.1.1.s266)

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11. In connection with footnote 10, it is worth pointing out that *nok* was loaned 'wholesale' from Middle Low German, including its 'enough' reading, as outlined in the Norwegian Academy Dictionary.

Both *schon* 'already' and *nok* 'enough' are uncontroversially scalar in their semantics. I take this to further corroborate my scalar hypothesis in (8), repeated in (39), since the common denominator of the quadruplet in (36) seems to be an abstract notion of *scalarity*.

(39)   *The scalar hypothesis of well-type modal particles*
  i.   Particles with a function similar to that of German *wohl* originate from scalar modifiers with a meaning that grammatically encodes the surpassing of a contextually given threshold on a scale (i.e. 'x exceeds a threshold θ').
  ii. Their grammaticalization involves a shift of the type of expression that they modify (before: a proposition, afterwards: the commitment to a proposition).

On a big-picture level, I propose to divide functional meanings into a CORE (*A* in (30b)) and a PERIPHERY (*Z*$_n$ in (30b)). For *wohl/schon/vel/nok*, in (36), I propose that the CORE consists of a scalar operator meaning that involves the exceeding of a threshold; by contrast, the PERIPHERY consists of additional shades of meaning that the elements have acquired due to their individual diachronic origins. For instance, while scalar *wohl* in German largely corresponds to 'approximately' (and not 'more than, over'), native speakers of Norwegian report that scalar *vel* predominantly means 'more than, over' (and only marginally admits an 'approximately' reading).

6.   Support from dialectal variation

A final piece of evidence for a scalar origin of *wohl*-type elements stems from dialectal variation, which also emulates developments such as the ones of *nok* 'enough' and *schon* 'already' (in Section 5). As a baseline, the South German lexeme *schier* has previously been discussed in Eckardt (2011).[12] Its original meaning was that of the temporal adverb *soon* (Middle High German *schiere* 'soon'), from which it has developed the approximator reading *schier* 'almost, virtually', as illustrated in (40).

(40)   Der Beifall   wollte **schier** nicht enden.
       the applause wanted SCHIER   not   to.end
       'The applause **almost** (= *schier*) was not going to end.'
                             (*DeReKo*: Niederösterreichische Nachrichten, 26.11.2008)

---

12. Note that *schier* has a North German homophone (illustrated by **schieres** *Hechtfleisch* '**pure** pike meat') that has a different diachronic trajectory (related to Middle High German *schīr* 'pure'); while it is unclear if their diachronic origin is distinct, I will adopt the standard view of treating them as separate lexemes and I focus exclusively on the South German version.

An attentive reader will already have noticed the parallel between *schier* 'almost, virtually' and *wohl* 'approximately'. Again, there is no doubt concerning the scalarity of *schier* 'almost, virtually'.

Crucially, for our purposes, there is a side of *schier* that has gone unnoticed in recent discussions (including Eckardt 2011), and which was first discussed in Grosz (2017). The DWB observes that *schier* acquired an additional reading as a *wohl*-type modal particle, which derived from its 'almost, virtually' reading. The relevant quote is given in (41).

(41) *das mit **schier** verbundene [bezeichnet] eine steigerung gegenüber dem, was beschrieben werden soll. das mag der anlasz gewesen sein zur herausbildung des gebrauchs im sinne von 'gar, vollends', von dem aus das wort dann zu der bedeutung '**wol**' im weiteren sinne und zum bloszen füllwort herabsinkt.*[13]
translation: 'What is combined with *schier* conveys an increase with respect to what is being described. This may have been the reason for why *schier* acquired a reading in the sense of *gar* 'even' and *vollends* 'completely', from where *schier* developed a meaning equivalent to *wohl* in the broadest sense, and becomes a mere filler.'

This '*wohl* reading' is documented for (colloquial) Viennese German in a dictionary by Hügel (1873: 136), who identifies its meaning with that of *wahrscheinlich* 'probably' and provides the Examples (42a) and (42b).

(42) a. Er wird **schier** heirat'n.
          he will SCHIER get.married
          'He will **probably** get married.'
      b. Du wirst **schier** a Fiab'r kriag'n.
          you will SCHIER a fever get
          'You will **probably** get a fever.'

While the *wohl* reading of *schier* has largely disappeared from present day German (including most varieties of Austrian German, such as Viennese German), it is still preserved as an archaism in Burgenland varieties of East Austrian German. So far, I have been able to confirm this for the districts of Mattersburg, Oberpullendorf, and Neusiedl am See. For instance, example (43) (where the spelling emulates dialectal speech) is from a public Facebook discussion, found via *Google*.

(43) na des wiad **schia** nix   wean!
      well this will SCHIER nothing become
      'Well, this **probably** (=*schier*) won't go well!'

---

13. http://www.woerterbuchnetz.de/DWB?bookref=15,19,29 (Section II.3, [Bd. 15, Sp. 26]).

Moreover, examples (44) and (45) are from a local newspaper in Burgenland. An interpretation as 'almost, virtually' is not possible in these examples. In fact, native speakers of non-Burgenland varieties of German (such as speakers from Southern Germany or Western Austria) judge (44) and (45) as deviant, not to say gibberish.

(44)　Youngster Patrick Pasterniak hatte **schier** etwas　　dagegen.
　　　youngster Patrick Pasterniak had　SCHIER something against.it
　　　'**Apparently** (=*schier*), youngster P. Pasterniak was against [*his team losing*].'
　　　　　　　　　　　　　　(*DeReKo*: Burgenländische Volkszeitung, 11.06.2008)

(45)　Während der Saison den Klub zu wechseln, ist **schier** nicht
　　　during　the season the club to change　is SCHIER not
　　　das Einfachste.
　　　the easiest
　　　'To change one's club during the season is **probably** (=*schier*) not the easiest.'
　　　　　　　　　　　　　　(*DeReKo*: Burgenländische Volkszeitung, 05.09.2013)

Given its uncontroversially scalar origin (in the form of *schier* 'almost, virtually'), the modal particle *schier* 'probably, apparently' in Burgenland German (which seems to have been more wide-spread in the 19th century, according to the observations in Hügel 1873 and the DWB) thus provides further evidence for the scalar hypothesis of *well*-type modal particles in (8) (as repeated in (39)).

7.　Future directions / micro-parameters

In the spirit of Matthewson & Davis (2018: 7), we can now start looking for the micro-parameters in variation between the different modal particles that we have discussed. To give one concrete example, German *schon* is tendentially accompanied with a positive evaluative component (i.e., '*p* is good', cf. Egg 2012), while *schier* in Present Day East Austrian German has a negative evaluative component (i.e., '*p* is bad'); *wohl*, by contrast, is neutral. The contrast is very sharply illustrated by (46B$_1$) vs. (46B$_2$). To the extent that *schon* can be used in (46B$_1$), or *schier* in (46B$_2$), it can only be understood to be ironic. A question for future research is whether this difference derives from their different source meanings, *schier* 'almost' vs. *schon* 'already'.

(46)　A:　Schau mal, wie dumm sich der da　anstellt!
　　　　　look　PRT how stupid self he there behaves
　　　　　'Look at how incompetently he is acting there!'
　　　B$_1$:　Das wird **schier** / #**schon daneben** gehen.　　　(*schon* only ironic)
　　　　　this will　SCHIER #SCHON wrong　go
　　　　　'This will go wrong, I suppose.'

> B$_2$: Das wird **schon** / #**schier gut** gehen.　　　　　(*schier* only ironic)
> 　　 this will　SCHON #SCHIER good go
> 　　 'It'll be OK, I'm sure.'

Another possible micro-parameter might be the presence or lack of inferential evidentiality in the meaning of such modal particles. Göbel (2018) and Eckardt & Beltrama (2019) argue that German *wohl* is an evidential particle, which shares more properties with the evidential adverb *obviously* than with the purely epistemic adverb *probably*. Similarly, Zimmermann (2018) argues that German *schon* operates on evidence for *p* (vs. against *p*), and Fretheim (1991: 180) proposes that Norwegian *vel* and *nok* draw on the speaker's reasoning, indicating an inferential component. By contrast, Fretheim (1991: 180) argues that the Norwegian modal particle *visst*, which is also treated as a quasi-synonym of *vel* and *nok*, lacks this connection to speaker reasoning.[14] While *visst* is ascribed an evidential component by Fretheim (1991: 181), it can only draw on sensory (visual/auditory) experience.

　　A third parameter may be the presence or lack of a discourse-managing component. Fretheim (1991: 181) observes that Norwegian *vel*, but not *nok*, prompts the addressee to offer their opinion; this intuition is captured by his free translations of the Norwegian examples in (47B$_1$) and (47B$_2$) (from Fretheim 1991: 182).

(47)　A:　Jeg føler meg　ikke bra.
　　　　　 I　feel　myself not　good
　　　　　 'I don't feel well.'
　　 B$_1$: Nei, men du　har　**nok** ikke feber.
　　　　　 no　but　you have　NOK no　temperature
　　　　　 'No, but you **probably** don't have a temperature.'
　　 B$_2$: Nei, men du　har　**vel** ikke feber.
　　　　　 no　but　you have　VEL no　temperature
　　　　　 'No, but **you don't think** you have a temperature, **I suppose?**'

Intuitively, German *wohl* patterns more like *nok* in this case (rather than *vel*), in that (48B) seems to convey the same finality that Fretheim (1991: 182) intuits for (47B$_1$).

(48)　A:　Ich fühle mich　nicht gut.
　　　　　 I　feel　myself not　good
　　　　　 'I don't feel well.'
　　 B:　Nein, aber du　hast　**wohl**　kein Fieber.
　　　　　 no　but　you have　WOHL no　temperature
　　　　　 'No, but you **probably** don't have a temperature.'

---

14. Note that Norwegian *visst* is a cognate of German *gewiss* 'surely', according to Fretheim (1991: 177).

A fourth micro-parameter may be the presence or lack of an uncertainty inference. Zimmermann (2018: 724) argues that *wohl* can convey speaker uncertainty, which *schon* does not (as shown in (49A), slightly adapted from Zimmermann 2018: 724).

(49)   Q: What do you think about St. Pauli?
　　　A: St. Pauli ist **wohl** / #**schon** ein gutes Team, aber vielleicht
　　　　　St. Pauli is WOHL #SCHON a   good team but possibly
　　　　　auch nicht.
　　　　　also not
　　　　　'St. Pauli {would be a good team/#is a good team alright}, put possibly not.'

Finally, it is a defining factor of German *wohl* that it is anchored to the speaker in declaratives, (50a), but to the hearer in interrogatives, (50b).

(50)　a.　Der Schlüssel ist **wohl** in der Küche.
　　　　　the key   is WOHL in the kitchen
　　　　　'The key is in the kitchen **I assume**.'
　　　b.　Wo   ist **wohl** der Schlüssel?
　　　　　where is WOHL the key
　　　　　'Where, **do you assume**, is the key?'
　　　　　　　　　　(quoted from Eckardt & Beltrama 2019, emphasis added)

The type of hearer-anchoring that we see in (50b) seems to be completely impossible for Norwegian *vel*. Norwegian *wh*-questions with *vel* only have a rhetorical interpretation (see Fretheim 2018); in addition, as shown in (51) (repeated from (4)), yes/no-questions with *vel* are marginal to begin with, and – for speakers who accept them – only have a rhetorical interpretation as well.

(51) %Er det **vel** nødvendig å forhåndsbestille?
　　　is it   VEL necessary to make.a.reservation
　　　'It is **not** necessary to make a reservation.'
　　　(*lit*. 'Is it VEL necessary to …?')

By contrast, a German *yes/no*-question with *wohl* that is clearly addressee-oriented is cited in (52).

(52)　Es gibt die fragenden Blicke: Ist das **wohl** auch einer von denen?
　　　it gives the questioning looks is this WOHL also one of   those
　　　'There are those questioning looks: He **must** be one of them, **don't you think?**'
　　　(*lit*. 'There are those questioning looks: Is that WOHL also one of them?')
　　　　　　　　　　　　　(*DeReKo*: Tages-Anzeiger, 31.10.2002)

To summarize, micro-parameters along which *wohl*-type particles differ include: [i.] presence of positive (*schon*) or negative (*schier*) evaluation, [ii.] inferential evidentiality (present in *wohl/schon/vel/nok*, but not in Norwegian *visst*), [iii.] a discourse-managing component that prompts the hearer for an opinion (present in

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Norwegian *vel*, but not in Norwegian *nok*), [iv.] an uncertainty inference (in *wohl* but not in *schon*), and [v.] addressee-orientation in questions (with German *wohl*, but not with Norwegian *vel*).

It is crucial for future research on such particles to revisit each of these micro-parameters in turn, especially from a cross-linguistically comparative perspective (as in Matthewson & Davis 2018). One overarching question is whether a given micro-parameter corresponds to a meaning atom in its own right, such that it can be freely combined with other meaning atoms to 'assemble' the semantics of different modal particles. To determine if this is the case, a first step will consist of splitting the set of micro-parameters into those that are intimately connected to the notions of scales and gradability *vs.* those that are orthogonal to scalarity. As of now, it appears as if evaluativity (i.), discourse-managing (iii.), uncertainty (iv.), and addressee-orientation (v.) cannot be tied too closely to scalarity, as the various particles do not pattern together on these four properties in spite of sharing a common scalar core. At the same time, inferential evidentiality, (ii.), may be intricately linked to scalarity, as it seems to span all four of the main elements (*wohl*/*schon*/*vel*/*nok*) discussed in this paper. From this vantage point, the study of such modal particles may thus shed new light on the role of scales and degree modification in the semantics of inferential evidentiality.

8.   Conclusion

In this article, I have proposed that *wohl*-type modal particles have a scalar meaning component, which explains why they cross-linguistically emerge from scalar operators (such as *wohl* 'approximately', *vel* 'approximately, more than', *bien* 'very', *schon* 'already', *nok* 'enough', and *schier* 'almost, virtually'). In line with Beltrama's (2015) formal approach to subjectification, their grammaticalization can be assumed to involve a shift in the element that they operate on: while their source lexeme (such as 'approximately') may operate on propositions, the modal particle variants ('surely') operate on the speaker's commitment to the proposition. These insights can now be used as the basis for future investigations into the semantics of *wohl*-type modal particles, complementing the work that has already been done by authors such as Zimmermann (2008, 2011) or Eckardt & Beltrama (2019). It also opens new lines of investigation into how *wohl*-type modal particles fit into a broader, more general understanding of modality as a gradable/scalar notion (see Lassiter 2016). Finally, in Section 7, I outlined a range of micro-parameters along which *wohl*-type particles seem to differ. Mapping out the exact nature of such micro-parameters and how they derive from the source lexemes is one of the future tasks that emerge from the study presented in this paper.

Acknowledgements

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CHAPTER 10

Modal particles in questions and *wh*-sensitivity
A view from French and German

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This study concentrates on the use of modal particles (MPs) in non-standard questions (such as rhetorical questions or surprise-disapproval questions), both in German and in French. For French, the items considered here as MPs are *bien, diable* and *donc*. Their behavior in non-standard questions is interpreted in the light of Bayer & Obenauer's (2011) proposal for German non-standard questions. Special attention is devoted to the "Small PrtP construction" where the particle combines with a *wh*-item. I discuss the hypothesis of a specific path of pragmaticalization for particles in non-standard *wh*-questions that would involve focus-sensitivity. Starting from the MP-equivalent uses of French and German focus particles *seulement* and *nur*, I turn to *bien*, *donc* and *diable*, three particles that are not subject to focus-sensitivity. All three items have other uses outside of interrogative contexts where they either interact preferably with items denoting sets of alternatives, or where they are used to mark the high degree of a quality or the atypicality of an entity. From these usages, I derive the semantic value associated with each particle in non-standard questions. The conclusion is that sensitivity to scales and sets of alternatives is very likely to play a major role in the rise of illocution-modifying particles in *wh*-questions.

Keywords: focus-sensitive particles, pragmaticalization, special questions, wh-items

1.   Introduction: German

In German,[1] interrogative clauses involving modal particles (MPs)[2] are frequently presented as rhetorical questions (see Fernandez-Bravo 1993, 1995: 130, Sauerwein-Spinola 2002; Kwon 2005; Bayer & Obenauer 2011; Gutzmann 2011). For instance, the use of *schon* (cognate[3] to the adverb *schon*, 'already') in a question often suggests that the speaker is unable to imagine a satisfying answer to her own question. The systematic overview of the distribution of German MPs in sentence types by Kwon (2005) generally suggests that MPs in interrogative clauses very often turn the utterance into a "special question" in the sense of Bayer & Obenauer (2011). Thus, interrogative clauses provide interesting arguments for the hypothesis that MPs are illocutionary type modifiers (Jacobs 1991, discussion in Gutzmann 2011; a similar view, albeit formulated in a very different theoretical framework, has also been defended by the "Abtönungspartikel" school going back to Weydt 1969). The aim of this paper is to test this hypothesis against the background of a comparison between German, where MPs have been extensively studied, and French, where their very existence is still subject to discussion (for a discussion, see Detges &

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1.   This article has benefited from the discussion with all participants of the conference on particles in German, English and beyond in Saarbrücken in January 2019. At this stage, I want to thank wholeheartedly the conference organizers, as well as the two anonymous reviewers who made very helpful and relevant comments on the first draft of this paper. The usual disclaimer about remaining weaknesses applies.

2.   I define discourse particles as particles taking scope over the whole VP at least, that can modify the illocutionary value of the utterrance and/or help manage the embedding of the utterance in its conversational context through the management of expectations and inferences. The meaning description of discourse particles can involve conflicting viewpoints both in the context set and in the Common Ground. Among discourse particles, I take MPs to be a subkind specialized for the anticipation of the hearer's reaction. As we shall see, focus particles, which are not MPs, can function as discourse particles in some contexts. See Waltereit & Detges (2007) and Detges & Waltereit (2009) for further discussion of the difference between both kinds of particles from a slightly different point of view (the authors use the name "discourse particles" for those illocution-related particles that are *not* MPs).

3.   According to the examples provided by the *Deutsches Wörterbuch* ('Grimm dictionary'), the first non-equivocal occurrences of MP *schon* and temporal *schon* both date back to the first half of the 16th century, when both forms separated from *schön*, "clear, beautiful". For this reason, I prefer not to comment on the grammaticalization of *schon* at this stage. The same applies to the question of heterosemy: MP and non-MP uses of *schon* can indeed be described as heterosemes from a synchronic point of view, but the full picture should actually include *schön*, where adjectival functions go along with a small formal difference (vowel fronting) which is not a standard feature of heterosemy.

Waltereit 2009; Schoonjans 2014 among others). In the following, I will make use of the classification of "special questions" proposed by Obenauer (2004). Obenauer distinguishes between three subtypes of "special questions" usually marked with particles, thus going beyond the pre-theoretical notion of rhetoricity.

–   Surprise-disapproval-questions express the surprise of the speaker at the propositional content, with a negative orientation towards this content.

(1)   Was steh-st   du   hier herum?
        what stand-2sG you here around
        'Why are you hanging around here? (Get lost!)'

(cit. Bayer & Trotzke 2015: 34)

–   'Can't find the value of *x*' questions express that the speaker has already tried to answer the question but wasn't successful at it.

(2)   Where (the hell) can the murderer be hidden?!   (cit. Roussarie 2009: 392)

–   Rhetorical questions in the narrow sense convey a disguised assertion that no convenient value exists for the *wh*-item.

(3)   Was hatte   ich schon zu verlieren ? Habe   *ja*   bereits verloren.
        what had:1sG I   Prt   to lose?   Have:1sG *Prt* already lost
        'What did I have to lose? I had already lost.'

(cit. Sauerwein-Spinola 2002: 327)

From a syntactic point of view, a critical phenomenon often takes place in *wh*-questions: under some conditions, those questions involve what Bayer & Obenauer call the "Small PrtP construction", a pattern where the *wh*-item is directly followed by the MP before the finite verb.

(4)   [Warum *bloß*] ist   ein Rauschenberg so teuer?
        why   *Prt* be:3sG a   Rauschenberg so expensive
        'Why the hell is a Rauschenberg so expensive?'

(cit. Bayer & Obenauer 2011: 471)

This is the most relevant exception to the rule prohibiting MPs to appear before the finite verb in matrix clauses in German. Further, unless we want to give up the V2 constraint for *wh*-questions in German, we have to assume, as Bayer & Obenauer do, that the MP merges with the *wh*-item to form but one constituent (see Bayer & Obenauer 2011: 460–467 as well as 476–478 for a syntactic analysis).

However, not all MPs behave in the same way in all *wh*-questions, and further important distinctions are to be made. Most crucially, the Small PrtP construction seems to be incompatible with the "surprise-disapproval"-interpretation (Bayer & Obenauer 2011: 482).

(5)   Wie (*denn) sieh-st   du   denn aus?
      how (*Prt)   look-2sg you *Prt*   out?
      'What do you look like now?' (implied: "you look weird").

(6)   Was (*denn) lach-st   du   denn so dumm?
      what (*Prt)   laugh-2sg you *Prt*   so silly?
      'Why do you laugh so stupidly?' (implied: "you should rather be ashamed of
      behaving like that").

Whereas *denn* is licit in both global questions and *wh*-questions, albeit not in the
Small PrtP construction*, schon* does not seem to be licit in V1 questions (Kwon
2005: 102), but can occur in *wh*-questions, including in the Small PrtP construction.

(7)   Doch wer *schon* möchte   sich am   Jahres-ende in Askese   üben?
      but   who *Prt*   would.like REFL at:ART year-end   in asceticism exercise
      'But who on Earth would like to practice asceticism at the end of the year?'[4]

Further, while *doch* is also arguably not licit in V1 questions (Kwon 2005: 90), it
seems to be marginally licit in *wh*-questions.

(8)   Wie war   *doch* gleich Ihr   Name?
      how be.PRET.3SG *Prt*   now   your name?
      'What was your name, please?' (implied: "I knew it but I have forgotten", see
      other example. in Schoonjans 2013)

Its use is restricted to contexts where the speaker is aware that she should not have
raised the question. I couldn't find any occurrences of *doch* in the Small PrtP con-
struction in authentic corpora, nor in secondary literature. One further question
that will have to be raised in what follows is whether this syntactic distribution
can be connected to the individual semantics of the particles at stake and/or to the
categorial contribution of MPs to the meaning of *wh*-questions. Bearing these indi-
vidual differences and these questions in mind, let us now turn to French particles.

2.   MPs in French *wh*-questions: An overview

2.1   *Bien*, *Diable* and *Donc*

The existence of MPs in French has been disputed, but at least in questions,
there seem to be very plausible candidates, with at least three particles exhibiting
MP-similar behavior: *bien* (Culioli 1990; Péroz 1992, Mosegaard Hansen 1998),

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4. Source : German Reference Corpus (Ref : DEREKO, A01 / JAN.-01011 St. Galler Tagblatt,
06.01.2001)

donc (Culioli 1990) and *diable. Bien* is cognate to the adverb meaning 'well', *donc* to an abductive conjunction equivalent to 'thus, consequently', and *diable*, to the noun meaning 'devil'.

(9) Qu'=a=t⁵=il *bien* pu   se   passer pour en   arriver à
     what=has=it *Prt* can.PAST.PTCP REFL happen for   from-this arrive to
     ce   constat   amer?
     this assessment bitter
     'What can possibly have happened that led to this bitter assessment?'[6]

(10) Que *diable* allait=il faire dans cette galère?
     what *Prt*   went=he do   in   this galley
     'What on Earth was he doing on this galley?'

                            (Molière, *Les Fourberies de Scapin*, II.7)[7]

(11) Mais où   ai=je   *donc* mis ma montre ?
     but   where have:1SG=I *Prt* put my watch
     'Where have I put my watch?' ("I have no idea")

                            (Beckett, cit. Schoonjans 2014: w40)

As stated above, the classification of *bien* or *donc* as MPs is controversial, as is the mere existence of MPs in French. While the case of *diable* is indeed quite dubious, it seems to me that there are several reasons for assuming the existence of MPs in French, and for regarding *bien* and *donc* as good candidates.

From a functional point of views, I follow Waltereit (2006) in stating that MPs mark anticipations of reactions to the content of the clause, especially anticipations concerning the ratification of its propositional content by other speech act participants. This definition seems to be acceptable both for defenders of the "epistemic modal" interpretation such as Abraham (2012, on MPs as markers of "Foreign Conscience Alignment"), for proponents of relevance-theoretical accounts (starting with König 1991 and going on mostly with Gast 2008 on "Common Ground updating") and for supporters of "argumentative" functions (Fischer 2007, see König 1997

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5.   The *t* is not glossed since it is a mobile consonant appearing for strictly phonetic reasons.

6.   Source: https://www.lci.fr/famille/l-oncle-raciste-la-belle-soeur-depressive-et-la-cousine-devote-les-conseils-pour-survivre-avec-dignite-au-repas-de-noel-2108074.html [retrieved on June, 8th, 2019].

7.   An anonymous reviewer asks whether this literal translation is correct. Today, *galère* can indeed mean 'a desperate situation' and *qu'allait-il faire dans cette galère*, 'why did he put himself in such a mess ?'. But those uses are actually derived from the present example, taken from one of Molière's best-known comedies. In the original extract, one of the characters is supposed to have been made prisoner by pirates while visiting a galley. 'What on Earth was he doing on this galley ?' is the scream of his father upon learning of this supposed abduction.

on the convergence of argumentative and relevance-theoretical approaches). The fact that French exhibits some pragmaticalized or semi-grammaticalized, syntactically integrated items specialized for this sort of meanings is commonly accepted (see Ducrot 1980 for a general view, Culioli 1990: 135–168. Mosegaard-Hansen 1998 and Waltereit & Detges 2007 on *bien*, Culioli 1999 on *seulement*, Paillard 2017 on the classification of particles among discourse markers in French). The bilingual dictionary of particles by Métrich et al. (1992–2001) as well as the contrastive work by Schoonjans (2013, 2014) have also shown that even though German MPs are often not translated at all in French, there are still some equivalents, e.g. between *donc* and *doch* or some uses of *bien* and some (stressed) uses of *wohl*.[8]

Since the issue of pragmaticalization and/or grammaticalization will come to play some role later on in this paper, let us state immediately that I use a minimal definition of pragmaticalization as conventionalization of a lexical item or a phrase as marker of a pragmatic function. In some of theses cases, pragmaticalization goes along with grammaticalization. For instance, in the following example, *diable* is clearly grammaticalized since *quelle* ('which', feminine form) agrees with *anecdote* (fem.) and not with *diable* (which as a noun is masculine), as should have been the case if *diable* were still a full noun.

(12) Quelle *diable* d'anecdote   viens-tu   me conter là!
       which.F *devil*(M) of=anecdote(F) come:2SG=you me tell   there
       'The story you're telling me is so incredible!'[9]

At this stage, it appears that French has some discourse particles. But does it mean that they are MPs in the proper sense? While some cases are quite dubious (see Buchi 2007 or Moosegard-Hansen 2000 on *déjà*, for which there does not seem to be any clear MP-similar use), some uses of *bien* in questions and assertions exhibit a clear MP-typical meaning (see also Péroz for a general overview on the values of *bien*, although the question of its categorial classification is not raised in his book). Even Waltereit & Detges (2007), who defend the idea of a strict separation between discourse particles and MPS, claim that French *bien* is an MP.

However, the chief objection raised by scholars who remain skeptical about the existence of proper MPs in Romance languages is syntactic. They claim that

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8. An anonymous reviewer points out that *also* ('thus') also exhibits specialized interrogative uses that might be a suitable equivalent to some examples with *donc* in this paper. This suggests that it might be fruitful to pursue more contrastive work on discourse particles going back to semantically similar lexical items. This has already been proposed in the studies collected by Paillard (ed., 2017), including one on German *wohl* and French *bien* (Modicom 2017), but there is obviously more work to do in this domain.

9. Source: https://www.cnrtl.fr/lexicographie/diable [retrieved June 9th, 2019], quoted from Victor Hugo.

the definition of MPs is not purely functional, and that it implies some formal features that must be language-specific (Diewald 2013). Most crucially, starting with Abraham (1991), it has been claimed that the language-specific notion of "modal particle" is associated with the existence of a "bracket structure" as in German and other Germanic languages exhibiting MPs such as Dutch, Swedish or Norwegian: Except for the "Small PrtP construction", MPs appear only in the "midfield" of the German verbal clause, i.e. between the two structural positions of the verb in autonomous clauses (first or second position for the finite verb and final position for the non-finite part of the verb) or between the initial complementizer and the final verb cluster in dependent clauses (from a generative point of view, both cases are equivalent: MPs have to appear between the constituent in C and the basic syntactic position of V).

