

Four pieces for modality, context and usage

by

Igor Yanovich

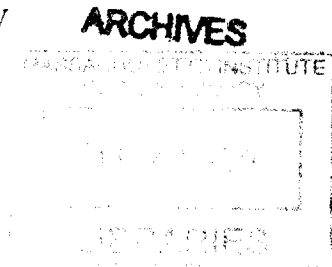
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Abstract

The main part of this dissertation consists of four loosely connected chapters on the semantics of modals. The chapters inform each other and employ similar methods, but generally each one is self-contained and can be read in isolation.

Chapter 2 introduces new semantics for epistemic modality. I argue that the epistemic modal base consists of the propositions that can be obtained by the interlocutors early enough to affect their resolution of their current practical goal. Integrated into the standard contextualist semantics, the new definition successfully accounts for two sets of data that have been claimed to falsify standard contextualism, namely from disagreement dialogues and complements of attitude verbs.

Chapter 3 traces the historical rise of the *may-under-hope* construction, as in *I hope we may succeed*. In that construction, the modal does not contribute its normal existential modal force. It turns out that despite the construction's archaic flavor in Present-Day English, it is a very recent innovation that arose not earlier than the 16th century. I put forward a hypothesis that the *may-under-hope* construction arose as the replacement of an earlier construction where the inflectional subjunctive under verbs of hoping was used to mark a specific type of formal hopes about good health.

Chapter 4 proposes that O(ld) E(nglish) **motan*, the ancestor of Modern English *must*, was a variable-force modal somewhat similar to the variable-force modals of the American Pacific Northwest. I argue that in Alfredian OE, *motan(p)* presupposed that if *p* gets a chance to actualize, it will. I also argue that several centuries later, in the 'AB' dialect, Early Middle English **moten* is was genuinely ambiguous between possibility and necessity. Thus a new trajectory of semantic change is discovered: variable force, to ambiguity between possibility and necessity, to regular necessity.

Chapter 5 argues that, first, restrictions on the relative scope of deontics and clausemate negation can hardly be all captured within the syntactic component, and second, that capturing some of them can be due to semantic filters on representations. I support the second claim by showing how such semantic filters on scope may arise historically, using Russian *stoit* 'should' and English *have to* as examples.

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Тем, кто научил меня работать — моим учительницам и учителям,
и тем, благодаря кому я жив — моим выбранной семье и подругам

Фантазіє, богине легкокрила,
Ти світ злотистих мрій для нас відкрила
І землю з ним веселкою з'єднала.

Ти світове з'єднала з таємним,
Якби тебе людська душа не знала,
Було б життя, як темна ніч, сумним.

Леся Українка, *Сім струн: Фа*

Imagination, light-winged goddess,
You opened us the light of golden dreams,
And linked it with a rainbow to the earth.

You joined the open and the hidden,
If human soul had not known you,
Then day would've been as sad as night.

Lesja Ukrajinka, *Seven strings: F*

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Without the people who shared, and are sharing with me their kindness, their thoughts, and some time of their lives, my life would have been different and worse, and as a consequence, this dissertation would probably not have been written at all. If my existence had any sense during the years at MIT, that was thanks to Polina, Ira Ch., Olesya, Vita, Katya and Liza, Natasha K., Anya N., Ira M., Anya F., Olya K., Maria D., Frau D., Yana Z., Sonya S.R., Agnieszka, Olya and Maria, Nadya P., Masha B./P., Yana and Anya G.v.B., Yulia B., Ira Y., Lena Go., Lena Gr., Nastya P., Tanya L., Anya Sh., Anya P., Olya B., Filya M., Katya L., Liza B., Pritty P., Patrick G., Jennifer C., Paolo S., Salvador M., the people of the Tree House, and many, many others.

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Chapter 1

Modality, context, usage: the agenda

The main part of this dissertation consists of four loosely connected chapters on the semantics of modals. The chapters inform each other and employ similar methods, but generally each one is self-contained and can be read in isolation. At the same time all four address different parts of the same general agenda. This introduction aims to explain what those agenda are, and through that, to explain how the chapters fit together.

The guiding intuition behind the agenda is that there exist empirical phenomena in the realm of modality for which we do not yet have appropriate technical apparatus (a trivial part), and that in order to develop such apparatus, we need to pay close attention to how modals are used by speakers in realistic circumstances (a somewhat less trivial part). So rather than taking an existing theory and checking its predictions against a specially selected dataset, as a general strategy I attempt to start with the data, and see what those data may suggest in terms of possible analyses. Specifically, I look at how sentences with modals in them are used in the actual extra-linguistic **context** of communication, and which features of that context affect the modals' interpretation; furthermore, I look not only at isolated examples and constructed scenarios, but also at the **usage** of modals as represented in corpora, applying formal-semantic analysis to naturalistically produced data. Hence the four projects described in this dissertation are called “pieces” to be played together by modal expressions, context, and usage.

Of course, I am far from alone in choosing this general direction. Attention to fine-grained details of context is characteristic of semantic research in general, and specifically within modal semantics, recent work by [Arregui, 2011] and [Rubinstein, 2012] tie the truth-conditions of particular modals to certain features of the utterance context.¹ Corpus studies on modals are not uncommon either, especially in the functionalist and historical literature, cf. [van der Auwera and Taeymans, 2009], [Hacquard and Wellwood, 2012], though they rarely involve in-depth, one-by-one semantic analysis of the found occurrences.

Thus if the general perspective chosen in this dissertation turns out to be useful, the credit should be distributed widely — and if not, that would most likely only signify the present author’s personal failures. Here, I would like to make a case for choosing that perspective. In short, I would like to argue that we need to consider data of more types in order to better understand modality, and to update our semantic models accordingly, building a new analytical layer on top of the Kratzer semantics — just as the Kratzer semantics itself is a new analytical layer on top of the standard possible-worlds semantics for modality.

The Kratzer semantics is formulated within the general possible-worlds framework, and goes like this. Modals are said to be dependent on (at least) two conversational backgrounds, modeled by sets of natural language propositions. The first background, the *modal base*, determines the general scope of the modal claim: only those worlds are considered at all where all the propositions in the modal base are true. According to [Kratzer, 1991], there are at least circumstantial modal bases, containing propositions describing facts, and epistemic modal bases, with propositions describing pieces of knowledge. The second conversational background, the *ordering source*, orders the worlds selected by the modal base by how large a share of the propositions from the background are true in those worlds: the more ordering-source propositions are true

¹[Arregui, 2011] argues that dependencies between facts that are assumed to hold in the utterance context affect the truth-conditions of deontic modals. [Rubinstein, 2012] argues that one norm or preference may play a different role for the truth-conditions of a modal depending on whether that norm is known to be shared between the participants or not.

in it, the more optimal a world. Finally, a range of operators may be defined that are sensitive to the two conversational backgrounds provided by context. For example, possibility is one such operator: a possibility claim $\Diamond p$ would say that from among the worlds w' in the set of worlds where all propositions from the modal base are true, we can select those w'' that are optimal as determined by the ordering source, and in some of those w'' 's proposition p is true. Now to analyze natural language modals, we can specify what kind of operator they are (=what *modal force* they have), and which modal bases and ordering sources from the general inventory of conversational backgrounds they may use. Then the modal system of a given language may be characterized in the following format:

	modal force	modal base	ordering source
<i>muss</i>	necessity	no restrictions	no restrictions
<i>kann</i>	possibility	no restrictions	no restrictions
<i>darf</i>	possibility	circumstantial	deontic, teleological ('in view of certain aims')
<i>soll₁</i>	necessity	circumstantial	bouletic ('in view of certain wishes')
<i>soll₂</i>	necessity	empty	hearsay
<i>wird</i>	weak necessity	epistemic	doxastic ('in view of certain beliefs')
<i>dürfte</i>	weak necessity	epistemic	stereotypical

Figure 1-1: The modal system of German, [Kratzer, 1991, p. 650]

The Kratzer framework provides us with a powerful toolkit for formal descriptive analysis of a given modal meaning that we already identified. But by itself, it leaves many things unexplained. For example, in Kratzer's schema for German, it is stated that necessity modal *müssen* may appear with any kind of modal base and any kind of ordering source whatsoever. We can thus expect that modal to be able to express epistemic, circumstantial, deontic, bouletic, stereotypical readings, and so forth. But how does the hearer know what reading was intended on a particular occasion? Or,

in other words, how does the context fix the contextual parameters of the modal? The Kratzer semantics by itself does not answer that question, delegating it to the pragmatic theory of how contextual parameters get fixed.

Furthermore, we can take any set of propositions whatsoever and declare that it is a modal base or an ordering source. But in reality we only see a relatively restricted set of conversational backgrounds used by natural languages. How do we know which sets of propositions are plausible conversational backgrounds and which aren't? For example, many languages distinguish clear categories of deontic modality, concerning permissions and obligations, and epistemic modality, concerning what is possible or necessary given what is known. What exactly about those categories makes them occur in language after language?