(13) a.   Wie du weiß-t,   hat   er das *ja* immer so gewollt.
           as   you know-2sɢ has:3sɢ he it   *Prt* always so wanted
           'As you know, he always wanted it to be so.'   (cit. GRAMMIS)[10]
     b.   … weil   die Priester *ja* auch Ärzte   waren
          …because the priests *Prt* also doctors were:3ᴘʟ
          'Because the priests were also doctors [as you know].'
                                        (cit. Métrich et al. 1992–2001, vol.4, p. 130)

This argument is discussed thoroughly by Schoonjans (2014). Since the Small PrtP construction plays an important role in this paper, I will not use his arguments drawing on the existence of these constructions, which would lead me to a circular reasoning. Yet, Schoonjans also shows that it is actually untrue to claim that there is nothing like a "bracket structure" in French. In example (14), the two bracket positions are arguably held by *dois* and *dire*:

(14) Je dois encore le   lui   dire.
      I   must still   3sɢ:ᴀᴄᴄ[11] 3sɢ:ᴅᴀᴛ tell
      'I must still tell it to her.'   (cit. Schoonjans 2014: § 27)

In questions, the finite and the non-finite forms of the verb are clearly separated and there is some room for additional constituents. (15) is a surprise-disapproval polar question; the bracket positions are held by *avez* and *cru*:

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10. Source: https://grammis.ids-mannheim.de/systematische-grammatik/279 [retrieved: Nov. 28th, 2019].

11. There is no proper case system in French, except for some traces in pronominal paradigms. *Le* and *lui* are two oblique pronouns. *Lui* is always used to resume prepositional antecedents, especially those marked by the destinative preposition *à*.

(15) Vous n'avez   *tout de même* pas   cru   cela?
      you   NEG1=have *Prt*   NEG2 believe:PART DEM:DIST
      'Don't tell me that you believed it!'   (cit. Schoonjans 2014: § 29)

One could argue against Schoonjan's claim that this bracket structure is by no means as developed as it is in German. But Dutch, Norwegian and Swedish also exhibit a much more limited bracket structure that German and they present undisputed MPs, as well. The very extensive midfield of German is not an archaic feature of Germanic: German has actually developed its midfield further than other Germanic languages.

Furthermore, in his paper, Schoonjans delivers a corpus study on the position of six items that are very likely to be MPs in French (*bonnement, donc, quand même, seulement, simplement* and *tout de même*).[12] He shows that depending on the sentence type, 81% of the pragmatic uses of these items appear in this tentative midfield (the highest value, 97%, being obtained in injunctions). 29% of them appear between a finite and a non-finite verbal form, i.e. in a position for which there is no doubt about its similarity with the Germanic "bracket"; 52% of them appear immediately after the finite form or in the Wackernagel position in sentences where the verb does not exhibit a non-finite part, i.e. in positions that cannot be completely proved to belong to something like a "midfield", but that are good candidates if one admits the existence of such a midfield in French. This suggests that the argument on French particles being radically different from German MPs from a syntactic point of view should not be overstated. On the contrary, items such as *donc* and *bien* display formal and functional properties that are strikingly similar to those of German MPs. As regards *diable*, things are more complicated even though the superficial behavior of diable in questions seems to make a comparison with *donc* and *bien* very natural. As we shall see, *diable* actually behaves quite differently from the other two. Especially, its formal properties are quite distinct. The fact that it cannot appear outside of the "Small PrtP construction" (see below) means that *diable* is not licit in the French equivalent of the "midfield". *Diable* is often stressed, which seems to be possible with *donc* in the "Small PrtP construction" but not in the midfield. Interrogative *bien* is never stressed. At this stage, it is difficult to see if these prosodic properties have to do with the syntax of the particles (as suggested by the fact that *donc* can be stressed in the "Small PrtP construction") or with different degrees of prosodic deficiency. If the latter is true, *diable* might have to be set apart.

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12. All these forms are primarily adverbs, but I suscribe to the view that at least in Romance (and arguably in Germanic, as well), particles are adverbs (see Cardinaletti & Starke 1999, or Manzini 2015 for an even more radical stance).

(16) a. Où   a-t-il   *bien* / **BIEN* pu   ranger sa   montre?
          where have:3SG-he *Prt* / *Prt*   can:PART put   POSS:3SG watch
          'I wonder where has he put his watch'

      b. Où a-t-il *donc* / **DONC* pu ranger sa montre?

      c. Où *donc* / *?DONC* est-ce qu'il a pu ranger sa montre?

      d. Où *diable* / *DIABLE* a-t-il pu ranger sa montre?

      e. Où a-t-il **diable* / **DIABLE* pu ranger sa montre?

The use of *diable* in non-standard questions has been mentioned by the notoriously conservative Académie Française dictionary since its 1762 edition.[13] *Diable* is originally a noun ('devil'), unlike *bien* and *donc*, which exhibit adverbial origins ('well' and 'thus', respectively). The use of *diable* as a particle is similar to that of more complex phrases like Engl. *the hell* or Germ. *zum Teufel. Diable* is strictly restricted to questions where the speaker doesn't have any answer, usually with a surprise-disapproval meaning.[14] This means that the "particle" use of *diable* is much more restricted than comparable uses of *donc* or *bien*.

Given its specific history, we can indeed expect to find some differences in the behavior of *diable* as opposed to *donc* and *bien*. Indeed, unlike *diable*, MP *bien* is licit in polar questions, albeit with a different meaning.

(17) a. Est-ce qu'il   est parti ?[15]
          is-that COMP=he is   left
          'Did he leave? / Has he left?'

      b. *Est-ce qu'il est *diable* parti?

      c. Est-ce qu'il est *bien* parti ?
          'Has he left, as he was expected to ?'

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13. Source: https://www.cnrtl.fr/definition/academie4/diable [retrieved on June, 8th, 2019].

14. Obenauer (1994 and subsequent work) regards *diable* questions as "Can't find the value of *x*" questions. Indeed, by using *diable*, the speaker usually manifests that she has not been able to find any fitting value for *x*. But as we shall see later, the core semantics of *diable* are more consistent with the idea of *diable* also conveying an attitude of surprise and / or disapproval towards the very fact that no convenient value can be found, and for this reason, I would rather regard *diable* as an exponent of surprise-disapproval questions. This notion of disapproval is explicitly mentioned in the 1762 dictionary : "On dit aussi, pour marquer qu'on désapprouve quelque action, quelque discours, &c. *Que Diable avez-vous fait? Que Diable avez-vous dit?"* (One also says, as a way to mark that one disapproves of some action, discourse etc.: What [diable] have you done? What [Diable] have you said?).

15. Examples without indications of source are my own. So are all grammaticality judgements for French.

This meaning of confirmation is characteristic for the use of MP *bien* in assertions. It is possible to answer with a declarative utterance containing MP *bien*, with its characteristic corroborative value:

(18)　Oui, il　est *bien* parti.
　　　 Yes, he is　*Prt*　left
　　　 'Yes, I confirm that he has left.'

We have to assume that the corroborative particle *bien* takes a rather low position in the hierarchy of the clause, and that it is maintained in this position in V1 questions, regardless of the illocutionary operator, whereas the MP use in *wh*-questions exhibits different features.

　　　Let us now turn to *donc*. It is also acceptable in yes-no-questions:

(19)　Est-ce qu'il　　　 est *donc* parti ?
　　　 is-that COMP=he is　*Prt*　left
　　　 'Should I infer that he has left?'

Authentic contexts show that yes-no-questions with *donc* are actually illocutionary consequences of the previous reasoning exposed immediately before asking the question. In other words: *donc* in yes-no-questions is pragmaticalized, but it is not an MP; it has undergone a meaning shift from *de re* consequence to *de dicto* consequence and now presents the act of asking the question as the result of what precedes:

(20)　Je viens de commencer un tour du monde un peu à l'arrache et du coup je n'ai pas eu le temps de faire mes vaccins contre la rage et l'encephalite japonaise, qui nécessitent tous deux des rappels. Je voulais les faire ici au Canada mais quand je vois les prix (200 \$ L'injection…), je me dis que je trouverai sûrement moins cher en Amérique du Sud non?
　　　 'I've just begun with a trip around the world, quite in a hurry, and thus I didn't have the time to get my vaccines against rabies and Japanese encephalitis, which both need booster shots. I wanted to do this here in Canada, but when I see the prizes (\$ 200 each vaccine…), I think that I would certainly get something cheaper in South America, wouldn't I?'
　　　 Est-il *donc* possible au Mexique (ou ailleurs　dans le　coin)　de
　　　 is-it　*donc* possible in Mexico　or　elsewhere in　the corner to
　　　 se pointer　dans un hopital et　de se　faire　vacciner ?
　　　 REFL=check in　a　hospital and to　REFL make vaccinate?
　　　 'So, is it possible to come unannounced to a hospial in Mexico or somewhere else in that region, and to have oneself vaccinated?'[16]

16.　Source: https://tinyurl.com/ueh2ety4 [retrieved Dec. 6th, 2019]

(21) Pour les Français établis dans les 32 autres États, ces difficultés supplémentaires administratives, et ces coûts liés peuvent être un frein au retour en France.
'For those French people who live in the other 32 states, these additional bureaucratic troubles and these costs can be a hurdle for their resettling to France.'

Est-il *donc* possible d'avancer   sur le dossier des   échanges
is-it *donc* possible to=come.forward on the file   of.the:PL exchanges
de permis avec les   autres États, dans un souci de rendre plus
of licenses with the:PL other:PL states in   a   sorrow of make more
attractive la   France et   de faciliter les   démarches de retour
attractive the:F France and to facilitate the:PL procedures of return
en France ?
to France
'So, is it possible to have some progress in the issue of mutually recognized licenses with other States, in order to make France more attractive and and to facilitate the procedures for those who return to France?'[17]

As a consequence of that, it is not possible to answer a yes-no-question in *donc* with an assertion including *donc*, as opposed to what we have seen for *bien*.

(20) a. Oui, il est **donc possible de se faire   vacciner.
          Yes, it is   *donc* possible to REFL make vaccinate
          'Yes, it is possible to have oneself vaccinated.'
      b. Oui, il est **donc possible d'avancer   sur ce dossier.
          Yes, it is   *donc* possible to come.forward on this file
          'Yes, it is possible to achieve some progress on this issue.'

Actually, consecutive *donc* is possible in post-verbal position in assertions, but with a *de re* reading:

(22) Il ne   se   sentait pas   bien, il est *donc* parti.
      he NEG1 REFL felt   NEG2 well, he is *donc* left
      'He didn't feel good, so he left.'

Thus, even though *bien* in yes-no-questions is an MP and *donc* is arguably not, both items are similar inasmuch as their use in *wh*-questions is quite different from what can be observed both in assertions and in yes-no-questions. This suggests that we might have the need for a specific pathway to the emergence of *wh*-particle questions.

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17. Source: http://questions.assemblee-nationale.fr/q15/15-10350QE.htm [retrieved Dec. 6th, 2019]

2.2 The Small PrtP construction in French

All of those three French MPs interact preferably with *wh*-items, either in the Small PrtP constructions or after the finite verb. This means that the ban on Small PrtP constructions in "surprise-disapproval" questions observed by Bayer & Obenauer for German does not hold in French, at least if we judge that *diable* questions express surprise-disapproval.

(23) a. Où   est-il allé ?
          where is-he gone
          'Where has he gone ?'
      b. Où *donc* est-il allé ?
      c. Où est-il *donc* allé ?
      d. Où est-il *donc bien* allé ?
      e. Où est-il *bien* allé ?
      f. *Où *bien* est-il allé ?
      g. Où *diable* est-il allé ?
      h. *Où est-il *diable* allé ?

Diable even has to appear immediately after the *wh*-item and thus it occurs only in the Small PrtP construction (see 23 h). This is not be the case for *bien* and *donc* (23 c, d and e). On the other hand, *bien* does not accept the Small PrtP construction at all (23 f and 24 to 26) :

(24) *Pourquoi *bien* a-t-il   fait   cela ?
       why   Prt   has-he done that ?
       Intended : 'Why did he do that ?' ('I wonder')

(25) *Qui *bien* a   volé   l'orange   du   marchand ?
       who Prt   has stolen the=orange of.the merchant
       'Who stole the merchant's orange ?'

(26) a. Qu'a-t-il   pu   dire?
          what has-he can.PART say
          'What may he have said?' (implied: "I have no idea about it")
      b. Qu'a-t-il *bien* pu dire?
      c. Que/*Quoi *bien* a-t-il pu dire?

Donc is not acceptable in the Small PrtP construction after *que* ("what").

(27) a. Qu'a-t-il *donc* pu dire ?
      b. *Que *donc* a-t-il pu dire ?

Yet, it seems to be acceptable after the other *wh*-word used for things, *quoi*, originally the stressed form of *que*.

(28) De quoi *donc* a-t-elle besoin ?
of what *Prt* has she need
'What does she need ?'

(29) A quoi *donc* pensait-elle ?
to what *Prt* thought=she
'What was she thinking about ?'[18]

Further, *donc* is acceptable with *qu'est-ce* in the frozen *wh+est-ce que* construction.

(30) Qu'est-ce donc qu'il   regarde, cet oeil effaré   des   mourants ?
what is-that *Prt* COMP=it looks   this eye astonished of.the:PL dying:PL
'What is it looking at, this astonished eye of dying people ?'
(Victor Hugo, *Les Contemplations*, "Joie du soir", 1843)

Que is deficient in several constructions, incl. PrepPs. Thus, we might assume that this restriction of use is actually due to *que* being unable to merge with other constituents.

As it stands, it seems that all three particles behave differently in *wh*-questions and polar questions: *diable* is not licit in polar questions altogether, *donc* is not an MP in polar questions, and *bien* has a different semantic contribution depending on the question being polar or partial; *bien* is also the single of those three MPs not to be licit in the Small PrtP construction. In the next step, I intend to discuss this specificity of *wh*-questions: Is there a specific semantic path for MPs in *wh*-questions? If so, is there a link between this semantic path and the issue of the Small PrtP construction? And what about *bien* not accepting this construction?

3. Looking for a specific semantic path for Modal particles in *wh*-questions

3.1 „Only"

Up to now, I have only dealt with modal particles. But as it seems, both in French and in German, MPs are not the only discourse particles licit in *wh*-questions that can trigger illocutionary modification. French *seulement* and German *nur* (both comparable to English *only*, see König 1991) also occur in *wh*-questions in context where the speaker has absolutely no idea about the answer. In German, *nur* can even participate in the Small PrtP construction:

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18. An anonymous reviewer raises the highly interesting hypothesis of a "constraint against monosyllabic or non-stressed interrogatives", that might be due to the fac that "MPs need to be non-stressed, too". This is certainly a very relevant explanation attempt. However, since it seems to me that the prosodic status of *donc* in the Small PrtP clause needs further investigation, I will leave this question open.

(31)   *[Summary of TV movie : Harriet has disappeared for many years, but each year,*
       her uncle still receives an anonymous birthday present, a flower between two
       pieces of glass, the same present she used to make him][19]
       Was *nur* ist damals   mit Harriet geschehen ?[19]
       what *Prt* is at.that.time with H   happened
       'What on Earth happened to Harriet at that time?'

From a functional point of view, it is very tempting to treat those items as MPs
characteristic for "Can't find the value of *x*" questions. But it is still disputed whether
nur should be regarded as an MP or still as a FocP, albeit with a value of "free
choice" (as argued by Abraham 2017 or Modicom & Duplâtre 2018). This value of
free choice is reminiscent of what happens in irrelevance conditionals, where the
non-contiguous combination of a *wh*-word with *nur* or with *auch* (additive FocP)
triggers the same "widening" effect.

(32)   Wohin   ich *auch* schaue ins   heimische Land,
       where:DIRECT I   Prt   look:1SG in:ART.ACC home-ADJ land
       [Da blühen die Reben an sonnigen Hügeln.]
       'Wherever I look in my home country, [grapevine is blossoming on the sunny
       hills.]'   (song)

(33)   Wohin   ich *nur* trete,
       where.direct I   Prt set.foot:1SG
       [wiederhole ich den bangen Auftritt unsrer Trennung].
       'Wherever I set foot, [I repeat the anxious event of our separation.]'.
                                        (Friedrich Schiller, *Philosophische Briefe*, 1786)

An anonymous reviewer justly points out the fact that this use can only have devel-
oped from the "scalar" kind of *nur*, since the "exclusive" *nur* is incompatible with
quantifiers and *wh*-items can be assimilated to quantifiers. I cannot agree more.
We shall see a similar phenomenon with *bien* below: the specialized "Can't find
the value of *x*" use of the particle in *wh*-questions cannot be connected directly to
the most frequent use in declarative contexts, but to a slightly specific and clearly
scalar value that becomes more salient in *wh*-subordinate clauses. In the case of
German *nur*, it does not seem that the interrogative use of the particle really needs
to be classified an MP since its meaning is not primarily concerned with illocution-
ary modification: it is much more a subcase of the scalar focus-sensitive particle,
and hardly distinguishable from its use with *wh*-subordinates. The "Can't find the
value of *x*" effect is secondary, and arises from the combination of free choice with
interrogative sentence mood.

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19. Source: DEREKO, BRZ09/SEP.13957

Yet, this also hints at a possible path of development for *wh*-sensitive MPs: if one assumes that *wh*-items denote sets of entities and that in questions, those entities are conceived of as alternatives, focus-sensitive particles and other devices specialized for the scanning of paradigms of alternatives could be good candidates for the grammaticalization into MPs (which might well be the cline which *nur* is currently engaged on). This would also provide a reasonable explanation for the rise of Small PrtP constructions, which can indeed be modeled in the same way as Focus particle phrases (as proposed by Bayer 2018). In German, it has been shown that MP *schon* and its temporal adverbial cognate have retained the same core meaning, which involves scales of alternatives. Temporal *schon* is focus-sensitive and has developed further uses as focus particles outside of the semantic realm of temporality (König 1977; König 1991; Zimmermann 2018).

Doch is not focus-sensitive, but it always involves the presence of conflicting alternatives. As such, it finds itself in a neighboring domain of focus, while not exhibiting the syntactic properties associated with focus-sensitivity proper. And indeed, as an MP, *doch* is acceptable in V2 questions, even though examples of it are quite rare. It doesn't seem to occur in the Small PrtP construction, suggesting that there might indeed be a different cline of grammaticalization for focus-sensitive particles (see Bayer 2018: 258 for a synthesis on the structural similarities between both classes).

3.2 Situation in French

Diable is licit only in the Small PrtP construction, and seems to waver between "Can't find the value of *x*" and surprise-disapproval questions (Obenauer 1994 and subsequently, Beyssade 2006). But a look at its cognates suggest that *diable* has its own history as a surprise-disapproval intensifier often syntactically associated with the constituent concerned by the intensification. Besides its uses in questions, *diable* is not only a swear word used to mark surprise, similar to English *the hell* or German *zum Teufel*. *Du diable* ('of the devil') and *de tous les diables* ('of all the devils') can be used to intensify nouns, usually to express disapproval about this intensity.

(34) Dès qu'il s'agit, dans leurs inventions littéraires [de nos auteurs dramatiques], d'un adultère, cela devient une affaire *de tous les diables*.[20]
'As soon as what is at stake in their literary inventions [of our playwrights] is adultery, this becomes *the hell of* a stuff.' (lit. 'a business of all devils')

The pattern <Art *diable de* + Noun> is also used to mark the combination of surprise and disapproval, this time inside of a noun phrase (see Example (12), reproduced here as (35)):

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20. Source: https://www.cnrtl.fr/lexicographie/diable [retrieved June 9th, 2019], quoted from Sainte-Beuve.

(35) Quelle **diable** d'anecdote   viens-tu   me conter là![21] Si tu
      which.F devil(M) of=anecdote(F) come:2SG=you me tell there   if you
      crois   que   je te   crois![22]
      believe COMPL I   you believe
      'The story you're telling me is so incredible! Don't believe that I will believe
      you!'

These pragmaticalized uses of *diable* show that this marker has long developed a
set of specialized discourse values centered on surprise at and/or disapproval of
something representing an extreme and unexpected value within a set of possi-
ble entities or situations. *Diable* is not focus-sensitive, but its surprise-disapproval
uses go along with the ability to associate with a constituent and to semantically
characterize this partner constituent within a paradigm in the same fashion as in
"*wh-diable*-verb" surprise-disapproval questions.

    As regards *donc*, Culioli (1990: 169–175) has shown that the basic procedural
meaning of *donc* is to link a pre-constructed term *x* to a new term *y*, where *x* is
the background for the conversational validity of *y*. *Y* is the most adequate and/
or contextually relevant item (abduction is only one possible contextual value of
this more general operation). In other words: in *x donc y*, *donc* is used to make it
possible to assert *y* given the conversational background, of which *x* is the most
salient component, but not necessarily the only one, since the spring from *x* to *y*
usually needs at least an entailment rule or another premise.

(36) La porte était fermée;
      'The door was closed.'
      j'ai   *donc* attendu dans la   rue.
      I have *donc* waited in   the street.
      'so I waited in the street.'   (cit. Culioli 1990: 175)

(37) De   1784 à 1796, *donc* du   vivant de Laclos,
      from 1784 to 1796 *donc* of.the living of Laclos,
      douze autres éditions parurent
      twelve other editions appeared
      'From 1784 to 1796, and thus during Laclos' lifetime, twelve other editions were
      published.'   (Culioli 1990: 173)

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21. Source : https://www.cnrtl.fr/lexicographie/diable [retrieved June 9th, 2019], quoted from
Victor Hugo.

22. Source : https://www.cnrtl.fr/lexicographie/diable [retrieved June 9th, 2019], quoted from
Victor Hugo.

Most crucially, in *wh*-questions, this lack of assertability is due to the impossibility to select a valid term inside of the paradigm of alternatives denoted by the *wh*-item. Culioli's proposal is that in these cases, the combination with a particle such as *donc* or *seulement* indicates that the *wh*-item includes the requested content item y.

> Asking a question means to scan (in an abstract way) all conceivable solutions without being able to isolate one of them as valid. Resorting to another speaker, be it in reality or in pretense, gives the notion of an end point to this process of scanning. […] *Donc* marks the relationship between the antecedent (the process of scanning completed over the set of possible solutions) and the end point which finally brings the scanning process to a stable conclusion. Hence the subjective force of *donc*, which reinforces the interrogation, with various effects which can be paraphrased as surprise, impatience, or irritation, because one does not reach the end of the scanning process. Examples are:
>
> > *Où donc est-il? Où est-il donc?*
> > 'Where is he, at last? Where is he?'
> > *Qui donc aurait pu prendre les clés?*
> > 'Who could have taken the keys? (I wonder)'
>
> (cit. Culioli 1990: 171; my transl.)[23]

In assertive contexts, the combination *wh*+particle marks that all members of the set are acceptable (hence the free choice value of the construction). Conversely, in *wh*-questions, this combination is interpreted on the background of the semantic characteristics associated the sentence mood: the scanning of alternatives has led to no result, and it is now the hearer who must try to deliver a solution.

This description might explain why there is an opportunity for focus-sensitive particles to re-grammaticalize into discourse particles in this construction: *Only*, for instance, marks that a paradigm is being boiled down in the sense of exhaustion to its minimal values. In combination with a *wh*-item in a question, it can mark that the whole set of possible solutions has been scanned down in vain, thus specializing for "Can't find the value of *x*" contexts.

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23. "Interroger, c'est parcourir, de façon abstraite, les valeurs imaginables sans pouvoir en distinguer une qui soit valide. Le recours (réel ou fictif) à autrui fournit la représentation d'une issue à ce parcours. […] *Donc* marque la relation entre le prédécesseur (le parcours sur la classe des occurrences possibles) et l'issue qui, de façon ultime, stabilise le parcours. D'où la force subjective de *donc*, qui renforce effectivement l'interrogation, avec des effets divers que l'on peut gloser comme de la surprise, de l'impatience, de l'irritation, parce qu'on n'arrive pas à la fin du parcours. On aura par exemple: *Où donc est-il? Où est-il donc? Qui donc aurait pu prendre les clés?*"

This points to a limit of the account in terms of MP grammaticalization. There are basically two ways which can lead to a particle that is capable of merging with a *wh*-item in a Small PrtP and specializes for a certain kind of "special questions". The first is a construction involving a focus-sensitive particle taking the *wh*-item as its partner constituent. At least at this stage, it is still possible to describe this pattern as a special use of a focus particle. On the other hand, Culioli's analysis of *donc* shows that there is a pathway for other procedural markers to get access to Small PrtP constructions even though they are not focus-sensitive.

Donc shows that non-focus sensitive markers can develop into *wh*-sensitive modal particles in questions, as well. But the semantic and syntactic behavior of MP *donc* in *wh*-interrogative contexts cannot be completely reduced to the other uses of *donc:* we have to assume some degree of polyfunctionality or heterosemy. What is crucial here is probably the fact that even though *donc* does not separate the propositional content into a focus part and a presupposed background, it is a binary operator distinguishing between a conversational background that is treated as mutually accepted by speech act participants, and a new piece of information whose validity is at stake in the utterance, and has to be verified on the background of the given information.

(36)   La porte était fermée; j'ai *donc* attendu dans la rue.
        'The door was closed, *so* I waited in the street.'   (cit. Culioli 1990: 175)

This partition between the mutually accepted conversational background and the new, still unratified information is quite different from the partition between presupposition and focus, yet they are comparable. Although both sorts of information-packaging are quite different from a semantic point of view, they are pragmatically akin. The bipartition associated with the use of *donc* matches with some characteristics of *wh*-questions, where the *wh*-item corresponds to an open slot of new information, whereas the rest of the clause is usually treated as mutually accepted. Thus, the structured meaning of *wh*-questions fits not only the information-structural characteristics of focus-sensitive particles, but also some other procedural discourse markers like *donc*.

Things are still quite different when we have a look at *bien*. In assertions, MP *bien* does not include a conflict between a part that is validated and a part that is still subject of divergence between competing viewpoints. Apart from its uses in cleft structures, *bien* does not associate with one (or even several) focalized constituents of the clause. If there is any sort of focus at stake with the MP use of *bien*, it is Verum Focus: *bien* recalls that *p* is the case in a context where at least one speech act participant seems to waver between *p* and *not-p*.

(38) *[context: a food industrial has been accused of selling fraudulent meat, including*
      minced beef made of water and fat, but no meat]
      Contrairement au   raccourci qui est parfois effectué, il y avait   *bien*
      contrary.ADV   to.the shortcut REL is sometimes made, EXIST.PAST *Prt*
      de   la   viande dans ces   steaks   hachés !
      PARTIT DEF meat   in   those rumpsteaks minced
      'Contrary to the simplistic story that is sometimes told, there was Prt meat in
      those pieces of minced beef!'[24]

As we have seen, this value is retained in yes-no-questions.

(39) *[context: a reform of social law forces the judges to check the employers' claims*
      behind short-term contracts]
      A l'avenir, les juges de première instance devront examiner plus en détails le
      contexte de ces contrats, avant de se prononcer : sur quels motifs étaient-ils
      fondés ?
      Y'avait-il   *bien* une absence à compenser ?
      EXIST.PAST.INTERR *Prt* a   vacancy to compensate
      'In the future, judges at the first level of juridiction will have to examine the
      context of these contracts more in detail, before they can take a decision: What
      were the grounds for them? Was there Prt a vacancy to fill?'[25]

Actually, it can even be retained in some *wh*-questions that are not special questions:

(40) Pourquoi y avait-il   *bien* penalty pour une bousculade
      why   EXIST.PAST.INTERR *Prt* penalty for   a   jostling
      sur l'arbitre   d'Ajaccio-Le Havre ?
      on the referee of Ajaccio-Le Havre?
      "Why was it indeed appropriate to award a penalty after the referee of Ajaccio
      vs Le Havre had been jostled?" (→ the paper will explain why the penalty was
      legitimate, although some have cast doubt upon this legitimacy)[26]

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24. Source: https://www.francetvinfo.fr/sante/alimentation/steaks-haches-frauduleux-il-y-avait-bien-de-la-viande-mais-la-composition-de-ces-produits-n-etait-pas-conforme_3479345.html [retrieved June 9th, 2019]

25. Source: https://lentreprise.lexpress.fr/rh-management/droit-travail/104-cdd-a-la-suite-mais-l-entreprise-n-a-pas-abuse_2030654.html [retrieved June 9th, 2019]

26. Source: https://maligue2.fr/2018/05/20/pourquoi-y-avait-il-bien-penalty-pour-une-bousculade-sur-larbitre-dajaccio-le-havre/ [retrieved June 9th, 2019]

Thus, there does not seem to be any way in which *bien* could have followed one of the two paths described above. As expected, *bien* has not developed accessibility to the Small PrtP construction. Yet, we have seen that it behaves as a modal particle specialized for "Can't find the value" questions in *wh*-interrogative clauses. The question arising from this is twofold: (i) How come *bien* has been able to develop its "Can't find the value of *x*" usage in *wh*-questions? (ii) How is this compatible with its maintained incompatibility with the "Small PrtP" construction?