To frame the same general question a bit differently, how do the speakers of a language converge on a particular kind of modal meaning? The propositional content of conversational backgrounds is always hidden, and yet language learners manage to acquire the range of possible conversational backgrounds matching those used in their speech community. Furthermore, fully-competent speakers all use the same kinds of backgrounds with remarkable consistency. From those basic facts, we can conclude that there must be something very natural about the range of conversational backgrounds relevant for modals, but the Kratzer framework as such is designed to give us the tools for describing those backgrounds, not for explaining why we observe the ones we do.

The question of “naturalness” of certain types of conversational backgrounds becomes even more acute once we note that modal meanings change over time. And not only do they change, with individual modals gradually acquiring the ability to use new types of conversational backgrounds and losing the ability to use old ones — modal meanings change along particular regular routes, as discussed in [Bybee et al., 1994], [van der Auwera and Plungian, 1998], a.m.o. Figure 1-2 illustrates one of the ways to describe some of those routes. Thus modal meaning change is governed by precise laws, but adopting the Kratzer semantics as such does not equip us with any predictions regarding such regularities: all conversational backgrounds are equal in the

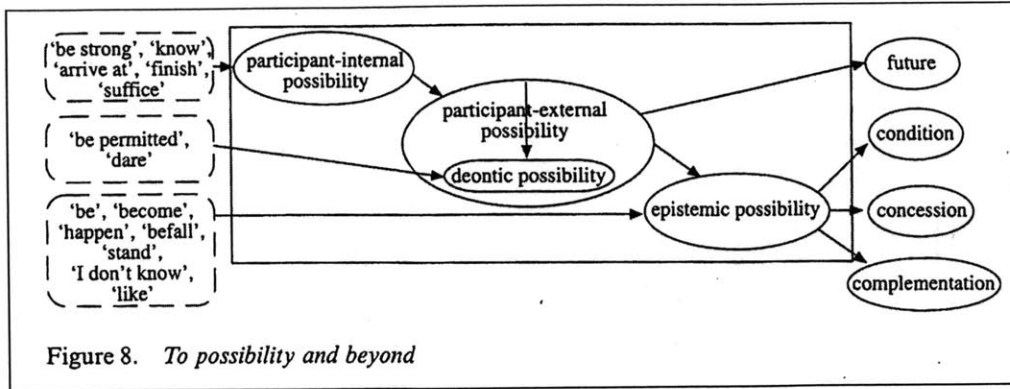


Figure 1-2: Paths of semantic change for possibility modals, [van der Auwera and Plungian, 1998, Fig. 8]

formal system.

The gradual nature of semantic change is also a problem. Figure 1-3 features a table illustrating such gradual change in the case of Late Middle and Early Modern English *may*. Today, *may* simply cannot be used to talk about internal ability — *can* or *able* are used for that purpose. In Old English, *may* was the unmarked choice for expressing that meaning. By the late 14th century (column M3 in Figure 1-3), that use was already on the decline, but it took the modal a long time to completely lose it: even in the late 17th century [Gotti et al., 2002] find 6% of all instances of *may* to convey ability. It is clear that the difference in the ratio of ability examples between the two periods is an important one, on some level of analysis: it tells us something of note about the semantics of the modal during the two periods. But the Kratzer framework as such does not provide us with tools to describe such differences in percentages. It only provides us with the apparatus to describe formally a particular instance of the modal.

What complicates things even further is the fact that synchronically, the same modal may have different interpretational possibilities in different linguistic contexts. For example, epistemic *can* may only occur in negative statements, 1, while epistemic *will*, on the contrary, can only be used in the positive, 2.

- (1) This $\{?_{epist} \mathbf{can} / OK_{epist} \mathbf{can't}\}$ be Mary.