Lets us turn back to assertions. The main pragmatic reading of MP *bien* is corroborative. In these contexts, *bien* can commute with *bel et bien* (lit. 'beautiful and well')

(41)   Pour une organisation qui a toujours associé le mois de jeûne musulman à une agressivité meurtrière,
'For an organisation [ISIL] which has always associated Ramadan, the month of fasting, to murderous aggessivity,'
il s'agit   *bel et bien* d'un sérieux revers.
it REFL-handle Prt   of a serious setback.
this is a serious setback, indeed.'[27]

The following, constructed example would have been equally acceptable, and semantically on a par with (41):

(42)   Pour une organisation qui a toujours associé le mois de jeûne musulman à une agressivité meurtrière,
'For an organisation [ISIL] which has always associated Ramadan, the month of fasting, to murderous aggessivity,
il s'agit   *bien* d'un sérieux revers.
it REFL-handle *Prt*   of a serious setback.

But this is not always the case. One subcase of MP *bien* in assertion is a usage where the propositional content is a notorious fact that the speaker names as a tentative argument for a disputed thesis.

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27. Thanks are due to one of the editors for making the parallel between *bel* et *bien* and indeed in this context. It seems to me that this translational equivalence holds only for those uses of *bien* which correspond to re-asserting a proposition that had previously been cast into doubt. I do not know of any contrastive study targeting the rendition of *bien* in English or of indeed in French, but this is definitely worth further investigation.

Source of the example: https://www.lemonde.fr/blog/filiu/2019/06/09/le-pari-rate-des-jihadistes-durant-le-mois-de-ramadan/ [retrieved November 26th, 2019]

(43) *[From a paper about musician Kanye West running for the US presidency:]*
Après tout, il y a *bien* eu Ronald Reagan,
after all EXIST.PERF1 *Prt* EXIST.PERF2 Ronald Reagan,
acteur de formation, et Donald Trump, dont on ignore encore
actor of education, and Donad Trump, of.whom one not.know still
ce qu'il est.
that what he is
'And you would vote for him [Kanye West]. After all, we've already had Ronald Reagan, originally an actor, and Donald Trump, whom we still don't know what he is.'[28]

A well-known example of that kind is by the French translation of a famous film title, *They Shoot Horses, Don't They?*

(44) On achève *bien* les chevaux.
one shoots.dead *Prt* the horses
'After all, they shoot horses.'

The utterance is a minimal argument (easily acceptable for everyone) supporting a more general thesis, in a context where the opposite thesis seems to be dominant, so that the speaker has to remind the hearer of *p* being the case. This shows that from a semantically minimalist perspective, corroboration cannot be taken as the basic value of *bien*. It is only a preferred context of use. Here, we are facing another important context of use, which could be labeled "tentative" context, and exhibits two distinct argumentative values: a slight objection to the hearer, or a concession. Most interestingly, this usage as a reminder of a minimal valid argument exhibit some specific affinities with clefted *wh*-indefinites in existential constructions.

(45) Au début de sa maladie, il a refusé les pronostics en me disant : « C'est possible d'y arriver… S'il y a une seule chance, je la prends.
Tu sais, après tout, il y a *bien* quelqu'un qui gagne le Tour de France ».
you know after all EXIST *Prt* someone who wins the tour of France
'At the beginning of his sickness, he refused the forecasts and would tell me : « It is possible to do it… If there is only one chance, I take it. You know, after all, there is still someone who wins the Tour de France. »'[29]

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28. Source : https://www.mouv.fr/buzz/yeezy-2024-kanye-west-en-nouveau-president-des-etats-unis-347114 [retrieved June 9th, 2019]

29. Source : http://www3.sympatico.ca/siroise/temoignages.htm [retrieved June 9th, 2019]

In these contexts, the presence of *bien* enhances a scalarity effect: in the case of *quelqu'un* ("someone, anyone"), it is implied that it is not any person who can do that, and that normal, prototypical or salient candidates within the set denoted by the existential *wh*-indefinite are not those for whom the predicate is true. For instance, in (43), it is implied that winning the Tour de France is something exceptional and that things like this do not occur normally (which is the reason why it is an argument for the speaker to hope that he will recover from his sickness: "impossible things happen"). If we follow this track, we see that this affinity to *wh*-indefinites is manifested in various contexts, always maintaining this scalar flavor, sometimes in a way that is very reminiscent of special questions:

(46) J'ose   encore espérer qu'il y a *bien*   quelqu'un qui va   parler, un jour.
      I dare still   hope   that EXIST *Prt* someone who goes speak one day
      'I still dare to hope that one day, there will be someone who's going to speak.'[30]

This utterance is taken from a paper about the 10th anniversary of the disappearance of a fishing vessel with several people on board in an area where European armies were conducting secret submarine exercises, so that the clear circumstances of the tragedy have never been exposed. A member of a victim's family hopes that the truth will come out, but it is presupposed that many people have already been asked to speak and that all of them have always refused to do so. The presence of *bien* triggers the interpretation that the speaker has no idea about who it could be because he doesn't see any plausible candidates yet.

Inside the realm of non-veridical contexts, the scalar effect of the co-occurrence of *bien* and a *wh*-indefinite is also present in conditional utterances where the protasis is an existential clause centered on a *wh*-indefinite:

(47) S'il y a *bien* quelque chose que Jean-Pierre Pernaut adore, c'est Noël![31]
      if EXIST *Prt* anything   that Jean-Pierre Pernault loves, that's Christmas
      'If Jean-Pierre Pernault loves anything, then it's Christmas !' (Implied meaning :
      "Christmas must be the thing that Jean-Pierre Pernault loves most").

In this structure, once again, the *wh*-indefinite denotes a scale of alternatives among which the speaker isolates an extreme value as being the most plausible candidate. At first, it is reportedly not completely self-evident that the predicate of the protasis (here : being loved by Jean-Pierre Pernault) is true of anything, but the apodosis

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30. Source: https://www.20minutes.fr/societe/1275777-20140118-20140118-hommage-marins-disparus-bugaled-breizh-10-ans-apres-naufrage [retrieved June 9th, 2019]

31. Source: https://www.lalibre.be/culture/medias-tele/s-il-y-a-bien-quelque-chose-que-jean-pierre-pernaut-adore-c-est-noel-52bae26235701baedaa90f31 [retrieved June 9th, 2019] Jean-Pierre Pernault is a conservative TV host advocating French folklore.

nails down one specific entity for which it is undisputable that the predicate of the protasis has to be taken as true.

Bien can indifferently occur in the conditional protasis (together with the *wh*-item) or in the apodosis, together with the unique referent satisfying the condition:

(48)   a.   S'il y a   quelqu'un qui doit   tout à Bach,   c'est *bien* Dieu.
          if EXIST anyone   who owes all to Bach   that is *Prt* God
          'If there is anyone who owes everything to Bach, it's God.'
                            (E. M. Cioran, *Oeuvres*, "Syllogismes de l'amertume", p. 797)
      b.   S'il y a *bien* quelqu'un qui doit   tout à Bach,   c'est   Dieu.
          if EXIST *Prt* anyone   who owes all to Bach   that is God
          'If there is anyone who owes everything to Bach, it's God.'   (constructed)

In this construction, the combination of *bien* with a *wh*-indefinite triggers both a scalar and a conjectural interpretation: all values in the set are presented as potentially dubious, with the one solution in the apodosis isolated as the most solid candidate. This is in line with the general value of *bien* as described by Péroz (1992: 29). Péroz claims that *bien* is used in contexts where the content *p* can be opposed to *p'*, another value within a same contextually given class (*P*). According to Péroz, *p'* is often equal to *non-p* ("*p* is not the case"), and in that case, it can be assumed that *P* is equivalent to the context set of the conversation. The presence of *bien* signals that *p* is finally preferred over *p'*, as the better alternative inside of *P*.

The look at assertions helps us understand the rise of *bien* in "Can't find the value of *x*" questions, as well as its idiosyncratic syntactic properties. In a *wh*-question, it is necessary to assume that the speaker is not able to find the adequate value inside of the paradigm. The very speech act of asking a question means that there are still several solutions in the set and that it is up to the hearer to pick one of them. *Bien*, although it is not focus-sensitive, can be semantically associated with a *wh*-pronoun, and this combination triggers an effect that is reminiscent of what we have seen for other particles: the paradigm of alternatives is taken to have been scanned down, all standard candidates are ruled out or at least considered as unreliable, and the valid solution, if there is any, has to be an extreme value on the scale. When this semantic effect is produced in a *wh*-interrogative clause, we can indeed expect this utterance to be "special question", and more precisely a "Can't find the value of *x*" question. But this is only an expected tendency, not a law or a necessity: as shown above (Example (39)) *bien* can still occur as an MP in standard *wh*-questions with the same meaning as in polar questions. In other words: the "Can't find the values of *x*" use sides with the use with *wh*-indefinites in conditional utterances and in "tentative" contexts, whereas the other, more marginal use in *wh*-questions sides with what can be observed in polar questions as well as in corroborative contexts.

At this stage, it seems to me that the question of re- or poly-grammaticalization has to be left open, although there are signs that the "Can't find the value of x" use of *bien* represents a case of a new specialized pragmatic meaning, and thus, a plausible example of poly-pragmaticalization.

4. Conclusion

The contribution of discourse particles to special *wh*-questions in German is a well-established fact. But a closer look shows that this contribution has potentially much to do with focus-sensitivity: many of those particles associate with the *wh*-item, which denotes a paradigm of alternatives, and they can even undergo a syntactic merger and form one constituent (Small PartP). The semantic contribution and the distribution of MPs in *wh*-questions differ strongly from what can be observed in polar questions. Finally, it seems that some focus-sensitive particles (*nur*, *auch*) can participate in the same syntactic and semantic patterns, whereas at least some of the German MPs that are felicitous in the Small PrtP construction tend to go back to focus-sensitive particles.

If we have a look at French, we see that there is a small set of particles exhibiting a similar behavior, although the single item that exhibits the same distributional properties as German *doch* or *schon* is *bien*. It seems to me that both *bien* and *donc*, when they are used as particles in questions, can be classified as MPs. A third particle, *diable*, shows similar properties, but at this point, it may be too early to call it an MP; further diachronic, syntactic and prosodic research is needed before we can decide whether *diable* is a slightly atypical MP or something else. There is also at least one focus-sensitive particle (*seulement*) that can intervene in the same constructions. But neither *diable*, nor *donc*, nor *bien* has ever been focus-sensitive. Yet, from a semantically minimalist point of view, it is possible to identify a meaning component of *donc* and *bien* that might be assimilated to a sensitivity to alternatives within the context set. As for *diable*, I showed that its uses in *wh*-questions revolve around the notion of surprise at and disapproval of an atypical value within a set of entities or situations.

I have tried to show that the semantic path leading to the "special interrogative" use of *bien* has to be distinguished carefully from the path leading to the use in polar questions. Of course, both have twin uses in assertions. Both of these interrogative uses are in line with the general meaning of *bien* proposed by Péroz, which is based on assertive contexts and also includes the original lexical adverb. Thus, the difference between the two uses of *bien* in questions should not be overstated. But the comparison between the "Can't find the value" usages of *bien* in *wh*-questions and the use of *bien* in assertions involving a *wh*-indefinite suggests that *bien* is not

insensitive to alternatives and to the designation of sets of alternatives within the clauses where it is used as a particle. This sensitivity might in turn favor the conventionalization of specific discourse values in *wh*-questions. At the beginning of this paper, I used a rather loose definition of pragmaticalization as conventionalization of discourse functions, which is independent from grammaticalization. The specific semantics of MP *bien* in *wh*-contexts in non-standard questions is probably a case or re- or poly-pragmaticalization, but it remains to be proved that it is a case of re-grammaticalization. In general, the first findings of this comparison between French and German suggest that there might be no unique path of emergence for particles in special questions, but a tendency to select items that are already sensitive to sets of alternatives, and to specialize them further, yet without losing the bond to their core meaning.

Abbreviations used in the glosses

ACC	accusative	INTERR	interrogative
ADJ	adjective	M	masculine
ADV	adverb	NEG	negative
ART	article	PART	past participle
COMP	complementizer	PARTIT	partitive article
DAT	dative	PAST	past
DEF	definite	PERF	present perfect
DEM	demonstrative	PL	plural
DIR	directional	REFL	reflexive pronoun
DIST	distal	REL	relative pronoun
EXIST	existential construction	SG	singular
F	feminine		

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PP-internal particles in Dutch as evidence for PP-internal discourse structure

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Drawing on evidence from Dutch, this paper presents the new observation that discourse particles can not only appear at the level of CP, but also inside the PP domain. In particular, we demonstrate that Dutch *dan* can receive a non-temporal interpretation, and in this reading *dan* can appear as a functional head inside a complex PP constituent. After having established a detailed structural analysis of this phenomenon, we look beyond Dutch and compare the discourse function that *dan* has inside the PP to the role that its German cognate *denn* plays at the level of CP. We conclude that both cases can be analyzed along the same lines because they express the same abstract discourse function: Both PP-internal *dan* and German *denn* are discourse-navigating devices that link 'a ground' to 'a figure', only differing in their semantic domains of application.

Keywords: discourse particles, Dutch, functional categories, German, prepositional phrases

1.   Introduction

In this paper, we will focus on the Dutch element *dan* ('then'), which features two readings relevant to the discussion in our paper. First, it can be interpreted temporally and, in this reading, it links one event to another preceding event (1). Second, for many speakers,[1] when a route is being described, *dan* may have a non-temporal navigating function, in which it serves to establish a transitional link with a preceding step (2):[2]

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1.   At this stage, it is not clear what determines the variation across speakers. A first impression is that Flemish speakers of Dutch are more tolerant of non-temporal *dan* than Dutch speakers from the Netherlands, but we have no precise data to back this up.

2.   Such examples are most natural when introduced by the coordinating conjunction *en* ('and'), which we add in parentheses. As shown by the parentheses, *en* is however not mandatory.

(1)   (en) **dan** zijn we **op de tweede dag** naar Gent gegaan.   [temporal]
      and then are we on the second day to   Ghent went
      '… and then on the second day, we went to Ghent.'

(2)   (en) **dan naast de kerk**   woont mijn tante.   [non-temporal]
      and then next-to the church lives   my   aunt

Our contribution is structured as follows. In Section 2, we introduce the core data
in more detail and we argue that in examples like (2), *dan* is part of the prepo-
sitional phrase (PP) *dan naast de kerk* ('then next to the church'). Pursuing this
insight, Section 3 will elaborate on the internal structure of adpositional projec-
tions in Dutch, in line with some of the existing literature (Koopman 2000; see
also Den Dikken 2010), and we conclude from our data that PP-internal *dan* is
a functional head with a fixed position in the extended adpositional projection.
In Section 4, we try to narrow down the interpretation of PP-internal *dan* and we
connect our observations on Dutch *dan* to what has been established about the
German discourse particle *denn*. More specifically, we will suggest that *dan* has an
abstract discourse-navigating function that can be modeled in terms of the broader
cognitive function of connecting 'ground' to 'figure', which is known from Gestalt
psychology. On this basis, we will then propose that this function could also be
used for analyzing German *denn*, which, in contrast to PP-internal *dan*, operates
at the clausal level. In contrast to previous literature that has accounted for parti-
cles like *denn* in terms of 'discourse-navigating devices' too (e.g., Csipak & Zobel
2015), our proposal takes the term 'navigation' more literally by endorsing a spatial
interpretation of particles like *denn*, based on the figure-ground configuration that
can be observed in the context of PP-internal *dan*.

2.   Co-constituency of *dan* and PPs

This section demonstrates that in examples like (2), repeated here for convenience,
the element *dan* must be part of the PP.[3]

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3.   We thus depart from Zwart (2005: 28), who briefly discusses the pattern (i) (his [42b]), in
which a locative PP *in dezelfde landstreek* ('in the same area') is followed by the adverbial element
nu ('now'), which does not have its regular temporal reading but rather seems to also have the
navigating function which we attribute to non-temporal *dan*. Zwart claims that *nu* in (i) is 'ex-
tra-dependent', meaning that it does not form a constituent with the PP to its left. At first sight, our
arguments advanced below in support of treating non-temporal *dan* as integrated with the locative
PP extend to non-temporal *nu*. The analysis of non-temporal *nu* must await further research.

(i)   In dezelfde landstreek nu   waren herders.
      in the-same area   now were   shepherds
      'Now there were shepherds in that same countryside.'

(3) (en) **dan naast de kerk**   woont mijn tante.
     and then next-to the church lives   my   aunt

First, observe that the string with *dan* is the initial constituent of a V2 configuration like (3). Dutch and its dialects are taken to be regular V2 languages. If initial *dan* and the PP *naast de kerk* are taken to form separate constituents, the structure in (3) would violate the V2 constraint.

At this point, let us already extend the data by illustrating that the non-temporal *dan* in (3) can also appear finally, that is, to the right of the respective PP:

(4) (en) **naast de kerk   dan** woont mijn tante.[4]
     and next-to the church then lives   my   aunt

An analysis for the final occurrence of non-temporal *dan* as a resumptive adverb for the locative PP *naast de kerk* ('next to the church') would be inappropriate because the designated resumptive for a left-dislocated locative PP is the locative *daar* ('there'), as shown in (5a–b), *dan* being the designated temporal or conditional resumptive in a left dislocation like (5c):

(5) a. (en) **naast de kerk,   daar** woont mijn tante.
         and next-to the church, there lives   my   aunt
     b. *(en) **naast de kerk,   dan** woont mijn tante.
         and next-to the church, then lives   my   aunt
     c. (en) **na   de lunch, dan/*daar** gaan we wandelen.
         and after the lunch, then/*there go   we walk

Crucially, when *dan* appears finally, as in (4), there is no intonation break between the PP (here *naast de kerk*) and *dan*; *dan* is destressed and we observe falling intonation. This prosodic pattern is different from the pattern found with resumption, in which the initial constituent and the resumptive are separated by a prosodic break.

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4. Note that *dan* may also appear in a middle field position with at first sight the same navigating function:

(i) a. (en) naast   de kerk   woont dan mijn tante.
         and next-to the church lives   then my   aunt
     b. (en) daarnaast woont dan mijn tante
         and there-next lives   then my   aunt

Given the analysis which we will be elaborating in subsequent sections, it is tempting to view middle field *dan* as the outcome of stranding of the PP containing *dan* due to movement of the PP *naast de kerk* or of the R-pronoun *daar* to the left periphery. We won't go into this analysis here. We thank Coppe van Urk for signaling these data to us.

In further support of constituency, the combination of the locative PP and initial or final *dan* can itself be dislocated, and using an appropriate D-word such as the locative resumptive *daar* can be interpreted as resuming the whole string (i.e., including non-temporal *dan*):

(6) a.   (en) [**dan naast   de kerk**]**i**, [**daar**]**i** woont mijn tante.
         and then next-to the church, there   lives   my   aunt
    b.   (en) [**naast de kerk dan**]**i**, [**daar**]**i** woont mijn tante.

Taken together, this distributional evidence strongly suggests that both with the initial and the final occurrence of *dan*, the string containing *dan* and the associated PP constitutes the initial constituent in V2 configurations.[5,6]

Let us hasten to add that there is an additional configuration with non-temporal *dan* which we will refer to as 'intrusive *dan*' and which will be of interest for our discussion of the functional structure of PPs below. Intrusive *dan* is a configuration in which *dan* is located PP internally, intervening between the displaced R-word *daar*, the complement of the preposition, and the associated preposition such as, for instance, *naast* in *daarnaast*. We will return to this data point in more detail in the next section, but for now let us just mention that in this use, the PP containing intrusive *dan* can itself be more deeply embedded. For instance, in (7a) the PP *daar dan naast* postmodifies the N *bureau*, itself part of the sentence-initial DP

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het bureau daar dan naast.[7] The same DP is the P-complement in an extraposed PP in (7b), and in an initial PP in the V2 configuration in (7c). Additionally, a PP containing intrusive *dan* can also be the complement of a preposition (*voor* 'for') in (7d–e): in this case, the containing PP as a whole may be extraposed (7d) or it may function as the first constituent in a V2 configuration (7e). We consider such embeddings as evidence for constituency of the string containing intrusive *dan*.

(7)   a.   [Het bureau [**daar dan naast**]] is voor de studenten.
            the   desk   there then next   is for   the students

      b.   De doctoraatsstudenten kan je   vinden in [het bureau [**daar**
           the PhD-students   can you find   in the office there
           dan naast]].
           then next

      c.   In [het bureau [**daar dan naast**]] kan je   de doctoraatsstudenten
           in the office   there then next   can you the PhD-students
           vinden.
           find

      d.   Ik heb een bureaulamp gekocht [voor [**daar dan naast**]].
           I have a   desk-lamp bought for   there then next

      e.   [Voor [**daar dan naast**]] heb ik een bureaulamp gekocht.
           for   there then next   have I a   desk-lamp bought

To sum up, the data above provide empirical distributional evidence that non-temporal *dan* should be viewed as located internally to the complex PP structure. In what follows, we will explore this complex configuration more carefully, based on some current analyses of the Dutch extended adpositional projection.

3.   The extended adpositional projection and *dan*

In this section, we introduce two diagnostics to determine the syntactic location of *dan* within the extended adpositional projection: its co-occurrence with R-pronouns such as *daar/er* ('there'), already briefly illustrated in Section 2, and its use with focus modifiers which express a degree within the PP (e.g., *juist* 'exactly').

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7.   See also the discussion in Corver (1990: 37–38) on other patterns of R-pronoun movement internally to DP.

3.1   R-pronouns and the functional structure of PPs in Dutch

We first return to the R-pronouns and their position within the Dutch extended adpositional projection. Consider the data in (8), which are well known from the literature. In (8), *daar* encodes the complement of the preposition *naast*, but unlike the nominal complement, which follows the preposition (8a), *daar* must precede it (8b)–(c).[8] To account for patterns like (8), Van Riemsdijk (1978) has argued that R-pronouns like *daar/er* obligatorily undergo R-movement to the position to the left of P:

(8)   a.   (en) [**naast de kerk**]   woont mijn tante.
             and next-to the church lives   my   aunt
       b.   (en) [**daar naast   ~~daar~~**] woont mijn tante.
             and there next-to there lives   my   aunt
       c.   *(en) [**naast daar**] woont mijn tante.

In (8b), the pronoun *daar* and the preposition *naast* form one constituent because, again, they are the initial string in a V2 pattern and resumption of the entire string is possible with (locative) *daar:*

(8b′)   (en) [**daar naast**]$_i$, [**daar**]$_i$ woont mijn tante

We will follow Van Riemsdijk's seminal analysis and assume that the PP-internal *daar* is subject to leftward movement. To formalize the analysis, we adopt a cartographic approach to the Dutch PP, in accordance with Koopman (2000); but see also Den Dikken (2010). Koopman (2000: 223) assumes that PP is dominated by PlaceP, and that within the articulated adpositional system, SpecPlaceP is the structural position for locative (non-directional) R-pronouns. We adopt her analysis. Relevant for later discussion, observe that in the hierarchy adopted here, PlaceP itself is dominated by a CP layer. For motivation we refer to Koopman's work.

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8.   Though in source PPs, *daar* seems to remain in the complement position:

(i)   a.   van   daar tot daar
             from there to there
       b.   van   hier naar daar
             from here to   there

Given our analysis developed below, the fact that P can precede *daar* (and *hier*) may suggest that there is more internal structure in the sequence *van daar* than meets the eye. Thanks to Marcel den Dikken for raising this issue.

(9) [$_{CP}$ [$_{C'}$ C$_{(Place)}$ [$_{PlaceP}$ daar/er$_i$ [$_{Place'}$ Place [$_{PP}$ Spec [$_{P'}$ [*naast* t$_i$]]]]]]]]

Inspired by Koopman (2000), the second diagnostic that we would like to use in order to narrow down the location of Dutch PP-internal non-temporal *dan* relies on the distribution of focus modifiers such as *juist* ('exactly'). Such modifiers preferably precede the preposition:

(10) a. juist daar/er   naast
         just there/there next-to
      b. daar/er juist naast
      c. $^{???}$daar/er naast juist

For Koopman (2000), modifying material such as *juist* is the lexicalization of a Degree head whose complement is PlaceP and which is located within the extended adpositional projection as in (11). In (11a), *juist* spells out Deg, *daar* is in SpecPlace and hence follows *juist*. In (11b), *daar* has undergone leftward movement to the specifier of the CP$_{place}$ layer associated with the PP and hence precedes *juist*:

(11) a. [$_{CP}$ [$_{C'}$ C$_{(Place)}$ [$_{DegP}$ Spec [$_{Deg'}$ *juist* [$_{PlaceP}$ daar/er$_i$ [$_{Place'}$ Place [$_{PP}$ Spec
         [$_{P'}$ [*naast* t$_i$]]]]]]]]]]
      b. [$_{CP}$ daar$_i$ [$_{C'}$ C$_{(Place)}$ [$_{DegP}$ Spec [$_{Deg'}$ *juist* [$_{PlaceP}$ t'$_i$ [$_{Place'}$ Place [$_{PP}$ Spec
         [$_{P'}$ [*naast* t$_i$]]]]]]]]]]

In both orderings (11a-b), *juist* takes narrow scope over the preposition, that is, the interpretation in both cases is 'exactly next to X'.

According to the structural claims implied in (11), the specifier position SpecDegP could for instance be deployed to host measures phrases like [*drie meter*] 'three meters': (12) gives relevant examples, (13) summarizes the representations according to Koopman's format.

(12) a. drie meter juist daar/er   naast
         three meters just there/there next-to
      b. daar/er drie meter juist naast

(13) a. [$_{CP}$ [$_{C'}$ C$_{(Place)}$ [$_{DegP}$ *drie meter* [$_{Deg'}$ *juist* [$_{PlaceP}$ daar/er$_i$ [$_{Place'}$ Place [$_{PP}$ Spec
         [$_{P'}$ [*naast* t$_i$]]]]]]]]]]
      b. [$_{CP}$ daar$_i$ [$_{C'}$ C$_{(Place)}$ [$_{DegP}$ *drie meter* [$_{Deg'}$ *juist* [$_{PlaceP}$ t'$_i$ [$_{Place'}$ Place [$_{PP}$ Spec
         [$_{P'}$ [*naast* t$_i$]]]]]]]]]]

With the two proposals about the syntax of PP-internal *daar/er* (9) and *juist* (11) in place, the next section turns to PP-internal non-temporal *dan*.

3.2   Locating non-temporal *dan* in the functional structure of Dutch PPs

3.2.1   *A first proposal*

Observe first (as already introduced above) that *dan* can co-occur with *daar* by either preceding the R-pronoun (14a) or following the R-pronoun and the associated preposition (14b):

(14)   a.   (en) **dan daar naast**   woont mijn tante.
             and then there next-to lives   my   aunt
        b.   (en) **daar naast dan** woont mijn tante.

As in our initial examples above (featuring a location encoded in a nominal like 'next to the church'), in these examples too, *dan* receives a non-temporal interpretation. In particular, *dan* navigates by sequencing a path from 'there' (*daar*) to 'next to *x*' (e.g., next to the church; see our examples above). Note again that as before, PP-final *dan* in (14b) cannot be taken to be a resumptive adverb for the PP to its left, because resumption would involve a locative element like *daar* (15b) rather than temporal or conditional *dan* (15a). As seen in (15c), indeed, resumptive *daar* can resume the string consisting of *daar*, the preposition, and (crucially) *dan*.

(15)   a.   *(en) **daar naast, dan** woont mijn tante.
        b.   (en) **daar naast, daar** woont mijn tante.
        c.   (en) **daar naast dan, daar** woont mijn tante.

In the 'intrusive *dan*' pattern, a PP-internal occurrence of *dan* intervenes between the shifted R-pronoun and the preposition (16a) (see also our preliminary remarks already in Section 2). As before, the entire string features as the initial constituent in a V2 clause (16a), and it can be resumed by locative *daar* (16b), providing evidence that the string is a constituent.

(16)   a.   (en)   **daar dan naast**   woont mijn tante.
             (and) there then next-to lives   my   aunt
        b.   (en)   **daar dan naast,**   daar woont mijn tante.
             (and) there then next-to, there lives   my   aunt

(17) contains some authentic *Google* examples for the intrusive *dan* pattern, which further substantiate the point that this is indeed an ordering option within complex PPs:

(17) a. Je   had Nik Kershaw als leuke vlotte (buur)jongen aan de ene
           you had Nik Kershaw as nice   cool   neighbor   on the one
           kant en   de nerdy afstandelijke Thtantes Dolby aan de andere kant.
           side and the nerdy distant   Thtantes Dolby on the other side
           Daar dan tussen   zat weer Howard Jones.[9]
           there then between sat again Howard Jones

<https://www.musicmeter.nl/forum/18/10257>

      b. […] En **daar dan tussen**   zit een groot grijs gebied.
              and there then between sit a   large big   area

<https://gathering.tweakers.net/forum/list_messages/1666438/22>

Recall from (7) that the relevant intrusive *dan* pattern can also itself be further embedded in a DP which is itself located in various positions.

Given the availability of intrusive *dan* patterns, there are three basic ordering patterns when non-temporal *dan* and *daar* co-occur within complex PPs: initial, final, and intrusive *dan*. With this in mind, let us now have a look at the ordering patterns that emerge when we combine these configurations with the adverb *juist*, which, following Koopman (2000), was taken as one instantiation of the Degree head inside the Dutch adpositional system.

(18a) and (18b) show that non-temporal *dan* can precede modifiers like *juist*, but (18a′) and (18b′) show that in such configurations *dan* itself cannot be focused:

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9. As pointed out by Marcel den Dikken (whom we thank for the observation), the attested (17a) contains two discourse particles, *dan* and *weer*, with only the former placed PP-internal. Interestingly, placing *weer* inside the PP, to the immediate right of *dan*, would also be acceptable as shown in (i). For Marcel den Dikken, (i) is preferable to (17a).

(i) Daar dan weer tussen   zat Howard Jones.
     there then again between sat Howard Jones

That the discourse particle *weer* can indeed occur PP-internally is of obvious interest and raises the questions as to how to handle it in the light of our current analysis and more generally what other particles can be PP-internal both in the context of PP-internal *dan* and in PPs in general. We agree with Marcel den Dikken that these issues are important and certainly merit further study. However, we admit that we do not have an answer to these questions. Indeed, the questions seem to us to go well beyond the scope of our present paper as they compel one to look at a broader range of PP-internal particles. In the light of the discussion below, the question arises, for instance, if *weer* should be treated as a functional head (i.e., similar to our analysis of *dan*) or as a maximal projection in specifier or adjoined position (i.e., similar to what we end up proposing for focus marker *juist* 'just'). Hopefully, we can address this issue in future work.

(18) a. (en) dan juist daar naast
        (and) then exactly there next-to
     a′. *(en) DAN juist daar naast
     b. (en) daar dan juist naast
     b′. *(en) daar DAN juist naast

In this respect, the use of non-temporal *dan* examined here differs from that of temporal *dan*, which can be focused without any problem:

(19)   DAN juist kwam ze binnen.
        then just came she in

Observe that not only can non-temporal *dan* not be focused, but, again unlike temporal *dan*, non-temporal *dan* cannot follow focusing *juist:*

(19′) a. juist DAN kwam ze binnen.
     b. *(en) daar juist dan naast
     c. *(en) daarnaast juist dan

By means of an informal questionnaire administered to 7 native speakers of Dutch (1 Brabantian, 3 West Flemish, 3 East Flemish), we tested all possible orderings with *daar* and *juist* and we found that the order *juist > dan* (where *dan* would be focused) is indeed unacceptable. Our informants were asked to score the examples from *0*, very bad, to *5*, very good. Table 1 below summarizes the results:

Table 1. Results of questionnaire; scores from 0 (very bad) to 5 (very good)

	BR	WF	WF	WF	EF	EF	EF	Σ
(En) **daar dan naast** woont mijn oma	5	3	5	5	3	5	4	30
(En) **daarnaast dan** woont mijn oma	5	2	4	4	3	5	3	26
(En) **daar dan juist naast** woont mijn oma	5	4	5	4	0	5	5	28
(En) **daar juist dan naast** woont mijn oma	2	0	3	0	0	2	2	9
(En) **juist daar dan naast** woont mijn oma	3	0	3	3	4	3	3	19
(En) **daarnaast juist dan** woont mijn oma	0	0	1	2	1	5	1	10
(En) **daar juist naast dan** woont mijn oma	5	4	2	4	3	4	2	24
(En) **juist daarnaast dan** woont mijn oma	5	4	3	4	3	3	4	26
(En) **dan juist daarnaast** woont mijn oma	5	5	4	4	5	5	5	33
(En) **dan daar juist naast** woont mijn oma	5	5	3	5	4	3	4	29
(En) **dan daarnaast** woont mijn oma	5	5	4	5	5	5	5	34

Recall that the initial hypothesis in this paper is that non-temporal *dan* within PPs is an abstract discourse-navigating device. The restrictions on the co-occurrence and interpretation of focusing *juist* are of interest here because they can be taken to suggest that non-temporal *dan* behaves like elements which have been classified as discourse particles in other languages, because, like these discourse particles, *dan* cannot be focused and stressed (see Munaro & Poletto 2002: 92 on these diagnostics, which are taken to hold cross-linguistically). Exploring this hypothesis, we follow Munaro & Poletto (2002, 2008) and propose that, like other discourse particles, *dan* is a syntactic head and hence cannot occupy a specifier position. Accordingly, we argue that PP-internal *dan* has head status and, based on its abstract navigating function, that it occupies a topmost head position in the functional layer of the adpositional system; tentatively, we submit that this position encodes a topic-like (or deictic) interpretation, and we thus claim that its semantic contribution can be accounted for in information structural terms. In other words, we hypothesize that PP-internal *dan* operates at the level of discourse meaning. Our structural hypothesis can be depicted as follows: in (20), we treat the head *dan* as a spell out of the C head which finishes off the PP functional domain.

(20) a. [CP [C' *dan* [DegP Spec [Deg' *juist* [PlaceP {*daar*} [Place' Place [PP Spec [P' [*naast* {~~daar~~}]]]]]]]]]

b. [CP {*daar*} [C' *dan* [DegP Spec [Deg' *juist* [PlaceP {~~*daar*~~} [Place' Place [PP Spec [P' [*naast* {~~daar~~}]]]]]]]]]

3.2.2 *Complications: An alternative analysis*

Upon further scrutiny, however, the data in Table 1 above raise an immediate problem for the analysis in Section 3.2.1. The representations in (20) would lead us to expect that only two orders are acceptable: *dan juist daar* and *daar dan juist*. Patterns like (21) divert from this and suggest the need for postulating additional functional structure because the examples receive higher scores than those with the unacceptable ordering *juist > dan*. The patterns in (21) are ordered by score (out of 35), and they all pose problems for our tentative analysis in (20):

(21) a. dan daar juist naast (*score*: 29)
b. juist daarnaast dan (*score*: 26)
c. daar juist naast dan (*score*: 24)
d. juist daar dan naast (*score*: 19)

Our claim in (20) has been that *dan* is a functional head occupying the highest discourse-related head in the functional layer of the PP system. According to (20), *dan* has topical material in its specifier (*daar*) and focal material to its right (*juist naast…*). Consequently, *dan* partitions topical and focal material inside the PP; in

other words, it acts as a 'watershed' element at the level of information structure (see also below), and we thus postulate that *dan* has a fixed position and does not move. From these assumptions, it follows that the patterns in (21) cannot be derived by our structural claims in (20).

To account for the unexpected acceptability of the word order options in (21), while maintaining the core claims sketched in (20), we will propose an alternative analysis for modifiers like *juist*. We assume that modifiers such as *juist* constitute maximal projections which freely adjoin to already existing phrases (of different sizes). Such an approach has been argued for in the discussion of focus particles, most notably by Büring & Hartmann (2001); but see also Jacobs (1983) for an early account. One of the many data points provided by Büring & Hartmann (2001) in support of the proposal is that German focus particles can occur in the prefield of V2 clauses (i.e., in SpecCP) alone and that therefore, by assumption, they constitute maximal projections. The following cases taken from Büring & Hartmann (2001: 241) exemplify this point:

(22) a.   [$_{CP}$ Auch [$_{C'}$ war ich sehr MÜDE]$_F$
            also   was I   very tired
            'Also, I was very tired.'
      b.   [$_{CP}$ Nur [$_{C'}$ WEISS das keiner]$_F$].
            only   knows that nobody
            'It's just that nobody knows about it.'

While, admittedly, this account may remain controversial for the syntax of CP-level focus particles (see Bayer 1996 for an alternative approach and Bayer & Trotzke 2015 for recent discussion), the option of the focus particles to freely adjoin to existing maximal projections has been argued to also hold for DP-internal focus particles in German (Sudhoff 2010; Kleeman-Krämer 2010).

In line with this approach to focus particles and departing from the earlier analysis in (20) above, we henceforth assume for Dutch that, like other focus particles, PP-internal focus modifiers like *juist* left-adjoin to focusable and maximal projections. The consequence of such an approach would be that *juist* does not occupy a fixed position (i.e., Deg) in the extended adpositional projection as suggested above. Rather, the modifier can adjoin to any projection within the PP provided it is maximal and focusable.[10] This revised account remains in line with

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10.   Our claim that *juist* can be adjoined freely predicts that there should be no ordering restrictions when *juist* co-occurs with other expressions that have traditionally been analyzed as being part of a Degree Phrase headed by *juist* (e.g., *drie meter*; see Koopman's 2000 proposal in (13) above). However, the ordering *juist drie meter* is only possible in a reading where *juist* is construed with the measure phrase, and thus for a PP-scope interpretation, the ordering clearly is: *drie*

our hypothesis in (20) that non-temporal *dan* is a type of discourse particle and thus constitutes a functional head in the PP system. Consequently, in this line of reasoning, the PP-internal configurations which are ruled out are the orderings in which *juist* would have to adjoin to the functional head *dan* (23a–b), and the unacceptability of these word order options is corroborated by the data pattern summarized in Table 1:

(23) *(en)   daarnaast   juist   dan
     (and) there-next-to exactly then
   *(en)   daar juist   dan naast
     (and) there exactly then next-to

Based on the above, we then arrive at the following revised structural claim for the PP-internal occurrence of non-temporal *dan*:

(24)   [$_{TopP}$ {*daar*} [$_{Top'}$ *dan* [$_{PlaceP}$ {*daar*} [$_{Place'}$ Place [$_{PP}$ Spec [$_{P'}$ [*naast* {~~*daar*~~}]]]]]]]

3.2.3   *Applying the analysis*

The acceptable orderings reproduced in Table 1 and discussed above as well as the data in (14)–(17) remain accounted for because we have not modified the possible positions of the relevant elements *daar*, *dan*, and *naast*. For reasons of space, we will not review these here again. Let us briefly illustrate how our modified analysis can capture the acceptable – but initially problematic – orderings in (21) above, repeated here for convenience.

(25)   a.   dan daar juist naast   (*score*: 29)
       b.   juist daarnaast dan   (*score*: 26)
       c.   daar juist naast dan   (*score*: 24)
       d.   juist daar dan naast   (*score*: 19)

In (25a), *juist* adjoins to the maximal projection (PP) of the preposition *naast*; the R-pronoun *daar* moves to SpecPlaceP and stays there; this derivation is summarized in (25a'):

(25a')   [$_{TopP}$ [$_{Top'}$ *dan* [$_{PlaceP}$ {*daar*} [$_{Place'}$ Place [$_{PP}$ *juist* [$_{PP}$ Spec [$_{P'}$ [*naast* {~~*daar*~~}]]]]]]]]

---

meter juist. We submit that this should receive a semantically based explanation, which is needed anyway for many facts in the domain of both particle and adverbial syntax; restrictions such as *Peter even also only drank water* vs. **Peter only also even drank water* (Zimmermann 2011: 2036) most probably can be explained on purely semantic grounds (for adverbials, see Ernst's 2007 scope-based approach in the domain of multiple adverbial modifiers).

In (25b), *daar* moves from the complement position of P to SpecPlaceP, leading to *daarnaast*. PlaceP moves as one constituent to SpecTopP headed by *dan*, leading to the final position of *dan*. In this example, the focus modifier *juist* adjoins to the maximal projection TopP:

(25b′)
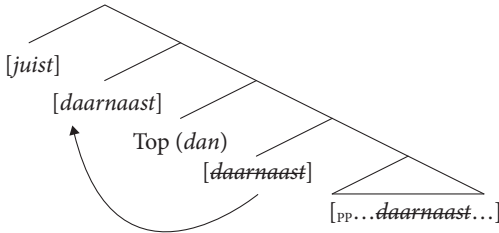
In (25c), the modifier *juist* adjoins to the PP *naast*, and, after *daar* has moved to SpecPlaceP, the constituent PlaceP is again moved to SpecTopP, the specifier position of the particle *dan*:

(25c′)
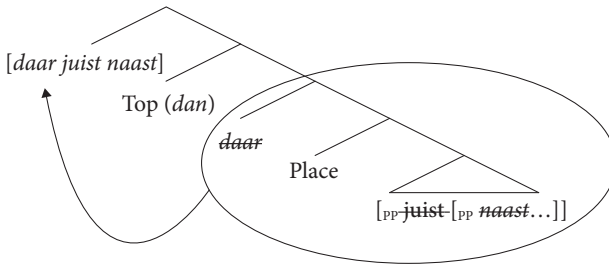
The final ordering in (21d) can be accounted for by postulating that *daar* moves to SpecPlaceP and from there further to SpecTopP headed by *dan*, and that *juist* adjoins to TopP.

At this point, we have shown how our system can derive all (potentially) acceptable PP-internal patterns of non-temporal *dan*. Crucially, our structural analysis is based on a number of claims already established in the literature on the functional makeup of Dutch PPs (e.g., Koopman 2000), on discourse particles (e.g., Munaro & Poletto 2002), and on focusing material within the nominal domain (see the discussion above). In our approach, we intertwine these different empirical domains and structural analyses to capture the PP-internal occurrence of the Dutch particle *dan*.

After having elaborated a proposal for the syntactic position of PP-internal non-temporal *dan*, we will now look both beyond the PP and beyond Dutch by turning to the interpretation of this non-temporal use of *dan* and further exploring how the interpretation of non-temporal *dan* may be relevant in relation to other discourse particles described in the literature.

4. Beyond non-temporal *dan*: Navigating the discourse

Exploring our hypothesis that, as a discourse-navigating device, *dan* partitions topical and focal material within the extended adpositional projection, this section examines the semantic role of this PP-internal particle in more detail. In particular, we will first argue that, as a discourse partitioner, *dan* can to some extent be assimilated to the CP-level discourse particles in German. After having isolated this commonality between PP-internal *dan* and German CP particles like *denn* (lit. 'then', but in its particle use distinguished from its use as a conjunction), we will formulate an account according to which, inside the locative PP, non-temporal *dan* navigates between 'figure' and 'ground'. We will extend this approach to examples in which non-temporal *dan* does not navigate space but rather time. Given our understanding of PP-internal *dan*, we will also suggest that our account can also be used for analyzing the controversial semantic contribution of German *denn*, because this particle also serves to navigate between figure and ground in the sense we are discussing below. But before we turn to the general idea of how both *dan* and *denn* contribute to navigating discourse components at different syntactic levels (i.e., PP and CP), let us first illustrate that both these particles have a fixed position in their syntactic domain that can be detected by means of the relevant information-structural setting.

4.1 Particles as discourse partitioners: From PP particles to clause-level particles

Recall that we have shown above that inside the PP, *dan* only allows topical material to its left and that, as shown by means of focus modifiers, PP-internal *dan* cannot itself be focused. Crucially, such information-structural configurations can also be observed in the domain of clause-level particles. In particular, we can easily draw parallels from the PP-internal patterns to the behavior of German CP-level particles such as the German cognate of *dan*: the particle *denn*, which is typically found in interrogative sentences. In the examples in (26), for instance, movement across the *particle denn* results in shrinking the focus domain of the clause, in that constituents which appear to the right of the particle are interpreted as focused material (see Bayer & Obenauer 2011: 456 for analogous examples). When only the lexical verb remains in the focus domain to the right of the particle, as in (26d), the verb receives heavy stress (i.e., […] *in der Stadt denn GEGESSEN?*). In all of the examples in (26), *denn* itself cannot be focused and receive stress.

(26) a. Was hat denn Andreas gestern in der Stadt gegessen?
        what has PART Andreas yesterday in the city   eaten
     b. Was hat Andreas denn gestern in der Stadt gegessen?
        what has Andreas PART yesterday in the city   eaten
     c. Was hat Andreas gestern denn in der Stadt gegessen?
        what has Andreas yesterday PART in the city eaten
     d. Was hat Andreas gestern in der Stadt denn gegessen?
        what has Andreas yesterday in the city PART eaten

SHRINKING OF FOCUS DOMAIN

Bayer & Obenauer (2011: 455) provide additional evidence for this discourse-partitioning function of the discourse particle by showing that weak and clitic pronouns obligatory precede *denn*:

(27) Hat {es/'s} denn {*es/*'s} jemanden interessiert?
     has it   PART it   someone interested
     'Did someone take an interest in it?'

Observations like those above for *denn* have also been made for the prototypical declarative particles in German such as *ja* and *doch*. Specifically, Grosz (2016) has recently proposed that these particles have an information-structural 'watershed' function (Grosz adopts this term from Krivonosov 1977). This is illustrated in (28) (examples from Grosz 2016: 338):

(28) a. weil   Riko ja   eine Frau   geküsst hat
        because Riko PART a   woman kissed has
        '(…) because Riko has [JA] kissed a woman.'
     b. weil   {man ja / *ja   man} arbeitet
        because one PART PART one   works
        '(…) because one is [JA] working.'

In (28a), the proper name *Riko* is intended to express 'old/topical' information, and the indefinite NP *eine Frau* should convey 'new/focal' information. A non-focusable phrase such as the arbitrary pronoun *man* cannot appear to the right of the particle *ja*; such elements precede the particle obligatorily (28b).

According to our terminology, both interrogative *denn* (see above) and declarative particles such as *ja* thus act as discourse partitioners. In other words, both in declaratives or interrogatives, the information-structural 'watershed' function seems to be a general feature of German CP-level discourse particles. What is more, recent work has also shown that particles like *ja* also operate as watershed elements

in this sense at the level of DP (see Trotzke 2018).[11] We thus see a clear parallel between our structural claim in Section 3, where PP-internal *dan* occupies a topical functional head, and the observations that have been made for discourse particles in other syntactic domains. With this parallel in mind, let us now return to our PP-internal *dan*.

4.2 Discourse partitioning and the figure-ground relation

What all our examples discussed in Sections 2 and 3 share is that in terms of interpretation, PP-internal *dan* in locative PPs (such as *daar naast de kerk* 'there next to the church') is a discourse device which navigates between a reference landmark (in these examples encoded by *daar*) and the constituent that it introduces (i.e., the object that is in focus; in some of our examples: 'the church'). This situation, as we would like to suggest in what follows, can be modelled in terms of the fundamental figure-ground relation, which has often been used, particularly by cognitive linguistics, to model linguistic data in terms of Gestalt psychology. In Talmy's (2000: 184) words,

> The Figure is a moving or conceptually movable entity whose site, path, or orientation is conceived as a variable the particular value of which is the relevant issue. The Ground is a reference entity, one that has a stationary setting relative to a reference frame, with respect to which the Figure's site, path, or orientation is characterized.

This conceptual background is an appropriate tool to capture the function of non-temporal *dan* when found in such locative PPs. More concretely, when *dan* occurs in an utterance like (29), its interpretation can be visualized as in (29′):

(29) (En) **dan daar naast de kerk**   (is een huis).
     and then there next-to the church (is a   house)

---

11. Cf. the following examples, where we observe a clear information-structural difference between the two different placements of the modifier 'in the last season'. That is, in (ib) either 'last' or 'season' would be heavily stressed, in contrast to the ordering in (ia); see Trotzke (2018: 335) for more discussion:

(i) a. ihre in der letzten Saison ja umwerfenden Schuhe
     her in the last   season JA gorgeous   shoes
  b. ihre ja in der letzten Saison umwerfenden Schuhe
     her JA in the last   season gorgeous   shoes

(29′)
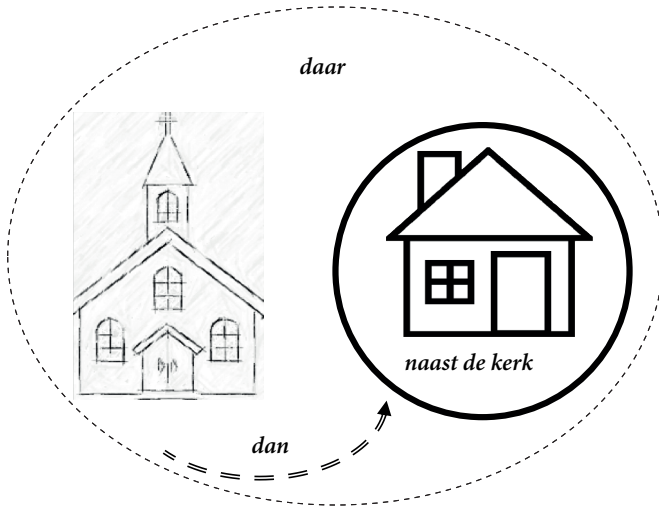
Figure 1. *dan* navigating between 'ground' (referred to by *daar*) and the 'figure'

The interpretation of non-temporal *dan* is indeed a rather abstract one that has to be accounted for in broad terms like our thoughts on figure and ground and the corresponding situation indicated in Figure 1. This is further supported by the data in the following section, showing that non-temporal *dan* can fulfill its abstract navigating function across different semantic domains.

4.3 Discourse navigation and temporal adjuncts

Interestingly, the navigating function of non-temporal *dan* is not exclusive to locative PPs. Indeed, further inspection of the data shows that the abstract navigating function of *dan* can even been detected in a temporal domain; that is, *dan* can not only navigate space, but also time. Consider the following examples:

(30) a. (en) **dan op de tweede dag** zijn we naar Gent gegaan.
and then on the second day are we to Ghent went
'… and then on the second day, we went to Ghent.'

b. (en) **op de tweede dag dan** zijn we naar Gent gegaan.
and on the second day then are we to Ghent went
'… and then on the second day, we went to Ghent.'

We can easily see that the element *dan* in (30) is the same abstract (and thus 'non-temporal') discourse-navigating device as in our locative cases above. (31) illustrates that the whole temporal constituent [*dan op de tweede dag*] or [*op de tweede dag dan*] can itself be resumed once again by the temporal resumptive *dan*

(= *dan₂*), demonstrating that *dan₁* must be part of the PP and does not itself convey the temporal reading of *dan₂*. Rather, *dan₁* is a discourse navigator over times and thus links two points of time according to the figure-ground scheme depicted in Figure 1.

(31) a. (en) **dan₁ op de tweede dag, dan₂** zijn we naar Gent   gegaan.
          and then on the second day then are   we to   Ghent went
      b. (en) **op de tweede dag dan₁, dan₂** zijn we naar Gent gegaan.

In sum, both in terms of the syntactic positioning and in terms of its interpretation we can conclude that what originates as a regular temporal adverbial (*dan*) can be redeployed to act as an abstract discourse-navigating device which can best be understood in terms of linking figure and ground, as we tried to illustrate in Figure 1 above.

4.4   German *denn* and the figure-ground relation

We have seen that PP-internal non-temporal *dan* reveals that this particle divides the syntactic domain it is associated with into topical and focal material. Moreover, the function of non-temporal *dan* as a linking device for the different components of the discourse structure can be realized both in space and in time, suggesting that the linking encoded by *dan* can be viewed in terms of an abstract concept of partitioning between figure and ground. With these considerations in mind, let us now return to the German cognate of *dan*, i.e., the CP-level particle *denn*, which is typically used in interrogative sentences.

Looking at the rich literature on this particular particle, it emerges that a range of theoretical proposals and refinements have been proposed to characterize the exact semantic contribution of the particle *denn* in questions and to define the specific conditions of its use. To illustrate this point, let us briefly paraphrase some of the accounts found in the literature (summaries/sketches of further accounts can be found in Csipak & Zobel 2015 and Theiler 2017):

König (1977):   *denn* signals that the reason for posing the question can be found in the current discourse context.

Romero (2017):   *denn* signals that the question 'has been pondered about.'

Gutzmann (2015):   *denn* is only felicitous if the hearer knows the reason why the speaker is asking the question.

Csipak & Zobel (2015):   *denn* is felicitous when A believes that B is able to supply an answer.

All the accounts referenced here are based on detailed discussions of relevant examples. However, when looking at the vast amount of literature on *denn*, it emerges that the conclusions drawn on the basis of many of these examples can be – and have been – challenged, and so the selection and inclusion of specific examples heavily depends on the interpretive notion of *denn* which the relevant author is arguing for. To see this point, consider (33), an example discussed by König (1977: 119) which is often cited in the literature on *denn*:

(33)   CONTEXT: A wakes up B and A asks:
    #Wie spät ist es denn?
    how late is   it   PART

According to König (1977), one component of the function of *denn* is that of indicating that the information asked for by the speaker is part of a discourse already established between the speaker and the hearer. (33) is taken to demonstrate that questions featuring *denn* are infelicitous when the addressee (here: B, who has just woken up) lacks a context (read: 'Common Ground') in which to interpret the question.

One prediction of König's (1977) characterization is that the particle *denn* should be ruled out in an out-of-the-blue usage. However, it has repeatedly been pointed out (most recently by Theiler 2017) that *denn*-questions can arise out of the blue. (34) is perfectly appropriate in an out-of-the-blue context, and in fact using *denn* in such a context is a very natural way to ask such an information-seeking question out-of-the-blue:

(34)   CONTEXT: Someone asking a passerby:
    Wo   ist denn hier der Bahnhof?
    where is PART here the train-station
    'Where is the train station here?'

In what follows, we will not discuss each of the other approaches to *denn* listed above. Let us merely point out that the empirical evidence for the claims made is inconclusive and that, typically, the formal semantics/pragmatics literature provides counterexamples to each of the claims made. The overall conclusion that we would like to draw from this situation is that the discourse function encoded by *denn* must perhaps be conceived in more abstract and broader terms.

To provide an alternative perspective on the conflicting discussions, and based on what we have sketched for PP-internal *dan* above, we would like to further explore some concepts associated with the particle *denn* in the more recent literature, namely that *denn* is a 'discourse-navigating device' (Csipak & Zobel 2015), and that it therefore 'helps interlocutors with navigating a discourse' (Theiler 2017).

Given our data on non-temporal *dan* above, we would like to take these informal paraphrases seriously by endorsing such a more narrowly spatial interpretation of *denn*, which is then conceived as a navigation device between figure and ground in the sense introduced above for PP-internal *dan*. In this approach, an utterance like (35) would encode the meaning depicted in (35′), where the particle *denn* navigates between the 'ground' (the reason(s) for posing the question) and the 'figure' (the question/the highlighted, focused part of the question):

(35)　Wo　　ist **denn** der Bahnhof?
　　　 where is　part　the train-station

(35′)

$\lambda x.\ x \in D_{locations}$:

Possible reasons for asking Q {R1, R2,...}

Q

Bahnhof is in x
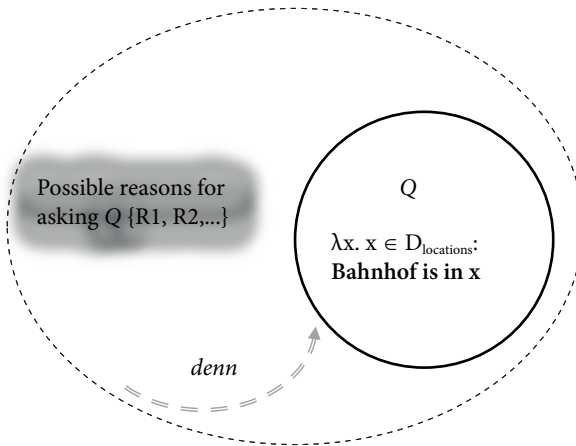
denn

Figure 2. *denn* navigating between the 'ground' (the reason(s) for posing the question) and the 'figure' (the question/the highlighted, focused part of the question)

This narrowly spatial approach to the discourse particle *denn* is the grammaticalization path that has been postulated for *denn* in the diachronic literature (see Abraham 1991; Wegener 2002). In particular, the particle *denn* can be derived from Idg. root **to*, which expresses a deictic meaning. OHG *danne/thanne* (cf. English *then*) first was a locative adverb and only later became a temporal adverb. Based on this diachronic development, Abraham (1991) sketches the following grammaticalization path:

(36)　localistic > temporal > logical > illocutive/discourse functional

The development summarized in (36) can be found elsewhere. Indeed, the final step of the grammaticalization process might also hold for English *then*. Biezma (2014) has recently suggested that in addition to encoding a temporal or logical link at the clausal level, English *then* can also act as an abstract discourse-functional element

beyond the clausal level. In her words: "I argue that *then* is a discourse marker establishing an anaphoric relation with the previous *discourse move*." (Biezma 2014: 374); see also Haselow (2011) for relevant work.