<i>Modal cat. Meaning</i>		<i>M3</i>			<i>E3</i>		
		<i>No.</i>	<i>o/ooo</i>	<i>%MAY</i>	<i>No.</i>	<i>o/ooo</i>	<i>%MAY</i>
dynamic	possibility	357	19	53%	167	10	35%
	ability	130	7	19%	28	2	6%
	prediction	51	3	8%	16	1	3%
	prediction/possibility	4	0.2	1%	1	0.1	0.2%
	necessity				2	0.1	0.4%
	habit	1	0.1	0.1%	1	0.1	0.2%
	Dynamic total		543	29	80%	215	13
epistemic	possibility	18	1	3%	83	5	17%
	necessity	1	0.1	0.1%			
	inference						
Epistemic total		19	1	3%	83	5	17%
deontic	possibility	14	1	2%	31	2	6%
	necessity	6	0.3	1%	29	2	6%
	(wish)	1	0.1	0.1%			
	Deontic total		21	1	3%	60	4
dy/de	possibility/permission	10	1	1%	2	0.1	0.4%
	Dy/de total		10	1	1%	2	0.4%
dy/ep	possibility	20	1	3%	22	1	5%
	prediction/poss.	1	0.1	0.1%	1	0.1	0.2%
	ability/poss.	1	0.1	0.1%			
	Dy/ep total		22	1	3%	23	1
bleached	with private verb	9	1	1%	15	1	3%
	periphrastic subjunct.	53	3	8%	79	5	17%
	Bleached total		62	3	9%	94	5
TOTAL		677	37	100%	477	28	100%

Table 4. Distribution of MAY by modal category and modal meaning.

Figure 1-3: The changes in semantic distribution of *may* between 1350-1420 (M3 in the table) and 1640-1710 (E3 in the table), [Gotti et al., 2002, p. 94]

(2) This {^{OK}*epist* **will** / [?]*epist* **won't**} be Mary.

In a different sort of pattern, generally *may* is a possibility modal, but [Portner, 1997] has to introduce a special lexical entry for *may* embedded under *pray*, as in 3. Such cases where a particular modal meaning is only available in a special kind of linguistic context are pervasive, but in order to make sense of them, we need to augment the Kratzer framework with some story about why and how the linguistic context can affect what kind of semantics the modal can receive.

(3) I **pray** that you **may** succeed.

There are many further questions. But I would like to concentrate on three particular issues which an explanatory theory of modality needs to address:

(4) **Three issues about the semantics of modals:**

- Factors affecting which conversational backgrounds get used by natural languages
- Modal meaning change
- Interpretational restrictions on modals specific to particular linguistic contexts

These three issues form the general agenda which the projects reported in this dissertation address. All three are interrelated. For example, if we get a better understanding of what makes certain conversational backgrounds natural (the first issue), we can better understand modal meaning change (the second issue): natural backgrounds would be “magnets” that attract modal items during their diachronic development. Conversely, the patterns of semantic change in modals tell us something about why we have the set of conversational backgrounds we do: if a modal acquired a meaning α , there must have been something about α which made that development possible. But in the absence of explanatory theory of “naturalness”, we can only register the fact that particular types of conversational backgrounds get used by languages quite often.

Furthermore, the second issue (one of modal meaning change) is obviously related to the third one, namely the issue of restrictions arising in particular linguistic contexts: such variants of a lexeme that are tied to a particular linguistic environment must have somehow arisen through diachronic change. Not much is known at the moment about modal meaning change relative to specific linguistic environments: it is often observed that an innovative variant emerges in one kind of linguistic context, and then spreads to others, but currently we lack a deeper understanding of the mechanics of how a new variant indexed to a particular linguistic context may arise in

the first place, and we do not know much about the mechanisms of spread across contexts either.

Finally, the existence of restrictions specific to linguistic contexts (the third issue) is naturally tied to the first issue. From the first principles, the way in which natural language works must be natural and convenient for speakers (or at least relatively so): otherwise the more natural option would have won. From that we can derive that, for example, the existence of lexical variants indexed to particular linguistic environments, as in 1-3, must be natural, too. It is easy to see why fully compositional semantics would be natural: it is convenient to have signs that have the same denotation in all contexts. But at the moment we do not have a theory that would explain how exactly having a lexical variant that is not allowed to appear everywhere that its compositional semantics would fit may be natural and convenient, in any sense of those words.

So while the Kratzer semantics provides us with a number of useful tools, there are questions to ask that would take us further afield. The present dissertation makes a modest attempt to move in that direction.

Chapter 2 on the semantics of epistemic modality addresses the first and the third issues from the agenda in 4. In that chapter, I propose a new standard-contextualist semantics of the epistemic modal base which is directly dependent on the current question under discussion. This results in a very restrictive theory of epistemic modality: as I fix the way in which the context determines the epistemic modal base, there remains very little wiggling room left for explaining complicated empirical patterns with the use of cherry-picked values for contextual parameters. Perhaps surprisingly, however, this shift to a more restrictive theory allows us to solve a number of puzzles about epistemic modality that have been claimed to be unsolvable within standard contextualism. In particular, the new theory makes predictions about disagreement with and retraction of epistemic claims that are equally good or better than the predictions of relativist and cloudy-contextualist theories of epistemics.

Furthermore, the same new theory of epistemic modality deals well with epistemics embedded under a wide range of attitude verbs, so switching to a more restrictive

theory for matrix contexts we also get better coverage of embedded cases. On a certain level, this is not particularly surprising. Current practical goals of the interlocutors must be a natural thing for semantic objects to depend on, so the theory tying the epistemic modal base to the current practical goals produces a meaning that should be expected to be natural in real communication. But if that meaning is natural, it would be able to serve as a strong pragmatic magnet: speakers would favor meanings of that sort because they are useful. So we would expect such a meaning to be easily generalizable across various contexts, and that is what we find.

To the extent that this generalization works, the third issue from 4 is irrelevant here. But in fact there *are* some types of complex embedding contexts where it is quite hard to use an epistemic modal, most notably involving complements of *suppose* and conditional clauses. I argue that what is going on in such cases is that, on the one hand, there is rarely a need to express the relevant epistemic meanings, and on the other, non-epistemic meanings of the same modal lexemes would be used more often in that linguistic environment. Because of those two facts of usage, speakers sometimes find it hard to judge or to produce the relevant examples with embedded epistemics, though if we set up the context right, favoring the targeted construal, we do get sentences with epistemic interpretations that were claimed to be impossible in some earlier work, cf. [Yalcin, 2007].

Chapter 3 directly addresses the third issue on the agenda in 4 more directly: it traces the rise of the construction *X hope(s) that Y may...*, which features a non-possibility *may* generally unavailable in English. Despite this construction being perceived as archaic by modern English speakers, is in fact a very recent innovation that has arisen not earlier than in the 16th century.

What makes the virtual absence of *may* in this context in the 15th century striking is that compositionally, at the time there was nothing in the semantics of the modal and verbs of hoping that would make that combination illicit. In fact, the 15th-century *may* was distributionally very close to present-day *can*, and in Present-Day English, the combination *X hope(s) that Y can...* is well attested. So we have a mysterious absence of a particular combination of a type of attitude verb and a

particular modal lexeme, which cannot be explained on purely semantic grounds. That suggests that the compositional semantics creates a wide space of opportunities only some of which will be recruited by the speakers in their actual usage. Thus to explain the actual distribution in naturalistically produced texts, we will need to augment the compositional semantics with some theory of the persistence of surface patterns of use.

The earlier absence of the *may-under-hope* combination from actual use seems to have created an opportunity for the language to employ it later when it needed a replacement for the dying-out construction with inflectional subjunctive under *hope*: the kinds of meanings that the subjunctive construction expressed still needed to be expressed, but a new form must have been found instead of the increasingly archaic inflectional construction. It thus appears that the archaic and elevated flavor of the modern *may-under-hope* construction stems not from its actually being archaic itself, but rather because of the kind of semantic niche which that innovative construction occupied since its creation.

Chapter 4 primarily concerns the issue of modal meaning change. Present-Day English modal *must* is a descendant of Old English **motan*, which is generally taken in the historical literature to have been a possibility, not a necessity modal. The semantic change from possibility to necessity which is believed to have happened to **motan/must* is unusual for two reasons: first, it is hard to see how a possibility modal could be semantically re-analyzed as conveying a necessity message in the first place; second, while all of *must*'s cognates in the other Germanic languages experienced a parallel semantic evolution, outside of this historically related group of modals we do not routinely find semantic change from \diamond to \square in languages of the world. My primary historical analysis of Old English **motan* and Middle English **moten* solves the puzzle: using the standard methodology of historical linguistics, I argue that Alfredian Old English **motan* was not a possibility, but a so-called variable-force modal: a modal that is neither \diamond nor \square , and does not have a direct translation equivalent in Present-Day English.

The inspiration for this analysis comes from recent detailed semantic fieldwork on

variable-force modals in three languages of the Pacific Northwest, namely St’át’imcets ([Rullmann et al., 2008]), Gitksan ([Peterson, 2010], [Matthewson, 2013]), and Nez Perce ([Deal, 2011]). However, Old English variable-force modality has a distribution different than in any of those three languages. I propose a novel formal analysis for **motan* that derives the variable-force effect from the workings of a presupposition saying that possibility and necessity collapse in the set of worlds that the modal quantifies over. Formulated specifically to fit Old English data, this analysis presents one more theoretical option in the emerging landscape of variable-force formal analyses. I check whether my analysis for Old English may carry over to St’át’imcets, Gitksan or Nez Perce, and conclude that it definitely is a wrong one to apply to the first two, and that it also seems to be slightly off in the case of Nez Perce, though up to a certain extent the data from Nez Perce and Alfredian Old English are very similar.