The abstract nature of *denn*, which, according to our claim, is captured in terms of an abstract linking function to relate figure and ground, is also indicated by Bayer's (2012) work on the dialectal usage of *denn*. Bayer (2012) has proposed that the grammaticalization path in (36) should be prolonged as in (36′) because in Bavarian, the clitic version of *denn* (-*n*) has become obligatory in genuine *wh*-questions and has thus shifted toward a pure question marker:

(36′)   (…) illocutive/discourse functional > *wh*-question marker

(37)   a.   Wo   wohnst-n du?
            where live-N   you
            'Where do you live?'
        b.   ??Wo wohnst du?

Our more abstract conception of the interpretation of *denn* in terms of a figure-ground relation allows us to also characterize the functioning of the clitic version of *denn*, which is used in Bavarian. Like in all the other cases of German *denn*, and like in the Dutch examples featuring PP-internal *dan*, the Bavarian version of *denn* continues to function as a linking device. This means that it is not semantically empty: It is deployed for linking general felicity conditions of questions ('the ground') to the actual posing of the question ('the figure'). More specifically, in those cases, 'the ground' would correspond to Searle's classical conditions: "[…] Preparatory condition: (i) S does not know the answer (ii) It is not obvious that H will provide the information without being asked. Sincerity condition: S wants this information. […]" (Searle 1969: 66–67); the figure, on the other hand, corresponds to the actual performance of a speaker when he poses the question based on these conditions.

In this section, we have shown what can potentially be gained by exploring cross-linguistic parallels of Dutch *dan* and German *denn*. In particular, transferring the interpretation of the PP-internal occurrence of the Dutch abstract PP-internal discourse navigator *dan* to the German CP-level discourse particle *denn* can help characterize the abstract discourse-navigating function of *denn*. Because to date none of the current accounts in the literature has succeeded in capturing all the relevant readings and examples of *denn*, we suggest in this paper that the interpretive contribution of the particle *denn* should be looked at at a more abstract level. For the interpretation of Dutch PP-internal *dan*, we propose that a spatial understanding of its linking function (between figure and ground) suggests itself. The point of the present section has been that this spatial understanding can fruitfully be extended to capturing the interpretive contribution of CP-level *denn*. While, admittedly, a

drawback of this type of approach is that it fails to specify the precise interpretive and discourse restrictions on the particle *denn* in German, by going beyond language-specific data points, it has the advantage of pointing to cross-linguistic patterns and parallels that might eventually lead us to a better understanding of the basic inventory of functional elements and/or projections and their interpretations.

5.   Conclusions

In this paper, we have presented the new observation that discourse particles can not only appear at the level of CP, but also inside the PP domain. In particular, we demonstrated that the Dutch lexical element *dan* (lit. 'then') can receive a non-temporal interpretation, which we characterize as a discourse-navigating function that links figure and ground. Syntactically, *dan* in this discourse reading appears as a functional head inside a complex PP constituent. To show this, we first illustrated the core data in Section 2 and argued that non-temporal *dan* has to be part of the prepositional phrase. Pursuing this insight, Section 3 has then elaborated on the internal structure of adpositional projections in Dutch, in line with some of the existing literature (Koopman 2000; see also Den Dikken 2010). We concluded from our data that PP-internal *dan* is a functional head with a fixed position in the extended adpositional projection.

After having elaborated a detailed structural analysis of this phenomenon, we have looked beyond Dutch and compared the discourse function that *dan* has inside the PP to the role that its German CP-level cognate *denn* plays at the clausal level. We argued for a unified approach according to which both cases can be analyzed along the same lines because they express the same abstract discourse function: Both PP-internal *dan* and German *denn* are discourse-navigating devices that link 'a ground' to 'a figure', only differing in their semantic domains of application. Using this broader cognitive approach to account for the discourse function of both Dutch *dan* and German *denn* allows us to fruitfully extend the spatial understanding of such linking devices also to non-spatial discourse domains, thereby illustrating how cross-linguistic patterns and parallels might point to an inventory of functional elements and projections that can be found across syntactic domains (in our case, the prepositional and clausal domain). In this regard, our paper is in line with recent work that pointed out that functional categories related to the occurrence of discourse particles can also be found inside the DP domain, and that these DP-internal categories and their interactions suggest strong parallels to what has been pointed out for CP-level particles (e.g., Lander 2017; Trotzke 2018).

All in all, we hope to have provided a starting point for further investigating the rich functional makeup of PPs, which has developed into a lively area of research more recently (in addition to the literature already cited, see Aelbrecht & Den Dikken 2013; Broekhuis & Den Dikken 2018; and Svenonius 2010). To the best of our knowledge, this chapter on PP-internal occurrences of discourse particles adds a new empirical phenomenon to this strand of syntactic work, and we also open up the possibility of exploring further PP-internal uses of (temporal) adverbs – like Dutch *nu* 'now' (Zwart 2005: 28) and German *nun* 'now' – that might also feature an abstract and non-temporal discourse-navigating function.

Acknowledgements

Funding

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Mandarin exhaustive focus *shì* and the syntax of discourse congruence

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This paper describes three constraints that together govern the distribution of the exhaustive focus marker *shì* in Mandarin Chinese. First, I argue that *shì* is a sentential focus particle that is subject to a requirement to adjoin as low as possible within its clause or phase. Second, I show that *shì* requires a congruent Question Under Discussion (QUD). Third and finally, I show that there are certain reduced clauses where *shì* is completely disallowed, although other focus particles such as 'only' may appear. To explain this last restriction, I propose that reference to a QUD is mediated by a functional head in the clause periphery. *Shì* is thus unavailable in reduced clauses which do not project this high functional layer.

1. Introduction

This paper concerns the use of the Mandarin Chinese morpheme *shì* as a focus particle in examples such as (1). Previous descriptions of this type of *shì* describe it as a marker of "emphasis" (Shi, 1994) or "contrastive focus" (Cheng, 2008), or as a cleft construction (Teng, 1979; Huang, 1982a,b; Shyu, 1995). I will give English *it*-cleft translations here and will discuss this choice below.[1]

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(1)   *The Mandarin focus particle shì:*
  a.   *Shì* [Zhāng Sān]$_F$ hē-le   hóngjiǔ.
       SHI Zhang San   drink-PFV wine
       'It's Zhang San that drank the wine.'
  b.   Zhāng Sān *shì* hē-le   [hóngjiǔ]$_F$.
       Zhang San SHI drink-PFV wine
       'It's wine that Zhang San drank.'

I concentrate here on the use of *shì* as in (1) which Cheng (2008) and Paul & Whitman (2008) have dubbed the "bare *shì*" construction, in contrast to the more commonly discussed *shì…de* construction.[2] I also note that *shì* is homophonous and homographous with the copular verb, which has frequently complicated its analysis and discussion.

The goals of this paper are to describe and explain the syntax of this particle *shì* and restrictions on its distribution. After a brief introduction to the semantics of *shì* in Section 2, I consider what type of focus particle *shì* is in Section 3. I argue that *shì* is a sentential focus particle – adjoining to the clausal spine and then hypothetically able to associate with any focus in its complement – but is subject to a requirement to be adjoined as low as possible while taking its focus associate in its scope. Such behavior is attested by sentential focus particles in Vietnamese (Erlewine, 2017b) and is a component of one approach to German focus particles (as in Jacobs, 1983, 1986; Büring & Hartmann, 2001).

Second, I motivate an independent semantic constraint on the distribution of *shì*. In examples where the aforementioned syntactic constraint still leaves open multiple possible surface positions for *shì*, its position is determined by the discourse context. Specifically, I argue in Section 4 that *shì* must appear in a clause that is congruent to a Question Under Discussion (QUD; Roberts, 1996/2012).

Finally, I observe in Section 5 that *shì* is simply disallowed in certain reduced clauses, such as non-finite embeddings, relative clauses, and certain adjunct clauses. Other focus particles such as 'only' are allowed in such environments. I propose that this restriction on *shì* reflects the fact that reference to a QUD is only available in the extended CP periphery. In certain types of clauses with reduced clausal peripheries, operators cannot make reference to a QUD, and thus particles such as *shì* which require such reference are disallowed.

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2.   See Cheng (2008), Li (2008), and Paul & Whitman (2008) for a range of behaviors that distinguish the bare *shì* construction from the *shì…de* construction. I do not discuss the *shì…de* construction in this paper.

2. *Shì* semantics

I begin by briefly introducing the semantics expressed by *shì* before we consider its distribution. Descriptively, *shì* associates with a focus and expresses exhaustive semantics, conveying that only the stated value for the focus leads to a true proposition. This exhaustivity can be demonstrated by setting up contradictions. Example (2a) is a baseline showing that there is no exhaustivity associated with a sentence without 'only' or *shì*. In (2b) and (2c), the particle *zhǐyǒu* 'only' or *shì* is in initial position and associates with the focused subject.

(2) *'Only' and shì expresses exhaustivity:*
    a. Zhāng Sān lái-le.   Lǐ Sì yě   lái-le.
        Zhang San come-PFV Li Si also come-PFV
        'Zhang San came. Li Si also came.'
    b. *Zhǐyǒu* [ZS]$_F$ lái-le.   {#[LS]$_F$ yě lái-le.   / #(Yě) zhǐyǒu
        only   ZS come-PFV   LS   also come-PFV   also only
        [LS]$_F$ lái-le.}
         LS   come-PFV
        'Only [Zhang San]$_F$ came. {# [Li Si]$_F$ also came. / # (Also) only [Li Si]$_F$ came.}'
    c. *Shì* [ZS]$_F$ lái-le.   {#[LS]$_F$ yě lái-le.   / #(Yě) shì
        SHI ZS   come-PFV   LS   also come-PFV   also SHI
        [LS]$_F$ lái-le.}
         LS   come-PFV
        'It's [ZS]$_F$ that came. {# [Li Si]$_F$ also came. / # It's (also) [Li Si]$_F$ that came.}'

As previewed in the introduction, *shì* focus constructions do not require their focus to be clause-initial. The focus in (2c) is in clause-initial position as that is the default position for subjects in Mandarin, but the focus of *shì* can also be in other preverbal and postverbal positions. The grammatical positions for *shì* and its possible focus associates will be the topic of Section 3.

    Paul & Whitman (2008) claim that there is a difference between *shì* in clause-initial position and *shì* in a clause-medial position, with the former but not the latter requiring exhaustivity. Their claim is based on the acceptability of the utterance in (3).

(3) *Apparent counterexample to the exhaustivity of shì:*
                                                   (Paul & Whitman, 2008: 420)
    Tā *shì* zài Běijīng xué-guò zhōngwén, (dàn) yě   zài Shànghǎi xué-guò.
    3SG SHI at Beijing study-EXP Chinese   but   also at Shanghai study-EXP
    'She studied Chinese in Beijing, but/and also studied Chinese in Shanghai.'

An issue with this example is that neither the discourse context nor position of focus is specified. As described by Hole & Zimmermann (2013: 307), *shì* in example (3) could associate with the location Beijing, but it could alternatively associate with another focus such as the entire predicate that follows it.[3] When we clarify that the first sentence in (3) is to be interpreted with narrow focus on the location Beijing, exhaustivity again rears its head:

(4)   *Exhaustivity effect of (3):*
   #Tā   *shì*   zài   [Běijīng]$_F$ xué-guò   zhōngwén,   dàn   yě   (*shì*)   zài   [Shànghǎi]$_F$
   3SG   SHI   at   Beijing   study-EXP   Chinese   but   also   SHI   at   Shanghai
   xué-guò   (zhōngwén)
   study-EXP   Chinese
   'It's in [Beijing]$_F$ that she studied Chinese, but {she also studied (Chinese) in [Shanghai]$_F$ / it's (also) in [Shanghai]$_F$ that she studied (Chinese) } .'

We can further unpack the meaning expressed by 'only' and *shì* into two components: that the prejacent is true, and that its focus alternatives are false. The two constructions differ in how these different components of meaning are expressed. Consider the contrast in (5) below. Negation only targets the exhaustive component of 'only', and not the prejacent, leading to a coherent utterance in (5a). This accords with the discussion by Tsai (2004) which describes Mandarin 'only' as presupposing its prejacent and asserting that its alternatives are false, much like the behavior of English *only* (Horn, 1969). In contrast, the negation of *shì* targets the prejacent, leading to a contradiction in (5b): more specifically, (5b) sounds like the speaker claims that Zhang San invited Li Si, but also that Zhang San did not invite Li Si.[4]

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3.   The most natural confounding reading which makes (3) natural is a verum-like reading. Hole & Zimmermann (2013: 307) describe *shì* in (3) as being able to associate with other subparts of the verb phrase as well, such as the verb, object, or verb phrase alone, but this conflicts with the description by Chiu (1993: 162), where it is explicitly claimed that *shì* before a preverbal *zài* location cannot narrowly associate with an object focus downstream. Chiu's description accords with my own description and proposal for patterns of focus association with *shì*, in Section 3.

4.   Two details on the surface segments in these examples:

(a)   The Mandarin 'only' particle appears as *zhǐ* in some environments but *zhǐyǒu* in others. For instance, we see *zhǐ* in (5a) but *zhǐyǒu* in (2b) above. This distinction will not be important for our current purposes, as we are primarily interested in the behavior of *shì*. See Erlewine (2015a) for one approach.

(b)   The negator *bù* bears a falling tone, but changes to a rising tone *bú* when immediately preceding another falling tone syllable. This explains its realization as *bú* in (5b).

(5) *'Only' vs shì under negation:*
   a. ✓*ZS yāo LS lái,   dàn (ZS) bù zhǐ yāo [LS]*_F *(lái).*
     ZS invite LS come, but ZS NEG only invite LS   come
     'ZS invited LS to come, but he didn't invite only [LS]$_F$.'
   b. #*ZS yāo LS lái,   dàn (ZS) bú shì yāo [LS]*_F *(lái).*
     ZS invite LS come, but ZS NEG SHI invite LS   come
     'ZS invited LS to come, but it's not [LS]$_F$ that he invited.'

Interestingly, the contrast in behavior between 'only' and *shì* in (5) parallels that between *only* and the corresponding *it*-cleft in English. The examples in (5) were modeled after a pair of sentences reported by Büring & Križ (2013), reproduced in (6):

(6) *Only vs it-cleft under negation:*   (Büring & Križ, 2013: 2)
   a. ✓She invited Fred, but she didn't invite only Fred.
   b. #She invited Fred, but it wasn't Fred she invited.

Such parallels may be behind the fact that many authors, since at least Huang (1982a: Chapter 4), have described *shì* focus constructions as clefts. Here I too will use English *it*-clefts in translations for *shì*.

    The behavior of *shì* in (5b) reflects that the exhaustive inference of *shì* is not at-issue. *Shì* simply passes up its prejacent as its at-issue meaning.[5] I describe the semantic contribution of *shì* as follows. Here, *C* is a set of contextually-determined alternative propositions to the prejacent *p*. The exhaustive inference requires that all non-weaker alternatives be false.

(7) *The semantics of shì (first version):*
   $\lambda p \,.\, \lambda w \,.\, p(w)$
        NOT-AT-ISSUE: $\forall q \in C\,[(p \not\Rightarrow q) \rightarrow \neg\, q(w)]$

We return to the identification of the set of alternatives *C* in Sections 4 and 5.
    A further question for the semantics of *shì* – as well as for clefts in English and other languages – is the precise nature of the not-at-issue exhaustivity inference in (7). Liu & Yang (2017) report on a series of experimental tasks which address this question. In brief, they report that the exhaustivity inference of *shì* is harder to cancel than that of a morphologically unmarked narrow focus answer to a *wh*-question, but easier to cancel than that of an 'only' particle. Each of these pairwise comparisons are statistically significant (see the discussion of their Experiment 2, p. 109),

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5. Descriptively, *shì* also introduces an existential inference, that one of the propositions in an alternative set is true, as has also been described for English *it*-clefts (Dryer, 1996; Rooth, 1999 a.o.). Here I concentrate on the status of the exhaustive inference. See also footnote 16 below.

indicating that the exhaustivity inference of *shì* has a distinctive intermediate strength. I refer the interested reader to Liu & Yang (2017) for details.[6]

Here I will not further discuss the precise status of the exhaustivity inference of *shì*, nor its source. It suffices for our current purposes to recognize that *shì* expresses not-at-issue exhaustive focus semantics, for which English *it*-clefts offer reasonable translations for our presentational purposes.

3.   *Shì* is a sentential focus particle

We now turn to the syntax of *shì*. Focus particles come in broadly two varieties, depending on their adjunction position: *sentential* particles adjoin to the clausal spine, whereas *constituent* particles adjoin to a subsentential constituent such as a DP or PP. For example, English has both sentential and constituent *only*s, realized identically in form. Both *only*s associate with the object and express the same meaning in (8).

(8)   *Two different onlys in English:*
    a.   Laura *only* drinks [red wine]_F. *sentential*
    b.   Laura drinks *only* [red wine]_F. *constituent*

That English *only* comes in two varieties can be verified through their association possibilities. *Only* in preverbal position as in (9) can associate with any constituent in its complement verb phrase, regardless of its linear or structural distance. In contrast, *only* preceding a DP or PP as in (10) must associate with a focus in that constituent.

(9)   *Patterns of association with English only:*   (based on McCawley, 1996: 172)
    a.   John *only* [put salt on the potatoes]_F.
    b.   John *only* put [salt]_F on the potatoes.
    c.   John *only* put salt on [the potatoes]_F.
    d.   *[John]_F *only* put salt on the potatoes.

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6.   Here too, I note a parallel to the behavior of clefts in other languages: Destruel (2015) and De Veaugh-Geiss, Zimmermann, Onea & Boell (2015) report on similar tests of the acceptability of cancelling the exhaustive inference of clefts versus 'only' particle constructions in English and French (Destruel, 2015: § 5) and in German (De Veaugh-Geiss et al., 2015: § 3.2). All of the experiments reported observe that the exhaustivity inference of clefts is easier to cancel than that of an 'only' construction, but is not non-existent. Clefts in these languages thus appear to pattern with the behavior of *shì* reported by Liu & Yang (2017), to the extent that the results of the experiments reported in these studies – with similar but not identical designs – are comparable. I thank an anonymous reviewer for pointing me to this literature.

(10) a. John put *only* [salt]$_F$ on the potatoes.
     b. *John put *only* salt on [the potatoes]$_F$.
     c. John put salt *only* on [the potatoes]$_F$.
     d. John put salt on *only* [the potatoes]$_F$.

The patterns of possible association in (9)–(10) are explained by *only* in (9) being sentential *only*, adjoined to the clausal spine, and *only* in (10) being constituent *only*, adjoined directly to a DP or PP, together with the c-command requirement on association with focus (11).[7]

(11) *The c-command requirement on association with focus:*
     (Jackendoff, 1972; Rooth, 1985; Tancredi, 1990; McCawley, 1996; Bayer, 1996; a.o.)
     A focus-sensitive operator must c-command its associate.

As a result, constituent particles such as *only* in (10) exhibit a type of adjacency requirement, not observed with sentential particles as in (9).

    With this background in place, we now consider the possible patterns of association for *shì*. We first consider examples (12)–(14) below, which are modified and expanded from that in Huang (1982a: 290). These examples show *shì* in different preverbal positions in a simplex transitive clause with a preverbal adjunct.

(12) *Patterns of association with shì in different preverbal positions:*
     Shì wǒ zúotiān mǎi-le nèi bě n shū.
     SHI 1SG yesterday buy-PFV that CLF book
     a. *'It's [that book]$_F$ that I bought yesterday.'
     b. *'It's [buying]$_F$ that I did with that book yesterday.'
     c. *'It's [buy that book]$_F$ that I did yesterday.'
     d. *'It's [yesterday]$_F$ that I bought that book.'
     e. ✓'It's [me]$_F$ that bought that book yesterday.'
     f. ✓'It's that [I bought that book yesterday]$_F$.'

(13) Wǒ *shì* zúotiān mǎi-le nèi bě n shū.
     1SG SHI yesterday buy-PFV that CLF book
     a. *'It's [that book]$_F$ that I bought yesterday.
     b. *'It's [buying]$_F$ that I did with that book yesterday.'
     c. *'It's [buy that book]$_F$ that I did yesterday.'
     d. ✓'It's [yesterday]$_F$ that I bought that book.'
     e. *'It's [me]$_F$ that bought that book yesterday.
     f. *'It's that [I bought that book yesterday]$_F$.'

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7. English sentential and constituent *only* also vary in their scope-taking possibilities; see Taglicht (1984).

(14)   Wǒ zúotiān *shì* mǎi-le   nèi běn shū.
       1SG yesterday SHI buy-PFV that CLF book
      a. ✓'It's [that book]$_F$ that I bought yesterday.'
      b. ✓'It's [buying]$_F$ that I did with that book yesterday.'
      c. ✓'It's [buy that book]$_F$ that I did yesterday.'
      d. *'It's [yesterday]$_F$ that I bought that book.'
      e. *'It's [me]$_F$ that bought that book yesterday.'
      f. *'It's that [I bought that book yesterday]$_F$.'

The possible patterns of association in (12)–(14) can be summarized as follows. *Shì* before the subject (12) and before the adjunct 'yesterday' (13) exhibit an adjacency effect, requiring its focus to be the immediately following phrase.[8] However, *shì* in immediately preverbal position (14) is able to associate with the entire verb phrase or any subpart thereof. At first glance, then, we may be tempted to describe *shì* as ambiguous between a sentential particle, limited to immediately preverbal position, and a constituent particle. See also Chiu (1993: 124ff), Zhu (1997: 103–106), and Li (2008: 766–767) for extensive additional data which accords with my description of *shì*'s association possibilities.

However, there are also challenges for the view that *shì* has a life as a constituent particle. First, *shì* never appears in postverbal position. Example (15) is flatly ungrammatical. Object focus with *shì* requires *shì* to be in immediately preverbal position, as in (14) above.

(15)   *No postverbal shì:*
      *Wǒ zúotiān   mǎi-le   *shì* nèi běn shū.
      1SG yesterday buy-PFV SHI that CLF book
      Intended: 'It's [that book]$_F$ that I bought yesterday.'

A possible solution may be to stipulate that the focus particle *shì* is somehow disallowed within the verb phrase. However, even outside of the verb phrase, if *shì* associates with a *subpart* of a preverbal constituent, it must precede the entire phrase. This is shown in (16) with a preverbal prepositional phrase.

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8.   Such patterns have led some authors to describe *shì* as always immediately preceding its focus. For example, Huang (1982a: 290) states that "The simplest way of looking at cleft [*shì*] sentence formation, then, is to say that it inserts the marker *shì* directly in front of the constituent in focus." Cheng (2008: 254) states that "the focused element in a bare-*shì* sentence is the constituent immediately following *shì*." Similar statements are made in passing by Shi (1994) and Shyu (1995) as well. However, as we will see here, such descriptions are seriously misleading, especially when we consider the possibility of long-distance association.

(16) *No shì inside preverbal PP:*
      Zhāng Sān {$^{\checkmark}$*shì*} [$_{PP}$ duì {**shì*} [Lǐ Sì]$_F$] rēng-le   qiú.
      Zhang San SHI   to SHI Li Si   throw-PFV ball
      'It's [Li Si]$_F$ that Zhang San threw a ball at.'

The facts above appear difficult to reconcile. On the one hand, the adjacency effects observed in (12)–(13) are straightforwardly explained if *shì* is a constituent particle, directly adjoining to the focused subject or adjunct. On the other hand, the distribution of *shì* in (14)–(16) challenges the idea that *shì* could ever be a constituent particle.

    Here I adopt the solution developed in Erlewine (2017b) based on the study of focus particles in Vietnamese. I propose that *shì* is a sentential focus particle, adjoined to the clausal spine, in all of the cases above, and is additionally subject to the constraint in (17).[9]

(17) *A constraint on sentential focus particle placement:*   (Erlewine, 2017b: 334)
      Sentential focus particles (focus-sensitive sentential modifiers) must be as low as possible while c-commanding their focus associate, within a given phase.

Vietnamese has both a sentential 'only' and a constituent 'only' like English, but unlike in English, the two differ in their surface form. The sentential 'only' is *chỉ* (18a) whereas the constituent 'only' is *mỗi* (18b). This allows us to unambiguously study the behavior of each type of particle separately.

(18) *Two different 'only' in Vietnamese:*   (Erlewine, 2017b: 331)
      a. Nam *chỉ*   mua [cuốn sách]$_F$.   *sentential*
          Nam only buy   CLF   book
      b. Nam mua *mỗi* [cuốn sách]$_F$.   *constituent*
          Nam buy only   CLF   book
          'Nam only bought [the book]$_F$.'

I show in Erlewine (2017b) that the sentential 'only' particle *chỉ* has a distribution precisely mirroring that of *shì* above: When preceding a preverbal phrase, *chỉ* must associate with focus on or within the adjacent phrase. When in immediately

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9. Yang (2012) states that focus-sensitive operators in Mandarin are "merged to the closest phase edge c-commanding the focus element" (p. 78). While this too is an "as low as possible" requirement, this characterization is incorrect. First, there is no independent evidence that the adjunction positions of focus particles are all phase edges; see for example the three positions in (12)–(14), which I believe to all be within the same phase. Second, it is unclear how this generalization would ever allow for a focus particle to be introduced in a higher clause, associating long-distance with an embedded clause constituent, as we will see in (20) below.

preverbal position, *chỉ* can associate with the following verb phrase or any subpart thereof. Unlike the constituent 'only' particle *mỗi*, it does not appear in postverbal object positions or inside prepositional phrases.

Such an "as low as possible" constraint on the position of sentential focus particles has been proposed for German by Jacobs (1983, 1986) and Büring & Hartmann (2001), although this analysis for German has proved to be controversial; see Reis (2005), Meyer & Sauerland (2009), and Smeets & Wagner (2018). A version of my constraint motivated for Vietnamese in Erlewine (2017b) has been claimed to hold of English (Francis, 2019: 57).[10]

The "as low as possible" logic predicts that, given a particular choice of focus associate (F-marked constituent), the placement of *shì* will be deterministic. This is true of simplex clauses. Let us return to the examples in (12)–(14) above. If our intended focus associate is the verb phrase or a subpart thereof, the lowest adjunction position for *shì* will be just above the verb phrase.[11] This blocks *shì* from adjoining in a higher position while associating into the verb phrase. If the focus is the preverbal temporal adjunct, *shì* adjoins just above it to c-command it, but no higher due to the "as low as possible" requirement (17). Finally, subject focus or broad focus leads to *shì* in initial position. The same logic yields the same pattern for Vietnamese sentential particles in Erlewine (2017b) as well.[12]

This proposal also predicts that *shì* in non-immediately-preverbal position will be able to associate with a focus within the phrase which follows it. This was already observed with the prepositional object in (16) above. Just above the entire PP's attachment is the lowest available point for *shì* to adjoin to the clausal spine and associate with the prepositional object. Similarly, as Xu (2010) makes clear, *shì* can narrowly associate with a subpart of an adjacent subject, as in (19). Note that *shì* in (19) must be on the matrix clausal spine, outside of the subject's relative clause, as reflected in the possible translations. This contrast is due to an independent restriction against *shì* in restrictive relatives, which will be discussed in Section 5 below.

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10. A reviewer asks about the underlying nature of this "as low as possible" constraint. I believe we can think of such a constraint as reflecting a more general functional preference to reduce ambiguity: if a sentential focus particle is adjoined higher in a structure, it is in a position to potentially associate with a larger set of focal targets than if it is adjoined lower. As languages do not morphologically encode the intended locus of alternatives – i.e. F-marking itself is not morphologically realized (see e.g. Branan & Erlewine, 2020) – there is a need to reduce such ambiguities for the benefit of efficient communication. The strict "as low as possible" constraint observed here may be one conventionalized strategy in response to this pressure.

11. More should be said about the lowest possible position for *shì*. See Chiu (1993), Zhang (1995), and Yang & Ku (2010) for some relevant observations.

12. I follow Erlewine (2017b) in describing these possibilities as varying in the height and timing of adjunction, subject to the restriction in (17), but alternative conceptions are possible. See Erlewine (2015b) for discussion.

(19) *Shì associating with a focus inside the subject:* (Xu, 2010: 143)
      Shì [DP [RC [Zhāng Sān]F mǎi ___ de] gǒu] zuì kě'ài.
      SHI   Zhang San buy   DE dog most cute
      'It's [the dog that [Zhang San]F bought] that's the cutest.'
      *'The dog that it's Zhang San that bought is the cutest.'

In all of our examples so far, the position of *shì* is fixed, given a choice of focus associate. When the focus is in an embedded clause, though, we yield apparent optionality in the placement of *shì*. With the focus in an embedded clause, *shì* can be in the higher or lower clause, as seen in (20). These two variants of (20) with *shì* in the higher or lower clause differ in their interpretation, which I discuss in the following section.