Having established that **motan* was a variable-force modal in Old English, we can explain why it *could* have the special change trajectory it actually had: being a different kind of animal, it need not have followed the usual change trajectories of possibility modals. But we do not yet get closer to the understanding of why it developed how it did. In fact, we even lack a detailed description of the micro-stages of the overall change. My analysis of Early Middle English data from the “AB language” dialect of the Western Midlands fills this gap. In the Early Middle English of *Ancrene Wisse* and related AB texts, **moten* is no longer a non-ambiguous variable-force modal. Instead, it has several well-delineated types of uses, some of them modern-type necessity ones (namely, circumstantial and deontic \square), while others should be analyzed as featuring a possibility, or at the very least a non-necessity modal. We thus observe the following general trajectory of change: OE **motan* is a variable-force modal, which by Early ME starts to function as truly ambiguous between \diamond and \square , and by Early Modern English loses virtually all non-necessity uses, turning into a regular necessity modal.

Chapter 5 studies the scope constraints on necessity deontics and clausemate negation. It is well-known that necessity deontics may have fixed scope with respect to negation (cf. *mustn’t P* and *don’t have to P*), and recently it has been argued

by [Iatridou and Zeijlstra, 2013] and [Homer, 2013] that such restrictions should be analyzed as stemming from polarity-item properties of the modals involved. I review the data on fixed scope of deontics from the literature, add to them new data from Russian deontics, and conclude that the landscape of deontic scope restrictions is too rich to stem *just* from NPI and PPI properties. Moreover, given that scope restrictions may be specific to particular tense-aspect-mood forms of a modal (as it is the case for French *devoir*), syntactic mechanisms seem to be too crude to derive the observed diversity of patterns, and need to be complemented with scope constraints belonging to the semantic component, and indexed to particular constructions rather than just lexical items.

After drawing that general conclusion, I go on to provide two examples of how a semantic restriction on scope with respect to clausemate negation may conventionalize in the first place. The subject of the first case study is Russian advice/suggestion priority modal *stoit* ‘should, ’d better’, which has fixed wide scope with respect to clausemate negation. Once we look into the historical rise of that modal lexeme from the mid-19th century on, we see that the modal meaning emerges as a semanticized implicature triggered by lexical verb *stojtj* ‘to be worth’; in negative contexts, that modal implicature amounts to the stronger reading $\Box > \neg$, not the weaker reading $\neg > \Box$. Thus the modern scope restriction was conventionalized because there was never evidence for speakers who re-analyzed the earlier implicature as a part of the assertion that would suggest the modal could scope under negation in its clause. The second example is English *have to*, which has obligatorily narrow scope with respect to negation. Again, once we see how the new modal meaning of *have to* arose in the mid-19th century from futurate uses, we can immediately note that there were no contexts among the ones reanalyzed as featuring the innovative modal which would support the wide scope construal. Thus we not only have a theoretical argument for the existence of purely semantic constraints on scope, but also specific examples illustrating how exactly such semantic constraints may come to be. This lies at the intersection of the second and third issues from the agenda in 4: in the two case studies we may observe how lexical items with particular restrictions may in principle

arise in a natural way, conveniently meeting the demands of the speakers.

Chapters 2-5 are related to independent papers at different stages of the cycle of submission and publication. Chapter 2 is a slightly expanded version of [Yanovich, 2013b], published in January 2013. Chapter 3 is related to the paper [Yanovich, 2012] submitted for a volume with OUP edited by Ana Arregui, María Luisa Rivero and Andrés Pablo Salanova, and is currently under review. Talks featuring material from Chapters 4 and 5 have been presented at several different venues over the 2012-2013 academic year. Both projects reported in those chapters are under preparation for submission.

Chapter 2

Epistemic semantics dependent on practical goals

The standard-contextualist analysis of epistemic modals says that, first, such modals (for instance, the epistemic *might*) are quantifiers over a certain set of worlds, often called the modal base, and second, that the modal base is determined by the context of utterance and the evaluation world. More precisely, the modal base of an epistemic modal must be epistemic: it must consist of worlds compatible with some body of knowledge determined by the evaluation world and the context of utterance.¹

Lately, standard contextualism received plenty of bad press. [Weatherson and Egan, 2011]

¹This chapter is a slightly expanded version of [Yanovich, 2013b], published in the *Journal of Semantics*, with two improvements.