(20) *Higher and lower shì:*
      Zhāng Sān (*shì*) shuō [CP Lǐ Sì (*shì*) dú-le   [liǎng]F běn shū].
      Zhang San SHI say   Li Si SHI read-PFV two   CLF books
      literally: 'Zhang San (SHI) says [that Li Si (SHI) read [two]F books].'

Note that, within each clause, the placement of *shì* must obey the "as low as possible" restriction (17). We can make sense of the apparent optionality in (20) by taking the "as low as possible" requirement to be relativized to hold only between different adjunction positions within a single syntactic domain. Example (20) shows that the embedded finite clause is its own domain for this purpose. Following Erlewine (2017b), I take the relevant domains to be phases in size.[13]

   A further argument for *shì* being a sentential focus particle comes from the availability of multiple focus association (Krifka, 1991).[14] In such multiple focus constructions, all the intended foci must independently be c-commanded. For English, this results in a difference between sentential and constituent *only*. Consider the contrast in (21):

(21) a. ✓*I only* saw [the children]F ask [the adults]F to be quiet.
      b. *I saw *only* [the children]F ask [the adults]F to be quiet.
      c. *Only* [the children]F asked [the adults]F to be quiet.

Only in example (21a) is a sentential *only*, c-commanding all of the embedded clause. This allows for the intended reading, where ⟨children, adults⟩ is the only pair such that the speaker saw the first ask the second to be quiet. In contrast, *only*

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13. In the case of *shì*, it is difficult to tell whether the "as low as possible" requirement is relativized to the phase or clause. Distinguishing between these two views would require studying a single clause with an additional verbal phase to potentially host *shì*, but I show independently in Section 5 below that *shì* is disallowed in reduced clause environments such as complements of control verbs.

14. I thank Michael Wagner for suggesting this diagnostic.

in (21b,c) are constituent particles, preceding the small clause subject or the matrix subject, and only c-command the immediately adjacent constituent.

Shì patterns with English sentential *only* in the availability of multiple focus association. This is illustrated in the following example from Cheng (2008).[15] The additional paraphrase of the intended meaning of the second clause is my own, based on the discussion in Krifka (1991).

(22)   *Multiple focus with shì:*   (Cheng, 2008: 256)
Shì [érzi]$_F$ jiào [dàrén]$_F$ bié chǎo, bú *shì* [dàrén]$_F$ jiào [érzi]$_F$ bié chǎo.
SHI son ask adult   not noisy NEG SHI adult   ask son   not noisy
'It was the son asking the adult not to make noise, not the adult asking the son.'
⟨the son, the adult⟩ is the only pair ⟨*x, y*⟩ such that *x* asked *y* not to make noise

The grammaticality of the multiple focus structure in (22) supports the view that *shì* is a sentential particle, taking the entire clause here as its complement. The fact that, in sentences with a single focus, *shì* when not immediately preverbal can only associate with the immediately following constituent must be due to the "as low as possible" requirement on its placement (17) rather than *shì* in such positions being a constituent particle that only c-commands the immediately following constituent.

I conclude this section with a brief note on the relationship between *shì* and other focus particles in Mandarin Chinese. As noted by Shyu (1995: 228–231), the distribution of *shì* and its association possibilities appear to parallel that of *zhǐ(yǒu)* 'only' and *shènzhì* 'even.' (I set aside the *lián* 'even' particle which obligatorily moves to a dedicated preverbal position.) I propose in Erlewine (2015a) that all three items have an identical basic syntax as sentential focus particles that are subject to the "as low as possible" generalization in (17). There are, however, some complications there, especially due to 'only' appearing as *zhǐ* in some positions but *zhǐyǒu* in others.

4.   *Shì* requires a congruent QUD

Next, we turn to a semantic constraint on the placement of *shì*: *shì* is only allowed in clauses that are congruent to a Question Under Discussion (QUD; Roberts 1996/2012 a.o.). I argue that this reference to a QUD is part of the conventionalized semantics of *shì*, unlike other focus particles such as 'only.'[16] This aspect of *shì*

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15.   Li & Cheung (2015: 366) also note the possibility of multiple association with *shì*.

16.   In Erlewine (2016), I consider the possibility that *shì* requires congruence to a QUD which has a particular, privileged status as being "accepted" in the discourse in the sense of Roberts (1996/2012). This explains the existence inference of *shì* (see note 5 above) as well as the marked status of *shì* in direct answers to new questions.

will help us understand the limited distribution of *shì* in certain types of embedded clauses in Section 5 below.

I first will return to example (20) above, where we first observed apparent optionality in the placement of *shì*. Example (20) is reproduced in (23)–(24) below with different preceding questions: 'How many books did Li Si read?' versus 'How many books does Zhang San think Li Si read?'. In the B responses to these questions, *shì* can only appear in the embedded clause in (23) but only in the matrix clause in (24). In each case, the focus is on the numeral 'two' in the object in the clausal complement of *shuō* 'say.'

(23)   *Embedded complement clause congruent to QUD ⇒ low shì:*
   A: (Shàng ge   xuéqī,) Lǐ Sì dú-le   jǐ   běn shū?
         last   CLF term,   Li Si read-PFV how many CLF books
         'How many books did Li Si read (last term)?'
   B: I don't know, but…
         Zhāng Sān (#*shì*) shuō [Lǐ Sì (✓*shì*) dú-le   [liǎng]F běn shū].
         Zhang San SHI say   Li Si SHI read-PFV two   CLF books
         'Zhang San says that it's [two]F books that Li Si read.'

(24)   *Matrix clause congruent to QUD ⇒ high shì:*
   A: Zhāng Sān shuō [Lǐ Sì dú-le   jǐ   běn shū]?
         Zhang San says   Li Si read-PFV how many CLF books
         'How many books does Zhang San say Li Si read?'
   B: Zhāng Sān (✓*shì*) shuō [Li Sì (#*shì*) dú-le   [liǎng]F běn shū].
         Zhang San SHI say   Li Si SHI read-PFV two   CLF books
         'It's [two]F books that Zhang San says that Li Si read.'

These exchanges show that the placement of *shì* in the higher or lower clause is felicitous in different discourse contexts. *Shì* in the embedded clause (23) requires that the embedded clause itself be congruent to the QUD, whereas *shì* in the higher clause (24) requires that the entire utterance with embedded focus be congruent to the QUD, which is supported by A's long-distance constituent question in (24).[17]

The same contrast is observed with focus in a purpose clause in (25)–(26) below. Here, speaker A is chatting with her friend B, who serves on the corrupt organizing committee of a sports event. In (25), A suggests that Li Si will win, to which B replies that they changed the rules so that Zhang San will win; here, *shì* is most natural within the purpose clause. In (26), A specifically asks who the rules were changed to support, to which B replies that they changed the rules so that Zhang San will win; this case, *shì* can appear in the higher clause and associate with the embedded focus.

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17. A similar interaction between the active QUD and the placement of the German discourse particle *denn* is reported by Bayer, Häussler & Bader (2016).

(25)   *Embedded purpose clause congruent to QUD ⇒ low shì:*
    A: Zhè chǎng bǐsài   *shì* [Lǐ Sì]$_F$ yīdìng huì yíng ba.
       this CLF   competition SHI Li Si definitely will win BA
       'It's Li Si that will win this competition right?'
    B: Bú-shì. (#*Shì*) [wèile zhè chǎng bǐsài   (✓*shì*) [Zhāng Sān]$_F$
       NEG-SHI   SHI for   this CLF   competition SHI Zhang San
       yīdìng   huì yíng], wǒmen xiūgǎi-le   guīzé.
       definitely will win 1PL   modify-PFV rule
       'No. We changed the rules [so that it's [Zhang San]$_F$ who will definitely win this competition].'

(26)   *Matrix clause congruent to QUD ⇒ high shì:*
    A: Nǐmen [wèile zhè chǎng bǐsài   Zhāng Sān háishì Lǐ Sì
       2PL   for   this CLF   competition Zhang San HAISHI Li Si
       yīdìng   huì yíng] xiūgǎi-le   guīzé?
       definitely will win   modify-PFV rule
       'Did you change the rules so that Zhang San or Li Si will definitely win this
       competition?'   (alternative question)[18]
    B: (✓*Shì*) [wèile zhè chǎng bǐsài   (#*shì*) [Zhāng Sān]$_F$ huì yíng],
       SHI for   this CLF   competition SHI Zhang San will win
       (wǒmen xiūgǎi-le   guīzé).
       1PL   modify-PFV rule
       ≈ 'It's [Zhang San$_i$]$_F$ that we changed the rules [so that he$_i$ will definitely win this competition].'[19]

The contrasts in (23)–(24) and (25)–(26) both show that the use of *shì* requires the clause with *shì* to have a congruent QUD. Of particular interest are the cases where *shì* is in an embedded cluase, as in (23) and (25); in these examples, B's entire reply is judged as a felicitous and natural response to A, but it is only the embedded clause that is congruent to the QUD made salient by A.[20] *Shì* in these cases is only allowed in these embedded clauses.

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18. The use of the *háishì* disjunctor makes this example unambiguously an alternative question. See Erlewine (2014, 2017a) for discussion.

19. This English translation itself is marginal, due to the inability of clefting out of the purpose clause. I use a resumptive pronoun here to make the intended reading clear. At first glance, this difference between the grammatical in-situ exhaustive focus construction in (26B) and its English translation may suggest that the *shì* construction does not involve covert movement. However, as Xu (2010) points out, it is possible that covert movement is involved but with the possibility of significant covert pied-piping. On the island-sensitivity of association with focus and covert pied-piping, see also Erlewine & Kotek (2018). Here I do not aim to determine whether or not *shì* constructions ever involve covert movement.

20. The QUD is explicit in (23) but implicit in (25), reflected in (25A)'s suggestion which itself uses *shì*. I have found it difficult to construct an example similar to (25) but where the content

To encode this dependency on a QUD, I propose a minimal modification to the semantics of *shì* introduced in Section 2 above. Specifically, in (27) below, the set of alternatives used to compute the not-at-issue exhaustive inference of *shì* is specifically a QUD – here a contextually-determined free variable *QUD* – rather than a contextually-determined alternative set *C* à la Rooth (1992).

(27)   *The semantics of shì (second version):*
$\lambda p. \lambda w . p(w)$
    NOT-AT-ISSUE: $\forall q \in \text{QUD} \ [(p \not\Rightarrow q) \rightarrow \neg \, q(w)]$

Note that I assume that a discourse may have multiple active QUDs at a time, so the reference here is to *a* QUD, which need not be the so-called 'current question.' See also note 16 above on the status of this QUD.

In the following section, we will consider more examples of embedded *shì* and see that only certain types of embedded clauses allow for *shì* within them. I will propose that this distribution itself is due in part to the QUD congruence requirement, whose formalization I revise once more in (37) below. On that note, it is perhaps worth highlighting that non-restrictive (appositive) relative clauses are one such environment which allows for embedded *shì* for many speakers. Consider example in (28) below. The utterance was judged as natural by three of six speakers consulted, with two others judging it as degraded but possible, and one outright rejecting it.

(28)   *Shì in non-restrictive relative clause:*
Context: A few candidates were considered for a job. The candidates included Mr. Martin who speaks French and Mr. Müller who speaks German. The boss announces:
%Wǒmen gù-le   [shuō déyǔ   de] nà ge Martin xiānshēng… Wǒ
1PL   hire-PFV speak German DE that CLF Martin Mr.   1SG
shuō-cuò-le.   Wǒmen gù-le   [*shì* shuō [fǎyǔ]$_F$ de] nà ge
say-wrong-PFV 1PL   hire-PFV SHI speak French DE that CLF
Martin xiānshēng.
Martin Mr.
'We hired Mr. Martin, who speaks German… I misspoke. We hired Mr. Martin, who speaks [French]$_F$.'[21]

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of the purpose clause addresses an explicit question. This appears to reflect a difference in the naturalness of using these different embedded clauses to directly respond to an explicit question, despite both clauses being able to refer to a congruent QUD using *shì*.

21. Clefting inside the relative clause is not possible in English, but a rough approximation using a resumptive pronoun would be 'Mr. Martin$_i$, who it's [French]$_F$ that he$_i$ speaks.'

Notice that the referent of 'Mr. Martin' is unique in the context, so the relative clauses must be non-restrictive. Here is an instance where – for those speakers who readily accept this example – the QUD referenced by *shì* clearly need not be the most salient or pressing QUD in the discourse. We can imagine here that the main clause addresses a question such as 'Who did we hire?'; the contents of these relative clauses are supplementary and do not obviously contribute to answering this question. However, the first relative clause *shuō déyǔ de* 'who speaks German' itself may raise an implicit question of what language the new hire speaks and answer it with 'German,' thereby addressing a "side issue" in the terms of Gutzmann & Turgay (2019). This implicit QUD licenses the subsequent use of *shì* in the boss's self-correction. Thus, in this way, the content of a non-restrictive relative may address *a* QUD, although it may not be *the* current question being addressed by the host utterance's at-issue content.

5.   On the distribution of *shì* and the syntax of discourse congruence

I now turn to the third restriction on the distribution of *shì* and its implications for the syntax/semantics of discourse congruence. The proposal above, which describes *shì* as a sentential focus particle, by itself may lead us to expect *shì* to appear in a variety of different syntactic environments, just as many other, better studied focus particles such as *only* and *even* and their equivalents may appear in many languages. It turns out, however, that *shì* is systematically banned in certain clause types, even though other focus particles such as *zhǐ(yǒu)* 'only' can appear in them. I propose that what these clause types have in common is that they are syntactically reduced, lacking higher, discourse-related layers of the clause, and this disallows them from making reference to QUDs, which I have argued is an integral part of the semantics of *shì*.

5.1   Clauses which disallow *shì*

We begin with an overview of the environments which do and do not allow *shì*.[22] We have already seen in (23) above that *shì* can appear in an embedded clause complement of *shuō* 'say', given a congruent QUD. It is similarly available in the

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22. To my knowledge, the contrasts that I will concentrate on here extend to interrogative clauses as well. *Shì* is generally available in interrogative clauses, although it interacts with *wh*-phrases, alternative disjunctions, and A-not-A verbs by giving rise to so-called intervention effects as in Beck (2006) and Beck & Kim (2006). See e.g. Huang (1982b: 377–378), Shi (1994: 86ff), Zhu (1997: 118), Yang (2008, 2012), Li & Cheung (2015), and Erlewine (2017a) for data and discussion of these effects.

complement of other bridge verbs such as 'think', factive verbs such as 'know', and the false belief verb *yǐwéi* (see e.g. Glass, to appear). These complements can all be described as finite CPs, although unlike matrix clauses, they disallow high sentence-final particles expressing clause type or speaker attitude (see e.g. Paul, 2014).

(29) *Shì possible infinite complement clauses:*
Zhāng Sān {shuō / rènwéi / zhīdào / yǐwéi} [CP *shì* [Lǐ Sì]F
Zhang San say   think   know   thought   SHI Li Si
zuò-cuò-le].
do-wrong-PFV
'Zhang San {says/thinks/knows/thought wrongly} [that it's Li Si that made a mistake].'

Shì is also grammatical in sentential subjects and in clauses introduced by the preposition *duì*. Li & Huang (2009) show that these types of clauses in (30)–(31) differ from the complement clauses in (29) in behaving externally as a nominal argument, as evidenced by their ability to be conjoined by the nominal conjunctors *hé* and *gēn*.

(30) *Shì possible in sentential subject:*[23]
[CP Zhè-cì   huìyì   *shì* [Zhāng Sān]F dàibiǎo   wǒmen] shì
    this-time meeting SHI Zhang San   represent 1PL   COP
ge   wèntí.
CLF problem
'[That it's Zhang San that will represent us at this meeting] is a problem.'

(31) *Shì possible in clausal argument of preposition duì:*
Wǒ duì   [CP zhè-cì   huìyì   *shì* [Zhāng Sān]F dàibiǎo   wǒmen]
1SG towards   this-time meeting SHI Zhang San   represent 1PL
méi-yǒu   yìjiàn.
NEG-HAVE opinion
'I have no objection to [it being Zhang San that will represent us at this meeting].'

Shì is also available in all adverbial clauses that I have tested. This includes conditional clauses introduced by *rúguǒ*, reason clauses introduced by *yīnwèi*, concessive clauses introduced by *suīrán*, and purpose clauses introduced by *wèile* and *yǐbiàn*. *Shì* in a *wèile* purpose clause is seen in example (25) above.

In contrast, *shì* is disallowed in control complements and small clauses, as in (32)–(34) below. This restriction for subject and object control verbs is noted in Chiu (1993: 134–135, 142). Note however that 'only' *zhǐ(yǒu)* is available in these

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23. Huang (1982b: 374) reports that *shì* is disallowed in sentential subjects, but other speakers I have consulted have found Huang's example acceptable, as well as other examples with *shì* in sentential subjects, such as this example.

same positions, indicating that there is not a problem with a focus particle in these positions or with focus on the intended arguments with F-marking.

(32)   *Shì disallowed in subject control complement:*
       Wǒ xiǎng [{*shì / ✓zhǐ} hē   [kāfēi]$_F$].
       1SG want   SHI / only drink coffee
       *≈ 'I want [for it to be coffee that I drink].'
       ✓'I want [to only drink [coffee]$_F$].'

(33)   *Shì disallowed in object control complement:*[24]
       Wǒ yīshēng yào   wǒ [{*shì / ✓zhǐ} hē   [kāi-shuǐ]$_F$].
       1SG doctor   make 1SG   SHI / only drink boiled-water
       *≈ 'My doctor makes it so that it's boiled water that I drink.'
       ✓'My doctor makes me [only drink [boiled water]$_F$].'

(34)   *Shì disallowed in small clause complement:*
       Wǒ kàndào [{*shì / ✓zhǐyǒu} [Zhāng Sān]$_F$ tōu nèi-tái mótuōchē].
       1SG saw   SHI / only   Zhang San steal that-CLF motorcycle
       *'I saw [it's Zhang San that stole that motorcycle].'
       ✓'I saw [only Zhang San steal that motorcycle].'

The contrasts in (32)–(34) above at first glance suggest that *shì* is disallowed in non-finite or equivalent reduced clauses, which is the conclusion that Chiu draws.[25][26] However, *shì* is also disallowed within restrictive relative clauses, as previously noted by Teng (1979), Huang (1982b), and Shi (1994: 86–87, 91).

(35)   *Shì disallowed in restrictive relative clause:*   (based on Huang, 1982b: 374)
       Wǒ xǐhuān [$_{DP}$ [$_{RC}$ {*shì / ✓zhǐyǒu } [Zhāng Sān]$_F$ dú-guo ___ DE]
       1SG like   SHI / only   Zhang San read-EXP   DE
       nèi-běn shū].
       that-CLF book
       *'I like that book [that it's Zhang San that bought].'
       ✓'I like that book [that only Zhang San bought].'

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24. The bracketing here gives the causee argument outside of the embedded clause, but this is a matter of analysis.

25. Whether Mandarin Chinese truly exhibits a finite/non-finite distinction is a subject of continued debate. See especially Grano (2017) and Huang (2018) for recent discussion.

26. A reviewer asks whether subject control as in (32) allows for partial control, especially as Landau (2001) has proposed that partial control involves a CP-level head. As Grano (2015) shows, Mandarin subject control with verbs such as *xiǎng* does not allow for partial control. The facts are complicated by the fact that some such verbs also take full clause embeddings with independent subjects, which can then be pro-dropped. See Grano (2015: Chapter 6) for details.

Many speakers do, however, accept *shì* in non-restrictive relatives, as seen in Section 4 above; see example (28). It's worth noting that the existence of non-restrictive relatives in Mandarin has been controversial. See Constant (2011), Del Gobbo (2014), and Lin & Tsai (2014) for a review of the issues and positions. The availability of *shì* in non-restrictive relatives but not in restrictive relatives, which appears to be a clear, categorical contrast for many speakers, lends support to the view that non-restrictive relatives must be recognized as possible in Mandarin and, furthermore, potentially structurally distinct from restrictive relatives.

　　The contrasts presented here show that *shì* is systematically disallowed from a range of clause types which otherwise allow focus particles such as 'only.' These clauses include control clauses and small clauses, which are known to be reduced and/or non-finite (see e.g. Grano, 2017; Huang, 2018), but also restrictive relatives. Here I will pursue the core intuition that these environments are all somehow reduced or "truncated," in lacking a particular layer of the CP domain associated with discourse congruence, and that this layer is necessary for calculating the semantics of *shì*.

5.2　Proposal

My proposal for the limited distribution of *shì* will build on the fact that *shì* requires a congruent QUD, as discussed in Section 4 above, together with two established ideas regarding the form and function of clausal functional structure. First is the idea that different types of clauses vary in the amount of high functional material that is projected. Such an idea has been particularly well motivated through the study of so-called Main Clause Phenomena (MCP) and/or root transformations, beginning with Emonds (1970) and subsequently extended through the study of various clause types in many languages. Work in this domain has shown that main or root clause status is not simply binary: it may be necessary to draw multiple grades of distinctions, even amongst finite clauses, depending on their type. An influential approach here has been the idea that clauses may be "truncated," projecting different extents of the clausal functional sequence; see especially Haegeman (2002, 2006, 2012) and Krifka (to appear).

　　More specifically for Mandarin, it has been known that there is at least a clear binary division between matrix clauses and embedded clauses, in that matrix clauses can host clause-typing and attitude sentence-final particles, which are never embeddable except through quotation (see e.g. Paul, 2014). More detailed work on different clause types, especially recent work such as Pan & Paul (2018) and Wei & Li (2018), show that further distinctions are necessary even amongst embedded finite clauses. Of particular interest here is that Wei & Li (2018) show that restrictive

relative clauses are structurally reduced compared to other finite clauses such as complement clauses.

The second idea that my proposal will build on is the "neo-performative" hypothesis, which claims that functional material associated with the speech act and its context are represented syntactically, in the higher layers of the clause. This line of work builds on an early intuition expressed by Ross (1970) and which has been subsequently developed by Speas & Tenny (2003), Haegeman & Hill (2013), Wiltschko & Heim (2016), Wiltschko (2017), Krifka (to appear), Miyagawa (2022), among others.

An example of MCP and its relation to speech act syntax/semantics is illustrated in (36) below. The adverb *frankly* comments on the speech act itself, rather than its content (see e.g. Ernst, 2002: 70–73). *Frankly* is available in non-restrictive relatives, but not in restrictive relatives. This accords with the intuition that non-restrictive relatives constitute a separate speech act (Emonds, 1979; see also Potts 2005).

(36)   *Frankly allowed in non-restrictive relative but not in restrictive relative:*
                                                               (Emonds, 1979: 239)
   a.   The boys, who have *frankly* lost their case, should give up.
   b.   *The boys that have *frankly* lost their case should give up.

This contrast can also be given a syntactic characterization, where non-restrictive relatives project a higher, speech act functional layer that is not present for restrictive relatives.

Concretely, I propose that one such peripheral speech act projection has the function of providing access to QUDs in the discourse context. Here I will refer to the relevant head as *Cong* for "congruence," although its label and precise identification is not critical for our purposes.[27] Recall from Section 4 that the semantics of *shì* depends on the availability of a congruent QUD. If reference to the QUD is necessarily mediated by this functional head Cong, it follows that reduced clauses which do not project Cong will also be unable to host *shì*. I propose that this is the unifying characterization for the clauses which disallow *shì*.

Formally, I encode this dependence on the QUD in the lexical entry for *shì* as in (37) below. The syntactic specification includes an unvalued [QUD] feature which

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27. In addition to having access to QUDs, this head may also ensure congruence between the clause and a QUD, and thereby being responsible for functions such as question-answer congruence.

Antomo (2012, 2016) proposes that MCP is available in clauses whose content is "at-issue," based on the behavior of German embedded V2 and English topicalization. Since at-issue status has been argued to be directly related to the relation of the clausal content to the QUD(s) in the discourse (Simons, Tonhauser, Beaver & Roberts, 2010; AnderBois, Brasoveanu & Henderson, 2015), this too may be thought of as reflecting a link to the QUD(s).

must be valued by Agree.[28] The semantics for *shì* then makes direct reference to the value of the [QUD] feature, and otherwise follows the formulation in (27) above.

(37)   *Proposal for Mandarin shì:*

$$
\begin{bmatrix}
\textsc{phon}: & shì \\[2mm]
\textsc{syn}: & [\textsc{uqud}: \underline{\qquad}\boxed{1}] \\[2mm]
\textsc{sem}: & \lambda p \,.\, \lambda w \,.\, p(w) \\[4mm]
& \textsc{not-at-issue}: \forall q \in \boxed{1}\,[(p \nRightarrow q) \rightarrow \neg q(w)]
\end{bmatrix}
$$

Cong is the unique head which bears a [QUD] value. If *shì* fails to Agree with Cong in the local clause to value its [QUD] feature, the result will be uninterpretable.

Consider the interpretation of *shì* in (38), repeated from (1a). Suppose the congruent QUD is 'Who drank the wine?' as in (39), whose denotation is the set of answer propositions.

(38)   *Shì* [Zhāng Sān]$_F$ hē-le   hóngjiǔ.
       SHI Zhang San   drink-PFV wine
       'It's Zhang San that drank the wine.'

(39)
$$
[\![\text{who drank the wine}]\!] = \begin{cases} \lambda w' \,.\, \text{Zhang San drank the wine in } w', \\[2mm] \lambda w' \,.\, \text{Li Si drank the wine in } w', \\[2mm] \lambda w' \,.\, \text{Wang Wu drank the wine in } w' \end{cases}
$$

This denotation of the congruent QUD is the value of the [QUD] feature on the Cong head, which values the [QUD] feature on *shì* under Agree. The semantic interpretation of *shì* makes reference to this value, following the specification in (37), resulting in the following not-at-issue inference in (38):

(40)   *Not-at-issue inference of (38):*
       $\forall q \in [\![\text{who drank the wine}]\!]$
                   $[(q \nRightarrow (\lambda w'.\ \text{Zhang San drank the wine in } w')) \rightarrow \neg q(w)]$
       = Li Si did not drink the wine and Wang Wu did not drink the wine in w

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28. Here I abstract away from whether Agree is initiated by *shì* or the Cong head. See e.g. Bjorkman & Zeijlstra (2019) for recent discussion. What is clear, however, is that *valuation* of the [QUD] value is downward in this Agree relation.

Syntactically encoding a dependence on a peripheral syntactic head is a common strategy in the analysis of particles with MCP-like distribution. For example, Wei & Li (2018) propose that certain discourse particle uses of the adverbs *yòu* and *yě* in Mandarin (see pages 197–199, 209–213) must be licensed by a local Force head (p. 219). Similarly, Bayer (2012) and Coniglio (2012) propose that German modal particles must Agree with a local Force head.[29] What is unique in this proposal is the semantic motivation of this syntactic dependency from the interpretation of *shì* itself, based on its conventionalized reference the QUD (Section 4).

In contrast, I propose that 'only' does not quantify over a QUD as its alternative set, *pace* Beaver & Clark (2008) and Coppock & Beaver (2011).[30] 'Only' therefore does not bear this syntactic dependency on Cong for access to the QUD. The semantics of 'only' in Mandarin instead quantifies over the Roothian focus alternatives of its complement, represented in (41) by $Alt(p)$. More specifically, for ONLY with sister α, $p = [\![\alpha]\!]^\circ$ and $Alt(p) = [\![\alpha]\!]^f$ in the notation of Rooth (1992).

(41) *Proposal for the semantics of Mandarin* ONLY:
      ONLY $= \lambda p.\ \lambda w : p(w).\ \forall q \in Alt(p)\ [(q >_S p) \rightarrow \neg q(w)]$

5.3   The "one *shì* per clause" restriction

The proposed difference between *shì* and 'only' in QUD sensitivity has the potential to explain an additional difference between *shì* and 'only.' As noted by Huang (1982b: 375–376) and Chiu (1993: 129–130), only one *shì* is allowed per clause. No such restriction holds of 'only.'

(42) *Only one shì per clause:*
      Shì [Zhāng Sān]$_F$ *shì* dú-le   [zhè-běn shū]$_F$.
      SHI Zhang San   SHI read-PFV this-CLF book

(43) *No such restriction on 'only':*
      Zhǐyǒu [Zhāng Sān]$_F$ *zhǐ* dú-le   [zhè-běn shū]$_F$.
      only   Zhang San   only read-PFV this-CLF book
      'Only [Zhang San]$_F$ read only [this book]$_F$.'

There are in principle two possible approaches to ruling out structures of the form in (42). The first is syntactic. Suppose Cong is only able to Agree with and value

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29. Bayer refers to the head as C, without distinguishing between distinct heads in a split CP.

30. Kadmon & Sevi (2011) also present more direct arguments against the idea that focus particles such as *only* necessarily quantify over a QUD as its alternative set. See also discussion in Roberts (2011) and Büring (2019).

one [uQUD] feature in its domain. Two *shì* in the same domain of Cong will be immediately ungrammatical, for syntactic reasons. The second approach is semantic. Because each *shì* will quantify over the same alternative set C, the clause's QUD, its multiple applications in an example such as (42) will be vacuous. Work such as Crnič (2011: 110), Alxatib (2020), and Erlewine & New (2021) have independently proposed that the use of focus particles must not be vacuous; such a Non-Vacuity constraint on the use of *shì* would similarly rule out the structure in (42). In more complex examples with intervening quantificational material between the two *shì*, the multiple applications of *shì* may not be vacuous, but other interpretational problems may arise. I will leave the full exploration of these possibilities, and its comparison to the syntactic approach to this constraint, for future work.

In contrast multiple 'only' in a single clause is grammatical, as in (43). The semantics I propose for 'only' in (41) above straightforwardly yields the correct meaning for such examples. This is possible crucially because the alternatives considered by the low 'only' at the VP edge and the high 'only' at the top of the clause are distinct. Intuitively, the lower alternatives vary in the choice of object, while the higher alternatives vary only in the choice of subject. Note that this would not be possible if 'only' particles necessarily quantify over the QUD, requiring multiple particles within a single clause to quantify over a single QUD.

6.   Conclusion

The focus particle use of *shì* has been a topic of substantial interest within contemporary Mandarin Chinese grammar. *Shì* expresses not-at-issue exhaustive focus semantics, similar to the semantics of clefts in other languages. Here I have investigated the distribution of the focus particle *shì*. I propose that *shì* is a sentential focus particle, adjoined to the clausal spine and associating with a focus in its scope. Three constraints then together govern its placement. First, *shì* must be adjoined as low as possible while taking its focus in its scope, within its clause or phase (see note 13). Such a constraint on sentential focus particles has been independently motivated in previous work on German (Jacobs, 1983; Büring & Hartmann, 2001), Vietnamese (Erlewine, 2017b), and English (Francis, 2019).

Second, I showed that the use of *shì* is dependent on congruence to a Question Under Discussion, but 'only' is not (*pace* Beaver & Clark 2008; Coppock & Beaver 2011). Access to the QUD is provided by an Agree relation with functional head in the high, speech act-related layer of the clause. Certain reduced clauses lack this head and therefore disallow *shì*, although other focus particles such as 'only' are allowed in them. Future work must pursue a more precise identification of this head, in relation to other functional heads proposed in the performative domain

(see e.g. Speas & Tenny, 2003; Haegeman & Hill, 2013; Wiltschko, 2017; Krifka, to appear) and the typology of truncated clause types in Mandarin, as explored in recent work such as Pan & Paul (2018) and Wei & Li (2018).

By way of conclusion, I return to an important remaining issue regarding *shì*: that of the relationship between the focus particle *shì* described here and the copular verb *shì*. Under my proposal here, the focus particle *shì* and the copular verb *shì* are synchronically distinct lexical items, although they clearly share a diachronic source. Jin (2020) looks across the modern Sinitic family to show that copular verbs regularly also have a use as a cleft particle. He also discusses diachronic evidence which shows that a copular verb later gained a use as a focus marker at least three times in the history of Chinese languages, suggesting that this is a common path of grammaticalization.[31]

Many previous authors have pursued the intuition that *shì* in its focus particle use is more directly related to the verb *shì*; see especially Huang (1988) but also Shi (1994) and Chiu (1993) who claim that the focus particle *shì* has the syntax of a modal verb. In my view, an important fact which these approaches miss is the close parallels between *shì* and other focus particles *zhǐ(yǒu)* 'only' and *shènzhì* 'even' in their focus association possibilities, which have been more straightforwardly analyzed as focus particles in the literature. In particular, it is not clear how a 'copular' account can derive the apparent "as low as possible" restriction on the position of *shì* (Section 3), which is familiar from sentential focus particles in other languages. See also Tham (2008) and von Prince (2012) for further discussions of both the copula *shì* and focus marker *shì* which highlight their differences in behavior.

What may appear to be the most challenging for my approach, where the focus particle *shì* has no verbal status, is the ability of the focus particle *shì* to undergo A-not-A question formation. Mandarin Chinese has a polar question formation strategy which is often described as involving reduplication of a modal or lexical verb with negation (44). The availability of this question strategy applying to *shì* as in (45) at first glance suggests that *shì* here is itself a verb, as also suggested recently in Jin (2020).

(44) *A-not-A polar question formation:*   (Huang, 1991: 306)
     Tā *xǐhuān-bù-xǐhuān* zhè-běn shū?
     3SG like-NEG-like   this-CLF book
     Does s/he like this book?'

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31. Similar patterns are attested in other language families as well. See for example Nurse (2006: 195–197) and citations there for discussion of a focus or cleft marker with a copular source in many Bantu languages.

(45) *A-not-A applied to shì:*   (based on Shi, 1994: 85)
      Nǐ *shì-bú-shì*   [míngtiān]_F dòng   shǒushù?
      2SG SHI-NEG-SHI tomorrow   undergo operation
      'Is it tomorrow that you will undergo an operation?'

When we consider a wider range of examples, though, it becomes difficult to maintain that A-not-A question formation necessarily targets verbs. This process can target certain adverbs such as *cháng* 'often' in (46) and also the comparative standard marker *bǐ* in (47):

(46) *A-not-A applied to adverb 'often':*   (Tsai, 1994: 162)
      Akiu *cháng-bù-cháng* lái?
      Akiu often-NEG-often come
      'Does Akiu come often'

(47) *A-not-A applied to comparative morpheme:*   (Erlewine, 2007: 16)
      Nǐ *bǐ-bù-bǐ*   tā   gāo?
      2SG BI-NEG-BI 3SG tall
      'Are you taller than him/her?'

I suggest that what we should take away from such data is that being a verb is not a prerequisite for being a target of A-not-A formation. The grammaticality of examples such as (45) does not lead us to immediately conclude that the focus particle *shì* is itself a verb.

Acknowledgements

Funding

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Evidentiality and the QUD

A study of *talán* 'perhaps' in Hungarian declaratives and interrogatives

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The aim of the paper is to sketch a unified account of the denotation of *talán* 'perhaps' in Hungarian, which appears in declaratives and polar interrogatives encoding assertions and questions. It is suggested for the first time that *talán* is not only an inferential or conjectural evidential, but also makes reference to the current question under discussion. The account explains some interpretational effects of *talán*, including the absence of the "interrogative flip" or the obligatory rhetorical question readings of polar interrogatives without constituent focus, which are discussed here for the first time.

Keywords: conjectural evidential, epistemic modal, interrogative flip, question under discussion, rhetorical question

1. Introduction

This paper presents some well-known and some novel observations concerning the distribution and interpretation of the pragmatic marker[1] *talán* 'perhaps' in declarative and polar interrogative sentence types in Hungarian, and sketches the outlines of a formal proposal that can account for them in a unified manner. The contribution of *talán* to the interpretation of ordinary (falling) declaratives, illustrated in (1), has received substantial attention in the literature:[2]

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[1]   We follow Gärtner and Gyuris's (2012: 388) proposal in referring to *talán* as a pragmatic marker, due to the fact that "it least prejudges the issues of form and interpretation that adequate formally explicit theories about are only beginning to emerge."

[2]   'VM' stands for 'verbal modifier', a category that subsumes verbal prefixes, among others, cf. É. Kiss (2002).

(1)   Béla talán   elutazott   a   hegyekbe.
       Béla perhaps vm.travelled the mountains.into
       'Béla perhaps went to the mountains.'

Previous authors (including Kiefer 1981, 2005, 2018 and Kugler 2003, 2010, discussed in Section 2.1 below) have attributed an epistemic modal, inferential meaning to *talán* in declaratives. This means that in the case of (1), the truth of the proposition BÉLA WENT TO THE MOUNTAINS, to be referred to as the *prejacent*, is considered by the speaker to be a possibility, based on what she concludes on the basis of the information available to her. We will propose that this contribution of *talán* is not made at the level of truth-conditional or at-issue (Potts 2005) meaning, but at the non-at-issue, expressive (Potts 2007) or use-conditional (Gutzmann 2015) level.

   In addition to falling declaratives encoding assertions, *talán* can also appear in forms encoding polar questions, which include ∧ (rise-fall)-*declaratives* (marked by multiple rise-fall tunes, to be discussed below), shown in (2), and ∧-*interrogatives* (marked by a global rise-fall tune, with a peak on the penultimate syllable), illustrated in (3)–(4). (3) and (4) differ in that the former contains a constituent focus, marked by placement of the relevant constituent (the NP *a hegyekbe* 'the mountains.into') into the preverbal focus position[3] and associated with an exhaustive/identificational reading (cf. Bende-Farkas 2007, É. Kiss 1998, É. Kiss 2002, É. Kiss 2006; Horvath 2007; Kenesei 1989; Szabolcsi 1994; van Leusen and Kálmán 1993, a.o.), and the latter does not.

(2)   Béla talán ∧ elutazott ∧ a   hegyekbe ∧ ?
       Béla perhaps vm.travelled the mountains.into
       'Perhaps Béla went to the mountains?'[4]

(3)   Béla talán   [F a   hegyekbe]   utazott   el ∧ ?
       Béla perhaps   the mountains.into travelled vm
       'Is it perhaps to the mountains that Béla went?'[5]

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3.   The fact that the verbal modifier *el* is situated behind the verb indicates that the NP *a hegyekbe* occupies the preverbal focus position. There are certain constituent types, e.g., universal DPs, which are excluded from the focus position even if they play the role of focus from the information-structural point of view. They will be ignored in what follows. (Cf. É. Kiss 2002 or Gyuris 2012, a.o., for further discussion.) We will also ignore constituent foci in postverbal position, to which É. Kiss (1998) assigns a non-exhaustive ("information focus") reading, since they constitute rather marked cases of answers to *wh*-questions (if acceptable at all). (Cf. Szendrői 2003 for discussion.)

4.   Due to certain functional similarities between ∧-declaratives in Hungarian and rising declaratives in English, to be discussed in Section 3, constructions of the former type are translated in terms of the latter. Cf. Suzuki (2018) for examples where *perhaps* occurs within rising declaratives in English.

5.   To emphasize the exhaustive/identificational interpretation of the preverbal focus, sentences containing the latter are translated into English with the help of cleft constructions.

(4) Béla talán   elutazott   a   hegyekbe ∧ ?
     Béla perhaps ᴠᴍ.travelled the mountains.into
     Literal translation: 'Did Béla perhaps go to the mountains?'[6]

We will show in Section 5 that in ∧-interrogatives without preverbal focus, as in (4), the presence of *talán* is only compatible with a rhetorical question reading.

We will suggest below that *talán* only contributes to the use conditions in forms encoding questions as well: it indicates that the speaker conjectures that the agreeing answer to the question is true, *talán* thus fails to display the so-called "interrogative flip" characteristic of the majority of inferential expressions cross-linguistically, to be discussed in Section 3.1.

The paper will argue for the first time that *talán* makes a further use-conditional (or non-at-issue) contribution as well: it indicates that the declarative or interrogative containing it is not uttered out of the blue, it addresses a "superordinate" open issue in the context. We will show how the relevant superordinate question can be reconstructed for each form type containing *talán* on the basis of the latter's information structure. These assumptions will be used to explain why utterances with *talán* are infelicitous in particular contexts, why it does not give rise to the "interrogative flip," and why ∧-interrogatives without constituent focus like (4) above obligatorily give rise to a rhetorical question reading. The relevant data will be introduced in the sections to follow. Nevertheless, the discussion of some uses of *talán* (including the one where it serves as a response particle, following a polar question), will have to be left for a different occasion.

All the examples in (1)–(4) above show *talán* in a sentence-internal position preceding the finite verb. This is, however, not the only position where *talán* can appear in the Hungarian sentence. It can equally appear sentence-initially, postverbally, or sentence-finally, both in declaratives and interrogatives, illustrated in (5a)–(c) and (5d)–(f), with the same interpretations as (1) and (4) above, respectively:

(5) a. Talán Béla elutazott a hegyekbe.
     b. Béla elutazott talán a hegyekbe.
     c. Béla elutazott a hegyekbe talán.
     d. Talán Béla a hegyekbe utazott el ∧ ?
     e. Béla a hegyekbe utazott talán el ∧ ?
     f. Béla a hegyekbe utazott el talán ∧ ?

The rest of the paper is built up as follows. Section 2 reviews previous discussion on the interpretation of *talán* in falling declaratives encoding assertions, introduces

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6. To simplify matters a bit, we provide only literal translations in cases where specifying the English equivalents of our examples would require a longer discussion. We come back to these examples in later sections of the paper.

some new data illustrating the contextual requirements posed by the latter, and makes a proposal on how to represent their use conditions formally. Section 3 presents previous work on the meaning of *talán* in questions, and introduces the three form types encoding question acts in Hungarian. Sections 4 and 5 discuss the contributions *talán* makes to the interpretation of ∧-declaratives and ∧-interrogatives, respectively. Finally, Section 6 presents the conclusions of the paper.

2.   *Talán* in falling declaratives

In this section, we first review previous work dealing with the interpretation of *talán* in ordinary declaratives, pronounced with a falling tune, which encode assertions, and present data illustrating that the contribution of *talán* is analogous to that of inferential or conjectural evidentials (cf. Faller 2002). Then we bring new data indicating that *talán*, in addition, introduces a constraint on the structure of the discourse. Finally, we sketch a way of formalizing these findings, relying on a question-based approach to discourse structure, initiated by Roberts (2012a).

2.1   Previous literature on *talán*: Epistemic possibility and inference

Talán 'perhaps', which has been referred to in the literature as a modal adverbial (Kiefer 1981), a modal particle (Kiefer 2018), or a modal adverb (Kugler 2010), came about as a result of grammaticalization from the matrix predicate *találom* 'find.1sg.' (Cf. Dér 2008: 120, Kugler 2003: 71.)

The interpretation of *talán* was studied in more detail by Kiefer (1981, 2005, 2018) and Kugler (2003, 2008. 2010), who agree that in the majority of its uses, it contributes "non-propositional" meaning conveying inferential possibility (Kiefer 2018: 291), and thus it "advances the speaker's hypothesis about a state-of-affairs" (Kiefer 2018: 287). Kugler (2003, 2010) claims that *talán* marks (medium) epistemic possibility and inferential evidentiality at the same time: "the evaluation 'possible' is based on inference" (Kugler 2010: 84).[7]

In what follows, we will offer some proof for the claim that *talán* does not make a contribution to the truth-conditional interpretation of the sentence, relying on Kiefer's (1981, 2018) arguments. We will contrast *talán* to the construction that is used as a default to express that a proposition is possible, the matrix clause containing the adjective *lehetséges* 'possible', which Kiefer (2005: 126) considers

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7.   Kiefer (2018: 291), in fact, denies that *talán* has any evidential meaning (without explaining, however, in what sense he uses the latter term).

synonymous with *talán* on its modal reading in declaratives. (Cf. Kugler 2010: 84–85 for a similar claim.)

First, (6) shows that the two constructions differ as to the possibility of *talán* taking scope below negation, a propositional operator.[8]

> (6) a. Béla nem utazott el a hegyekbe talán.
> Béla not travelled VM the mountains.into perhaps
> 'Béla perhaps didn't go to the mountains.'
> b. Nem lehetséges, hogy Béla elutazott a hegyekbe.
> not possible that Béla VM.travelled the mountains.into
> 'It is not possible that Béla went to the mountains.'

(6a) conveys that the speaker considers it possible that Béla didn't go to the mountains. As opposed to (6b), it does not have a reading where the speaker denies the possibility of Béla having gone to the mountains. (7), due to Kiefer (1981), shows the ungrammaticality of a construction where *talán*, situated in the subordinate clause, would have to be forced to take scope below matrix negation:[9]

> (7) *Nem igaz, hogy Péter talán az iskolában van.
> not true that Péter perhaps the school is
> Literal translation: 'It is not true that Peter is perhaps at school.'
>
> (Kiefer 1981: 168, (39b))[10]

Second, *talán* cannot take scope below the question operator, as opposed to matrix *lehetséges* 'possible', which can be illustrated by comparing (3), repeated in (8a), to (8b). (9) shows the semantic value of the latter (consisting of a set of propositions corresponding to the possible answers, cf. Hamblin 1973; Groenendijk and Stokhof 1984). In case *talán* were situated in the scope of the question operator in (8a), the latter's semantic value should also be identical to (9):[11]

> (8) a. Béla talán [F a hegyekbe] utazott el ∧?
> Béla perhaps the mountains.into travelled VM
> 'Is it perhaps to the mountains that Béla went?'

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8. Note that all variants of (6a) with *talán* in different positions would give rise to the same interpretation, independently of the c-command relations between the negation and the pragmatic marker.

9. (7) would be acceptable in echoic/quotational uses.

10. Unless noted otherwise, the translations of the examples from Kiefer (1981) are taken over from the original, the glosses are added by the author of the present paper.

11. The example is inpired by Eckardt's (2020: 7) examples (exx. (12)–(13)) containing German *wohl*.

      b.   Lehetséges, hogy Béla [F a   hegyekbe]   utazott el ∧?
           possible   that Béla   the mountains.into travelled VM
           'Is it possible that it is to the mountains that Béla went?'

(9)   {POSSIBLE (IT IS TO THE MOUNTAINS THAT BÉLA WENT), NOT(POSSIBLE (IT IS TO THE MOUNTAINS THAT BÉLA WENT))}

In other words, an agreeing answer to (8a) from the interlocutor would have to convey that it is possible that it was to the mountains that Béla went, and a disagreeing answer would have to convey that it is not possible that it was to the mountains that Béla went. This contradicts native speaker intuitions: whereas (10B) is a felicitous agreeing answer to (8a), repeated in (10A), (10B′) is not:[12]

(10) A: Béla talán   [F a   hegyekbe]   utazott el ∧?
             Béla perhaps   the mountains.into travelled VM
             'Is it perhaps to the mountains that Béla went?'
      B: Igen, Béla a   hegyekbe   utazott el.
             yes   Béla the mountains.into travelled VM
             'Yes, it is to the mountains that Béla went.'
      B′: #Igen, lehetséges, hogy Béla a   hegyekbe   utazott el.
             yes   possible   that Béla the mountains.into travelled VM
             Literal translation: 'Yes, it is possible that it is to the mountains that Béla went.'

The properties of *talán* in interrogatives will be addressed in greater detail in Section 3.
    Third, *talán* cannot appear embedded under the matrix predicate *know*, as Kiefer (1981) points out:

(11) *Anna tudja, hogy Péter talán   az iskolában van.
         Ann knows that Péter perhaps the school.in is
         Literal translation: 'Ann knows that Peter is perhaps at school.'

                                     (Kiefer 1981: 168, (39a))

The data presented above thus show that *talán* does not convey that the prejacent is objectively possible. Rather, it indicates the subjective epistemic possibility of the prejacent, based on inferential or conjectural (cf. Faller 2002) evidence. The contrast between the felicity of (12a), with *talán*, and (12b), with a matrix clause containing *lehetséges* 'possible', in a context where they are intended as guesses about the possibility of a certain state of affairs illustrates the same phenomenon:[13]

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12. Cf. Zimmermann (2008: 206, (14)–(15)) for analogous examples containing German *wohl*.

13. (12a)–(b) are inspired by examples provided by Eckardt and Beltrama (2019).

(12)   Context: A draws a marble out of a box that is known to contain an equal
       number of white and black marbles. She cannot see the colour, and has no
       preferences for any of them. A says to herself:

    a.   #Talán   egy fehéret   húztam   ki.
        perhaps a   white.ACC drew.1SG VM
        Literal translation: 'Perhaps it is a white one that I drew.'

    b.   Lehetséges, hogy egy fehéret   húztam   ki.
        possible   that a   white.ACC drew.1SG VM
        'It is possible that it is a white one that I drew.'

The fact that certain speakers observe a contrast between the felicity of the question-answer sequence in (13) vs. the one in (14) constitutes a further argument for the suggestion above:[14]

(13)   A: Mit   csinálsz a   hétvégén?
          what.ACC do.2SG the week-end.on
          'What are you doing at the week-end?'
      B: #/✓Talán   elutazom   a   hegyekbe.
          perhaps VM.travel.1SG the mountains.into
          Literal translation: 'Perhaps I'll go to the mountains.'

(14)   A: Mit   csinál Béla a   hétvégén?
          what.ACC do.3SG Béla the week-end.on
          'What is Béla doing at the week-end?'
      B: Talán   elutazik   a   hegyekbe.
          perhaps VM.travel.3SG the mountains.into
          'He'll perhaps go to the mountains.'

The claim that as an answer to (13A)/(14A), (13B) is infelicitous but (14B) is not is compatible with the assumption that *talán* does not only convey that the speaker considers the prejacent to be a possibility, but also that the speaker arrived at this assumption on the basis of an inference process, which does not normally play a role in contemplating about one's future actions (unless the speaker is not the one to make the decisions about her own activities).

The data illustrated above thus indicates that the behaviour of *talán* fits Faller's (2002: 184) suggestions about conjectures, which involve two components: "(i) the speaker arrived at the presented conclusion through reasoning, and (ii) this conclusion is not presented as necessarily following from a set of premises, but only possibly." Faller attributes a conjectural evidential reading to the enclitic

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14. '#/✓' is meant to indicate that the answer is infelicitous for some but felicitous for other speakers. The latter group mostly includes younger speakers. Discussion of the possible reasons for the interpretational differences will have to be left for future work.

chá in Cuzco Quechua, which she takes to contribute both a propositional and a non-propositional meaning component. As opposed to this, we will assume, based on the previous literature reviewed above, that *talán* does not contribute to the truth-conditional interpretation of the sentences it appears in, but it introduces two kinds of use conditions, which explains its (in)felicity in various contexts. One of the use conditions, referred to as UC2 in (15) below, conveys that the prejacent is a conjecture of the speaker. The other use condition, referred to as UC1 in (15), introduces a restriction on the structure of discourses, which has not yet been discussed before, and will be motivated in the next section.

(15)   The use conditions of declaratives containing *talán* (*D+talán*) (informal):
 UC1:   There is an (explicit or implicit) open question Q in the discourse, which the prejacent encodes a complete answer to.[15]
 UC2:   S has conjectured that the prejacent is true.

2.2   Declaratives with *talán* in context

The aim of this section is to argue for UC1, postulated in (15), for declaratives containing *talán*, which requires there to be an open question in the discourse that the latter declarative provides a complete answer to. First, the contrast between (16a), with *talán*, and (16b), containing *lehet* ('be.POSS') 'possible', shows that declaratives with *talán* are dispreferred discourse-initially.

(16)   Context: A and B, who are friends, meet for the first time during the day. They have never talked about getting a pet before. A says to B:
 a. #/?Képzeld,   talán   kapok egy   kiskutyát!
    imagine.SUBJ.2SG perhaps get.1SG a   puppy.ACC
    Literal translation: 'Imagine, perhaps I get a puppy!'
 b.   Képzeld,   lehet,   hogy kapok egy kiskutyát!
    imagine.SUBJ.2SG be.POSS that get.1SG a   puppy.ACC
    'Imagine, it is possible that I get a puppy!'

Whereas (16a) is infelicitous or at least marked out of the blue, without a previous discussion or question from the interlocutor, (16b) is acceptable. This suggests that the matrix predicate *lehet* 'be.POSS', as opposed to *talán*, does not introduce UC1.

Second, the requirement that a declarative with *talán* is supposed to provide a complete answer to the open question under consideration explains the infelicity of the answer in (17B), as opposed to the felicity of (17B′), with *lehetséges* 'possible':

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15. UC1 is inspired by Eckardt's (2004) proposal on the interpretation of German *vielleicht* 'perhaps'.

(17) A: Miért olyan üres   az   utca?
          why   so   empty the street
          'Why is the street so empty?'

    B: #Talán   munkában vannak az   emberek és   talán hideg van.
          perhaps work.in   be.3PL the   people and   perhaps cold is
          Literal translation: 'Perhaps people are at work and perhaps it is cold
          outside.'

    B′: Lehetséges, hogy munkában vannak az   emberek és   lehetséges, hogy
          possible   that work.in   be.3PL the people and possible   that
          hideg van.
          cold   is
          'It is possible that people are at work, and it is possible that it is cold outside.'

In case *talán* simply indicated that the speaker conjectures that the prejacent is
true, there would be no reason to exclude the simultaneous utterance of the two
conjectures in (17B). UC1, which requires a *talán*-declarative to be proposed as a
complete answer to an open question under discussion, however, is incompatible
with the simultaneous proposal of two such complete answers. As (17B′) indicates,
this requirement does not hold for *lehetséges* 'possible.'

 Third, UC1 provides a natural explanation for why *talán* is felicitous in the
following corpus example cited by Kugler (2008):

(18) Ezúttal   talán   valóban a   költemény keletkezése körülményeinek
      this.time perhaps really   the poem   creation.its circumstances.its.DAT
      ismerete   segíthetne.
      knowledge.its help.POSS.COND
      'This time it would perhaps really be the knowledge of the circumstances of
      the creation of the poem that could help.'   (Kugler 2008: 291, (22))

Kugler (2008: 291) sees a conflict between the interpretation of *talán* (indicating
medium or greater epistemic probability in her view) and that of *valóban* 'really',
which conveys "certainty and necessity." The only way the conflict can be resolved
in her opinion is if *talán* adopts a different interpretation in (18), and contributes
to "weakening the certainty, necessity" contributed by *valóban*. I disagree with
Kugler's interpretation of (18), and believe that *talán* and *valóban* make independ-
ent contributions to the interpretation. The latter indicates that there was a previous
commitment to the prejacent (THIS TIME IT WOULD BE THE KNOWLEDGE OF THE
CIRCUMSTANCES OF THE CREATION OF THE POEM THAT COULD HELP) in the dis-
course. This does not contradict the contribution of *talán*, which indicates, on the
one hand, that (18) provides a complete answer to an open question in the context
(UC1) and that the speaker made a conjecture about the truth of the prejacent on

the basis of the evidence available (UC2). For reasons to be discussed in the next section, an appropriate open question for (18) would thus be the following:

(19)   Mi   segíthetne   (a költemény értelmezéséhez)?
       what help.POSS.COND the poem   interpretation.its.for
       'What could help (with the interpretation of the poem)?'

In the following section we make an attempt at formalizing the intuitions introduced above.

2.3   Towards a formal account

We proposed in Section 2.2 that *talán* does not contribute to the truth-conditional (or at-issue) meaning of declaratives. Its contribution to the use conditons was summarized in (15), repeated in (20):

(20)   The use conditions of declaratives containing *talán* (*D+talán*) (informal):
       UC1:   There is an (explicit or implicit) open question Q in the discourse,
              which the prejacent encodes a complete answer to.
       UC2:   S has conjectured that the prejacent is true.

We discuss the formalization of UC1 first, in terms of a version of the Question Under Discussion (QUD) model of discourse, by Roberts (2012a), which itself relies on Hamblin (1973) and Rooth (1985, 1992), among others.[16] QUD-approaches view discourse as a means of sharing information about the world, or answering the Big Question (*What is the way things are?*) (Roberts 2012a: 5). Based on the intuition that questions guide the addition of new information to the Common Ground (Stalnaker 1978), the process of answering the Big Question can be modelled by dividing it into subquestions, repeating the procedure until all the subquestions are answered. The structure of questions, their subquestions and the answers to the latter can be represented with the help of a hierarchical (tree) structure (cf. Büring 2003). Here we will assume, following Roberts (2012a) that assertions must always be immediately preceded (and in the tree-structure dominated) by a question, and questions by a question. Questions are also allowed to remain implicit.

The *relevance* and *congruence constraints* posed by a particular QUD-based model (cf. Velleman and Beaver 2016) determine how explicit moves (questions or answers) make it possible to reconstruct implicit moves in a particular discourse.[17]

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16. Cf. Vellemann and Beaver (2016) for a discussion and comparison of QUD-based approaches, which the current overview relies on to a great extent.

17. Cf. Roberts (2012b, 2018) for the definition of a "scoreboard for a language game," which illustrates the significance of the constraints mentioned here.