The first improvement concerns my meta-theoretical claims about hidden eavesdropping scenarios. In [Yanovich, 2013b], I proposed what essentially is a relativist analysis of such cases, but mistakenly called my analysis contextualist. I have realized my mistake thanks to discussions with John MacFarlane in April 2013 and Kai von Fintel in June 2013. The kind of case about which I was wrong does not affect the general argument directly, so I confine its discussion to the new section 2.1.6.

The second improvement concerns my claim that Cloudy Contextualism cannot explain the scenario in 39. As was pointed out to me by Kai von Fintel, that scenario is not a definite counterexample against Cloudy Contextualism. My discussion of the example now points out some avenues that a cloudy contextualist may take to account for it, and highlights the challenges such an account would face.

review the criticism, and conclude that there are two areas where standard contextualism faces serious problems: first, disagreement and agreement dialogues with epistemic claims, and second, epistemic claims embedded under attitude verbs. Many authors, based on data from those two areas, claim that standard contextualism about epistemic modality is untenable (cf. [MacFarlane, 2011], [von Fintel and Gillies, 2011a], a.o.)

In this chapter I show that those claims turn out to be largely false. I do so by constructing a standard-contextualist theory, called Practical Contextualism, that successfully explains the behavior of epistemics both in (dis)agreement dialogues and under attitude verbs. In fact, the range of facts the new proposal accounts for is greater than for any competitor currently on the market.

There is still one thing which Practical Contextualism cannot do: if one believes that the very same assertion may have different truth values, then a strictly contextualist proposal would not be sufficient. As I personally believe it very natural that the same assertion may have different truth conditions dependent on the purposes for which we assess its truth, I also formulate Practical Relativism, a relativist cousin of Practical Contextualism. The two theories share most of the predictions, and only differ on the treatment of a small range of cases, notably on certain eavesdropping scenarios. The distinction between the contextualist and the relativist versions of my

As for the expansions compared to [Yanovich, 2013b], the present chapter provides a little more background on the predecessor standard-contextualist theories in Section 2.1.4, a couple more motivating examples at the beginning of Section 2.2, and adds some remarks absent from the journal version in footnotes 6. Some adjustments are also made to the choice of examples for the overall argument to accommodate the improvement (namely, the eavesdropping cases of the kind crucial for the choice between contextualism and relativism are discussed in the corresponding section, not as simple illustrations). I believe that the spirit of the analysis remains the same as in the *Journal of Semantics* article.

The work reported here has benefitted greatly from discussions with Ana Arregui, Kai von Fintel, Benjamin George, Martin Hackl, Sabine Iatridou, Angelika Kratzer, John MacFarlane, Paolo Santorio, Maziar Toosarvandani, Stephen Yablo, and especially with Irene Heim; from two presentations at the Semantics group at MIT in Fall 2011; and from the comments of two anonymous reviewers for *Journal of Semantics* and the journal's editors.

proposal is the most substantial difference between the present chapter and its earlier version published as [Yanovich, 2013b].

The plan of the chapter is as follows. Section 2.1 concerns dialogues with epistemic claims, and is more philosophical in spirit. I show why dialogues with epistemic disagreement and retraction have been taken to falsify standard contextualism as a whole, and then introduce Practical Contextualism, a new version of standard contextualism that can handle them. In many respects, the proposed theory is very conservative: first, it maintains the general Kratzer-style uniform semantics for modals, and second, it retains much of the intuitions behind the standard-contextualist proposals by [Hacking, 1967], [Teller, 1972], and [DeRose, 1991]. The novelty of my approach is in how exactly relevance of knowledge is defined: I take relevant knowledge to be the knowledge that can be obtained sufficiently early for it to bear on the practical actions which the assertion of an epistemic claim seeks to influence.

Section 2.2 concerns epistemics under attitude verbs, and is more linguistic. It tests the predictions of Practical Contextualism for sentences where epistemic modals are embedded under attitude verbs of different semantic classes. The range of attitude verbs discussed is larger than has been considered in any previous analysis of epistemic modality known to the author. It turns out that the predictions of Practical Contextualism formulated for matrix cases carry over well to epistemic modals embedded under attitude verbs, and for some types of attitudes, the new theory does a significantly better job than the other current theories on the market.