Relevance constraints concern the relation between ordinary semantic values of a node and the node dominating it (its *parent*), and the congruence constraints make it possible to determine what (implicit) question is addressed by an assertion or a subquestion, to be referred to as the *Current Question* (CQ, cf. Beaver and Clark 2008). Here we will follow the standard approach (cf. Hamblin 1973; Groenendijk and Stokhof 1984, a.o.), and take the ordinary semantic value of interrogatives to consist of a set of propositions. This means that, assuming that the relevant alternatives include Peter, John, and Susan, the semantic value of the *wh*-interrogative in (21a) is equivalent to the set of propositions in (21b):

(21) a. Who was invited to the party?
     b. {PETER WAS INVITED, JOHN WAS INVITED, SUSAN WAS INVITED}

We believe that modelling UC1 for *talán* can be done in terms of a relatively standard QUD-based apparatus, with one special feature: it has to cater for declarative questions, specifically, $\land$-declaratives, as well. As far as *relevance constraints* are concerned, we assume, following Roberts (2012a), that the relations between questions and answers and between superquestions and subquestions have the following properties. First, if assertion *a* is a child of question *q*, then *a* must be at least a partial answer to *q*. The truth of the proposition *p* asserted in a partial answer *a* must entail the evaluation (i.e., truth or falsity) of at least one proposition in the semantic value of the declarative or interrogative encoding *q*, whereas a complete answer must entail the evaluation of each of them (cf. Roberts 2012a: 11). Second, if question q_2 is a child of question q_1, q_2 has to be a subquestion of q_1, which means that any complete answer to q_2 has to entail at least a partial answer to q_1.

    Regarding *congruence constraints*, we will assume (following Rooth 1992 and Beaver and Clark 2008: 37) that if assertion *a* is a child of question *q*, the focus semantic value of the form encoding *a* (cf. Rooth 1985, 1992, denoted by $[\![\cdot]\!]^f$) is a superset of the ordinary semantic value of the form encoding *q*. This condition predicts that (21a) encodes a felicitous CQ for (22a), since the focus semantic value of (22a), shown in (22b), is a superset of the ordinary semantic value of (21a), shown in (21b):

(22) a. [John]$_F$ was invited.
     b. {x WAS INVITED | x ∈ D$_e$}

Based on the foregoing, UC1 for a declarative of the form *D+talán* can be formally rendered in terms of the QUD-based model sketched above as in (23), given that $[\![D]\!] = p$:

(23) UC1 of a declarative *D+talán* (formal version)
     The CQ is such that $[\![D]\!]^f \supseteq$ CQ, and $\forall \alpha \in$ CQ: $p \vDash \alpha$ or $p \vDash \neg\, \alpha$.

(23) means that whenever there is a declarative *D* to which *talán* is added in a discourse, *D+talán* is not only a partial answer to its implicit or explicit CQ but also a complete one.

As an illustration, consider (24A)–(24B) and (24A)–(24B′), both of which constitute felicitous question-answer sequences, which is predicted by the congruence constraints outlined above:

(24)   A: Kit   hívtak   meg a   buliba?
           who.ACC invited.3PL VM   the party.into
           'Who was invited to the party?'

   B: [Jánost   és   Pétert]_F   hívták   meg.
           János.ACC   and   Péter.ACC invited.3PL VM
           'It was János and Péter who were invited.'

   B′: Talán [Jánost   és   Pétert]_F   hívták   meg.
           perhaps János.ACC and   Péter.ACC invited.3PL VM
           'Perhaps it was János and Péter who were invited.'

The focus semantic value of (24B) and (24B′) consists of the set of alternative propositions in (25), with x ranging over the individuals in the model:

(25) $[\![$ (24B) $]\!]^f = [\![$ (24B′) $]\!]^f = \{$ X WAS INVITED $\mid$ X $\in$ D$_e\}$

Assuming that the ordinary semantic value of (24A) is equivalent to (21b), the latter is an appropriate CQ to both (24B) and (24B′), according to the congruence constraint above. As mentioned in Section 1, preverbal focus in Hungarian receives an exhaustive/identificational reading. This means that the utterance of (24B) and (24B′) does not only entail the truth of the propositions JOHN WAS INVITED and PETER WAS INVITED, it also entails the falsity of the third proposition in (21b), that is, of SUSAN WAS INVITED. This means that Hungarian declaratives with a preverbal focus constituent automatically satisfy UC1, even without *talán*.

There is, however, a declarative form type in Hungarian to the meaning of which UC1 does make a non-vacuous contribution. This is the form type referred to by Kálmán (1985) as a "neutral" sentence type, pronounced with a "level" prosody, with accents on all accentable words, illustrated by (26). '‘' marks the word accents referred to above:

(26)   ['Béla 'elutazott   a   'hegyekbe.]_F
           Béla   VM.travelled the mountains.into
           'Béla went to the mountains.'

Since this neutral sentence type is appropriate in a discourse-initial position, or as an answer to the question *What happened?*, we take (26) to represent broad or sentence focus, as indicated.[18] (27) shows a variant of (26) containing *talán*.

(27) [Talán ʼBéla ʼelutazott   a   ʼhegyekbe.]$_F$
      perhaps Béla   vm.travelled the mountains.into
      'Béla perhaps went to the mountains.'

Given that the congruence constraints outlined above also apply to declaratives with sentence focus, the CQ for (26) and (27) must be a subset of the set constituting the focus semantic values of the latter. Since the focus semantic value of a declarative with sentence focus includes all possible propositions, the utterance of a sentence of the latter type is predicted to provide a felicitous, though not necessarily complete, answer to any question. This entails that for *talán*-declaratives with sentence focus the second part of UC1 does make a non-vacuous contribution, since it requires the CQ to be such that the declarative can provide a complete answer to it. As an illustration, we compare the felicity of the discourse consisting of the question-answer pairs in (28)–(26) to that consisting of (28)–(27):

(28) Mi   történt   a   héten?
      what happened the week.on
      'What happened during the week?'

(26) provides a felicitous answer to the question encoded by (28), although it does not make the impression of being an exhaustive answer, since many events are expected to happen during a week. (27) is, however, infelicitous as an answer to (28): it gives the impression that Béla going to the mountains is the only thing that happened during the week. If the presence of *talán* in a declarative indicates that the denotation of the latter entails the evaluation of all propositions in the CQ, *talán*-declaratives with sentence focus are expected to be felicitous only as answers to a limited range of questions, those that force their answers to be exhaustive for independent reasons. The behaviour of *talán*-declaratives with sentence focus thus appears analogous to that of propositional clefts in Scottish Gaelic, discussed in Sheil (2016: 50): they are "ill-formed" out of the blue, but "well-formed" in richer discourse contexts, where the CQ evokes a set of mutually exhaustive answers.[19]

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18. Note, importantly, that Hungarian declaratives with "level" prosody do not constitute felicitous answers to polar questions. Felicitous answers to the latter are encoded by declaratives that bear a main accent on the preverbal focus constituent or on the (prefixed) verb in the latter's absence, which encodes polarity focus. Cf. Section 5 for further discussion.

19. According to Sheil, such CQs pre-generate a partition on the context set. I thank Michael Yoshitaka Erlewine for calling my attention to Sheil's work.

Sheil argues that prototypical CQs associated with propositional clefts ask for the interpretation, explanation, reason, or cause of a particular state of affairs. Although the typical discourse environments where *talán*-declaratives with sentence focus normally appear have not been investigated from an empirical perspective yet, it seems that they are most felicitous as answers to the type of questions listed by Sheil (2016). For example, the utterance of (27) constitutes a felicitous answer to the question in (29) asking for a reason or explanation for a state of affairs:

(29)   Context: Béla and Mari are a couple. They always do the shopping together.
A asks B:
Miért volt Mari egyedül vásárolni?
why   was Mari alone   shop.INF
'Why did Mari do the shopping alone?'

We turn now to the formal rendering of UC2, which will rely on Eckardt's (2020) account of German *wohl*, illustrated in the following example:

(30)   Oma   ist wohl einkaufen gegangen.   (German)
Granny is   wohl shopping gone
'Granny went shopping, I suppose.'   (Eckardt 2020: 11, (25))

On Eckardt's (2020: 18) view, *wohl* indicates that "the prejacent follows on the basis of defeasible inference from the speaker's knowledge." According to the author, this means that under circumstances that the speaker considers stereotypical, the truth of the maximal set of facts known to the speaker that are relevant for answering the CQ entail the truth of the prejacent. As already mentioned above, we assume that *talán* is weaker than *wohl*: it does not signal that the prejacent defeasibly follows from the relevant facts known to the speaker, only that it is compatible with the relevant facts. I propose, therefore, that UC2 for a declarative of the form *D+talán* can be formalized as in (31), which uses Eckardt's (2020: 18) four-place relation STEREO on $D_e \times D_s \times D_{\langle s,t \rangle} \times D_s$, which holds between an individual A, a possible world w_0, a proposition q and a possible world w if "w is an epistemic alternative for A in w_0, and w is a world where q holds true under circumstances that A considers stereotypical."[20] Furthermore, we assume that $p = [\![D]\!]$, and that q stands for the maximal set of relevant facts known to the speaker in w_0 that are relevant for answering the CQ.

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[20]. "Let q, p be propositions. Assume that agent A in w_0 knows q. A can defeasibly infer p from q iff $\forall w(\text{STEREO}(A, w_0, q, w) \rightarrow p(w))$. // "All epistemic alternatives of A where q is true under circumstances that A considers sterotypical are also worlds where p is true." " (Eckardt 2020: 18, (36))

(31) UC2 of a declarative *D+talán* (formal version)
      $\exists w(\text{STEREO}\,(S,\,w_0,\,q,\,w) \land p(w))$

(31) conveys that a declarative with *talán* is only felicitous if there is at least one possible world w with the following properties: it constitutes an epistemic alternative to the speaker S in w_0, the maximal set of facts q known to the speaker that are relevant for answering the CQ is true in it under circumstances that S considers stereotypical, and p is true in it as well. (31) thus means that S finds the truth of p compatible with those facts known to her that are relevant for answering CQ under stereotypical circumstances. To this, UC1 adds the condition that p is a felicitous complete answer to CQ. For example, UC2 predicts that in the context of (29), the utterance of (27) indicates the following: the speaker finds the truth of BÉLA WENT TO THE MOUNTAINS to be compatible with the facts that she knows and considers relevant for answering (29). The assumption that she considers (27) to provide a complete answer to (29) follows, in fact, from UC1. (Note that UC1 and UC2 in principle do not exclude that $\neg p$ is a complete answer to the CQ, and that it is also compatible with the facts known to the speaker that are relevant to answering CQ under stereotypical circumstances, which reflects Kiefer's intuitions discussed above.)

To sum up the foregoing discussion, (32) and (33) present my proposal for capturing the contribution of *talán* to the truth conditions and use conditions of declaratives of the form *D+talán*. (32) asserts that the truth conditions of declaratives with *talán* are equivalent to those of their counterparts without *talán*. (33) presents the two use conditions already shown in (23) and (31) for declaratives with *talán* in a context c and world w_0:

(32) $[\![\,D+talán\,]\!] = [\![\,D\,]\!]$

(33) $[\![\,D+talán\,]\!]^u_{c,\,w_0} = \checkmark$ if   i. The CQ is such that $[\![D]\!]^f \supseteq$ CQ, and
                                                    $\forall\alpha \in$ CQ: $p \vDash \alpha$ or $p \vDash \neg\,\alpha$ (UC1) and
                                              ii. $\exists w(\text{STEREO}\,(S,\,w_0,\,q,\,w) \land p(w))$ (UC2)

This closes the discussion on interpretation of declaratives with *talán*. In the following sections we turn to the use of *talán* in form types that are used to encode question acts in Hungarian. First, in Section 3, we review previous relevant work and summarize the properties of the form types under consideration.

3.   *Talán* and questions in Hungarian: Background

3.1   Previous work on *talán* in questions

Kiefer (1988) distinguishes between two interpretations for *talán* in questions. On the first one, illustrated in (34), *talán* is responsible for rhetoricity: the speaker considers the answer to be obvious (reflected in the original translation), and uses the question "to express indignation, surprise or annoyance" (p. 120):

(34)   Meg vagy   talán   elégedve az életeddel?
       VM   be.2SG perhaps satisfied the life.your.with
       'You are not happy with your life, are you?'   (Kiefer 1988: 119, (28b))

On the second reading, illustrated in (35), *talán* "expresses possibility": with the help of asking the question, the speaker "puts forward a hypothesis" about *p* being the case, since she considers *p* to be possible (p. 119).

(35)   Meghalt   talán?
       VM.died.3SG perhaps
       'He is perhaps dead?'   (Kiefer 1988: 119, (27a))

A comparison of Kiefer's claims (also supported by Kugler 2010 to the proposals regarding the contribution of *talán* to the meaning of declaratives made in (15)/(33) above suggests that *talán* does not undergo the "interrogative flip":[21] instead of taking the perspective of the addressee (as Korean evidentials or German *wohl* does, cf. Lim 2011 and Zimmermann 2008, respectively), it reflects the perspective of the speaker in questions as well (similarly to German *vielleicht* 'perhaps', for example).[22] As the overview by San Roque, Floyd and Norcliffe (2017) on the form and interpretation of evidentials in questions suggests, this property makes *talán* belong to a less common type of evidentials.

   In what follows, we will argue that the differences in the interpretations of *talán* in questions, observed above, are not due to the possible ambiguity of *talán*, but to the manner its conventional meaning interacts with the interpretations of the sentence types it appears in. This claim relies on the assumption that there are three form types available for encoding question acts in Hungarian, two interrogatives and one declarative, marked by a special prosody. These form types are reviewed in the following section.

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21. The notion was first introduced in Speas and Tenny (2003), cf. also Eckardt (2020) for discussion.

22. Pointed out to me by Hans-Martin Gärtner, p.c.

3.2   Forms encoding question acts in Hungarian

As discussed in Gyuris (2017), there are three types of root clauses that can be used to encode question acts in Hungarian. In *-e-interrogatives*, illustrated in (36a), the sentence type is marked with the *-e* interrrogative particle, which cliticizes onto the finite verb (or in case the latter is elided, onto the immediately preverbal constituent, e.g., focus or verb modifier). *Rise-fall interrogatives* (referred to as ∧*-interrogatives*), which mark the sentence type with a global rise-fall contour (L*HL%, whose peak is situated on the penultimate syllable, cf. Ladd 1996), are string-identical to declaratives. (36b) provides an illustration. Finally, (36c) represents the form type that is going to be referred to as a *rise-fall* (∧) *declarative*. ∧-declaratives are characterised by a rise-fall tone (L*HL%) at every accentable (word-initial) syllable, forming "a sequence of repeated rise-falls" (Varga 2010: 4).

(36)   a.   Elmentél-e   bevásárolni?
            vm.went.2sg-e vm.shop.inf
            'Did you go shopping?'
       b.   Elmentél bevásárolni ∧ ?
            'Did you go shopping?'
       c.   Elmentél ∧ bevásárolni ∧ ?
            'You went shopping?'

Gyuris (2019) suggested that ∧-declaratives resemble rising declaratives in English as far as their distribution and use is concerned (cf. Gunlogson 2003),[23] and proposed that the felicity conditions of the former should be captured in terms of the Interlocutor Bias Condition, presented informally in (37):

(37)   Interlocutor Bias Condition (IBC, informal)
       A ∧-declarative S_{decl} with propositional content p is felicitous in a context c only if
       a.   there is a proposition q such that
            i.   Addressee is committed to q, and
            ii.   Speaker believes that q follows from p in c
       b.   Speaker was not committed to p before the utterance of S_{decl}.
                                                             (cf. Gyuris 2019: 260)

Note regarding (37ai) that commitment of the Addressee to q does not only come about after the latter has made a corresponding utterance, but can be the result of evidence indicating the truth of q becoming available to all interlocutors. Also,

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23. ∧-declaratives are incompatible with the particle *vajon* 'I wonder', which is viewed as a diagnostic of interrogativity by Kálmán (2001) and Kenesei (1994).

note that (37aii) does not exclude using S_{decl} as an information-seeking question: the fact that Speaker considers p to follow from q does not necessarily mean that she excludes the possibility of p being false. In what follows, we will be concerned with the interpretations of ∧-interrogatives and ∧-declaratives containing *talán*, and assume that *-e*-interrogatives can be treated similarly to the former one.

There is a significant interpretational contrast between ∧-declaratives and ∧-interrogatives without a preverbal focus constituent in the presence of *talán*, which has not yet been noted in the literature before. Whereas the ∧-declaratives in question are felicitously used both as information-seeking questions (subquestions of information-seeking questions) and as rhetorical questions, illustrated in (38a) and (39a), respectively, the corresponding ∧-interrogatives only give rise to the latter reading, as the contrast between the felicity of (38b) and (39b) indicates.

(38)   Context: A has just come back from work, and sees some groceries in the kitchen that were not there when he left. He asks his roommate, B:
  a.   Mit   csináltál ma? Elmentél   talán ∧ bevásárolni ∧ ?[24]
       what.ACC did.2SG today VM.went.2SG perhaps VM.shop.INF
       'What did you do today? You went shopping perhaps?'
  b.   Mit   csináltál ma? #Elmentél   talán   bevásárolni ∧ ?
       what.ACC did.2SG today VM.went.2SG perhaps VM.shop.INF
       Literal translation: 'What did you do today? Did you perhaps go shopping?'

(39)   Context: B has just complained to A, his roommate, about there being no food in the house. A replies:
  a.   Miért nekem panaszkodsz? Elmentél   talán ∧ bevásárolni ∧ ?
       why   to.me complain.2SG VM.went.2SG perhaps VM.shop.INF
       'Why are you complaining to me? You went shopping perhaps?'
  b.   Miért nekem panaszkodsz? Elmentél   talán   bevásárolni ∧ ?
       why   to.me complain.2SG VM.went.2SG perhaps VM.shop.INF
       Literal translation: 'Why are you complaining to me? Did you perhaps go shopping?'
       Intended interpretation: 'Why are you complaining to me? You clearly did not go shopping!'

Given the distinction between string-identical ∧-interrogatives and ∧-declaratives discussed above, we can look again at the readings assigned by Kiefer to *talán*. Let us consider the example given in (34), which is repeated in (40a)–(b) with two different prosodic markings. (40a) illustrates the prosody of (34) in case it is analysed as a ∧-interrogative, and (40b) shows its prosody in case it is analysed as a

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24. Note that *talán* does not bear a separate L*HL% tune in ∧-declaratives. Instead, it is integrated into the preceding tune.

∧-declarative. Note that (40a)–(40b) are presented here together with their literal translations instead of the translation provided by Kiefer (1988).

(40) a. Meg vagy talán elégedve az életeddel ∧ ?
VM be.2SG perhaps satisfied the life.your.with
Literal translation: 'Are you perhaps happy with your life?'

b. Meg vagy talán ∧ elégedve ∧ az életeddel ∧?
VM be.2SG perhaps satisfied the life.your.with
Literal translation: 'Perhaps you are happy with your life?'

It follows from the discussion of (38)–(39) above that the ∧-interrogative in (40a) can only be interpreted as a rhetorical question, but the ∧-declarative in (40b) is ambiguous between the latter reading and one on which it encodes an information-seeking question.[25]

In the following sections, we will sketch the outlines of a proposal that accounts for the interpretational differences between ∧-declaratives and ∧-interrogatives, and also explains why the contrast is sensitive to the presence of a focus constituent. We assume that the rhetorical question reading of (40a)–(40b) is not due to the addition of *talán* to the structure, but a perfectly natural option for forms encoding questions. The reason why it is the only available reading for (40a) is that the use conditions of *talán* clash with the conditions for ordinary information question readings in particular types of interrogatives. The reason why (40b) is compatible with the information-seeking question reading as well is due to the fact that it is a declarative.

We look at the interpretation of *talán* in ∧-declaratives in the following section.

4. *Talán* in ∧-declaratives

In this section we will argue that the use conditions proposed for declaratives with *talán* in (33), repeated in (41), also apply to ∧-declaratives. This proposal provides a simple explanation why *talán* in ∧-declaratives does not relate to the conjectures of the hearer (thus failing to show the "interrogative flip"). As before, $D+talán$ stands for a declarative, c and w_0 for the context and the world of utterance, respectively, and q for the maximal set of facts known to the speaker that are relevant for answering the CQ, and $p = [\![D]\!]$.

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25. The fact that Kiefer (1988) translated (34) (without prosodic marking) as 'You are not happy with your life, are you?' into English indicates that he considered the rhetorical question reading the primary one.

(41) $[\![\, D+tal\acute{a}n \,]\!]^{u}_{c,\, w_0} = \checkmark$ if   i.   The CQ is such that $[\![D]\!]^f \supseteq$ CQ, and
                                    $\forall\alpha \in$ CQ: $p \vDash \alpha$ or $p \vDash \neg\, \alpha$ (UC1) and
            ii. $\exists w(\text{STEREO}\,(S, w_0, q, w) \wedge p(w))$ (UC2)

Let us assume that *D+talán* is a $\wedge$-declarative. According to (41), it is felicitous in a discourse if the CQ is a subset of the focus semantic value of *D*, such that the denotation of *D* entails the "valuation" of all elements in the CQ, cf. (41i), and *p* is compatible with the maximal set of facts known to the speaker that are relevant for answering the CQ, cf. (41ii). As an illustration, consider the dialogue in (42):

(42)   Context: Béla and Mari are a couple. They always do the shopping together.
    A: Miért volt Mari egyedül vásárolni?
        why   was Mari alone   shop.INF
        'Why did Mari do the shopping alone?'
    B: Béla talán $\wedge$ elutazott $\wedge$ a   hegyekbe $\wedge$?
        Béla perhaps VM.went   the mountains.into
        'Perhaps Béla went to the mountains?'

In order to be able to apply (41) to derive the use conditions of (42B), we have to make an assumption about the information structure of the latter. We suggest that the information structure of $\wedge$-declaratives is identical to that of declaratives pronounced with "level prosody," discussed in Section 2.3: they represent broad (sentence) focus. Thus, the restriction we proposed for *talán*-declaratives with level prosody applies to $\wedge$-declaratives as well: they are only felicitous if the answer alternatives in the CQ mutually exclude each other. As suggested above (following Sheil 2016), CQs asking for the interpretation, explanation, reason, or cause of a particular state of affairs belong to this type. (42A) also satisfies this criterion.
    This closes our discussion of the interpretation of $\wedge$-declaratives with *talán*. In the next section, we turn to the uses of *talán* in $\wedge$-interrogatives.

5.   *Talán* in $\wedge$-interrogatives

Examples (3) and (4), repeated here in (43) and (44), respectively, illustrate the use of *talán* in $\wedge$-interrogatives:

(43)   Béla talán [a hegyekbe]$_F$ utazott el $\wedge$?
       Béla perhaps the mountains.into travelled VM
       'Is it perhaps to the mountains that Béla went?'

(44)   Béla talán   elutazott   a   hegyekbe $\wedge$?
       Béla perhaps VM.travelled the mountains.into
       Literal translation: 'Did Béla perhaps go to the mountains?'

Assuming that the utterances of (43)–(44) are made in the context of a discussion about the last summer holidays, (43) is felicitous as an ordinary information question, but (44) only has a rhetorical question interpretation, as already discussed above.

The contribution of *talán* to (43) can be described informally as follows. It conveys that the question encoded by (43) is a subquestion of the CQ, that an agreeing answer to (43) provides a complete answer also to the CQ, and that the speaker conjectures that the agreeing answer is true in the context. This description suggests that the contribution of *talán* to the meaning of ∧-interrogatives can be captured in a manner analogous to what was proposed for declaratives if we assign the same role to the proposition denoted by the agreeing answer as what we assigned to the prejacent of *talán*-declaratives. Note that agreeing answers to ∧-interrogatives can be encoded in Hungarian with the help of declaratives that are string-identical to the latter, and also share their focus-background structure. This formal connection between ∧-interrogatives and declaratives will be used below to account for the contribution of *talán* to ∧-interrogatives. The declarative encoding an agreeing answer to (43) above is illustrated in (45):

(45) Béla [$_F$ a   hegyekbe]   utazott el.
     Béla   the mountains.into travelled VM
     'It is to the mountains that Béla went.'

My proposal for capturing the truth-conditional and use-conditional interpretation of ∧-interrogatives containing *talán*, represented as *I+talán*, is shown in (46) and (47) below, respectively. D_I stands for the string-identical declarative that encodes an agreeing answer to *I+talán,* p for the denotation of D_I, c and w_0 for the context and world of utterance, respectively, and q for the maximal set of facts known to the speaker that are relevant for answering the CQ.

(46) $[\![\,I{+}talán\,]\!] = [\![\,I\,]\!]$

(47) D_I: declarative that encodes an agreeing answer to I
      $[\![\,I{+}talán\,]\!]^u_{c,\,w_0} = \checkmark$ if   i. The CQ is such that $[\![D_I]\!]^f \supseteq$ CQ, and
                                                       $\forall \alpha \in$ CQ: $p \models \alpha$ or $p \models \neg\,\alpha$ (UC1) and
                                                   ii. $\exists w(\text{STEREO}\,(S,\,w_0,\,q,\,w) \wedge p(w))$ (UC2)

(46) proposes that the denotation of ∧-interrogatives with *talán* is identical to the denotation of their counterparts without *talán*. (47) defines the use conditions of ∧-interrogatives with *talán*, relying on the information structure of the string-identical declarative corresponding to the agreeing answer. First, *talán* indicates that the CQ is a subset of the focus semantic value of the agreeing answer, and the agreeing answer provides a complete answer to it (UC1). Second, it indicates that the speaker conjectures that the proposition denoted by the agreeing answer

is true (UC2), automatically predicting the absence of the "interrogative flip". (47) correctly predicts, for example, that (43) is felicitous in the context of the CQ denoted by (48):

(48)   Hova utazott el   Béla?
        where travelled VM Béla
        'Where did Béla go?'

We turn now to the interpretation of ∧-interrogatives with *talán* that lack a constituent focus, illustrated in (44). Given that the prosodic form of the latter (due to the lack of accents on accentable words) does not justify analysing them as broad (sentence) focus (cf. Section 2 above), I assume that they display focus on the polarity of the clause (cf. Gutzmann et al. 2020), and, in addition, that the agreeing answer to them shares the same information structure. The absence of a reading for this sentence type on which it encodes an information-seeking question will be attributed to the impossibility of satisfying UC1.

    If the agreeing answer to (44), illustrated in (49), has the same information structure as (44) does, with focus on the polarity, its focus semantic value is expected to be identical to (50):

(49)   Béla ʼelutazott a   hegyekbe.
        Béla VM.went   the mountains.into
        'Béla went to the mountains.'

(50)   {BÉLA WENT TO THE MOUNTAINS, NOT (BÉLA WENT TO THE MOUNTAINS)}

According to UC1 in (47i), the CQ associated with (44) must be a subset of (50). Since a CQ is expected to consist of at least two propositions, UC1 thus predicts that the CQ for (44) is identical to (50). The latter set, however, is identical to the semantic value of (44) itself. This means that for ∧-interrogatives with *talán* and polarity focus, UC1 predicts obligatory semantic identity between the question encoded by the interrogative itself and its CQ. In a QUD-based framework, the infelicity of *talán* in a ∧-interrogative with polarity focus can be accounted for by introducing the following requirement: two semantically identical questions can only follow each other in the discourse, and thus dominate each other in the corresponding QUD-tree if the fact that the second one is a repetition of the first one is explicitly marked. Since this criterion is not satisfied in the case of (44), it makes the information-seeking question readings of ∧-interrogatives unavailable. No such problem arises in the case of rhetorical question readings, which contribute an assertion, and not a question. As a result, the rhetorical question readings are retained for the sentence type under consideration, constituting the only interpretation available for them. The next section summarizes the conclusions of the paper.

6. Conclusion

This paper has investigated the interpretation of the pragmatic marker *talán* in ordinary falling declaratives, ∧-declaratives and ∧-interrogatives in Hungarian. It was proposed that besides functioning as a conjectural evidential, *talán* introduces certain restrictions on the structure of discourses it can appear in. We have discussed several pieces of data that have not yet been observed in connection with *talán*, such as its infelicity in particular contexts, the fact that it does not give rise to the "interrogative flip," and the fact that it forces interrogatives without preverbal focus to have a rhetorical question reading, and provided a sketch of a formal system that can model these in a unified fashion.

Acknowledgements

Funding

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Germanic languages have been recognized as having not only intensifying or focus particles, but also so-called modal particles. The relevant items are specialized discourse markers joined by characteristic syntactic properties. After an introductory overview of the complex field, the contributions of the current volume capitalize on, but also work much further beyond the baseline of the established insights. They offer analyses of (a) new data types within and sometimes across several Germanic languages (e.g. varieties/stages of German, Dutch, or Norwegian), encompassing different classes of particles and a variety of syntactic-semantic as well as usage-based aspects; (b) the classical dichotomy between languages like German and English when it comes to the availability of modal particles both synchronically and diachronically; (c) crucial integrated insight from non-Germanic languages such as French, Hungarian, Italian, Mandarin, or Vietnamese. A number of mostly interface-based proposals of several languages as well as further generalizations are put on the table for both expert and novice readers in the field.

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