Before we proceed, a note is in order regarding epistemic vs. non-epistemic *might*. All English modals which have prominent epistemic uses (e.g., *might*, *may*, *can't*) have non-epistemic uses as well, as has been discussed at least since [Moore, 1962] (cf. his Nb. IV, 17-18, and also Nb. VI, 15). While the epistemic reading should in most cases be more readily available in the examples I use, sometimes a non-epistemic meaning can also arise. The competing metaphysical/circumstantial readings can be distinguished from epistemic readings as follows: if modality concerns the intrinsic properties of the situation, then the modal is metaphysical/circumstantial; if modality

concerns the certainty or uncertainty about whether a particular situation holds, the modal is epistemic. The following examples from [Condoravdi, 2002] illustrate the difference:²

(5) *Metaphysical/circumstantial:*

It hasn't been decided yet who he will meet with. He may see the dean. He may see the provost.

(6) *Epistemic:*

It has been decided who he will meet with but I don't know who it is. He may see the dean. He may see the provost.

In the metaphysical/circumstantial example in 5, the situation being described is indeterminate, and there can be no knowledge anywhere in the world which could change that. In epistemic 6, the situation is determined one way or the other, and it is only our knowledge that is indeterminate, though at least those who decided it know who he will meet with. In general, a metaphysical/circumstantial claim aims to describe how the world is, while an epistemic claim aims to describe what we know about the world.

2.1 Disagreement and retraction

It has been argued by [MacFarlane, 2011], [von Fintel and Gillies, 2011a], among others, that data from disagreement dialogues doom any theory using the framework of standard contextualism. Below I describe those data and why several standard-contextualist theories fail to account for them (Section 2.1.1), and then introduce a new standard-contextualist theory that does not fail (Section 2.1.2). After discussing the contextual flexibility predicted by the new theory (Section 2.1.3) and its relation to the earlier standard-contextualist proposals (Section 2.1.4), I compare Practical Contextualism and two beyond-standard-contextualism approaches,

²[Condoravdi, 2002] analyzes modals as in 5 as metaphysical. [Abusch, 2012] argues that in some examples of that kind, the modal is circumstantial rather than metaphysical.

namely relativism about epistemic modality of [MacFarlane, 2011] and others, and cloudy contextualism of [von Fintel and Gillies, 2011a] (Section 2.1.5). Finally, in Section 2.1.6 I discuss the kind of case which, in my judgement, does call for a relativist rather than a contextualist theory, namely certain kinds of hidden eavesdropper scenarios where it is intuitively appealing to say that the same assertion may have different truth values depending on whose purposes its truth is assessed for. For the sake of such cases, I formulate Practical Relativism, a very close cousin of Practical Contextualism that shares most predictions with it.

2.1.1 Argument against standard contextualism from disagreement dialogues

The following dialogue illustrates the phenomena of disagreement with and retraction of epistemic assertions which will be our focus in this section:

- (7) a. *Sarah*: Bill might be in Boston.
 b. *George*: No, that's not true. I just saw him ten minutes ago here in Berkeley.
 c. *Sarah*: Oh. Then I guess I was wrong.

There are several issues raised by 7 which any reasonable theory of the semantics and pragmatics of the epistemic modal *might* needs to explain:

- (8) **Assertion**: Sarah is not wrong to assert 7a, though she may later retract it.
Disagreement: George's disagreement in 7b is (or at least may be) about where Bill is, not about what Sarah thinks.
Retraction: It is reasonable for Sarah to retract her earlier assertion in 7c after she learns Bill is in Berkeley.

Those explananda may seem trivial. The reason we need to discuss them at all is that many standard-contextualist theories fail to account for all three: they either explain **Assertion** well, but fail with **Disagreement** and **Retraction**, or vice versa.

We will now consider three variants of standard contextualism, and their criticism by [Egan, 2007], [MacFarlane, 2011], [von Fintel and Gillies, 2011a], a.o.

All three variants, as well as my new standard contextualist proposal to be introduced later, assume the same basic semantics for the epistemic *might* in 9.³ The differences between them concern how exactly *Epist.Modal.Base_{c,w}* is defined. A theory may be called standard-contextualist if its meaning for the modal is sensitive only to the context of utterance and the evaluation world. A theory using the entry in 9 is thus by definition standard-contextualist.⁴

$$(9) \quad [[\text{might}]]^{c,w} = \lambda p_{\langle s,t \rangle} . \exists v \in \text{Epist.Modal.Base}_{c,w} : p(v)$$

Given our intuitions about epistemic modality, the way *Epist.Modal.Base_{c,w}* is defined should be sensitive to some body of knowledge determined by the context. Three sensible definitions spelling out this idea in different ways are given below.^{5,6}

$$(10) \quad \text{SOLIPSISTIC CONTEXTUALISM: } \text{Epist.Modal.Base}_{c,w} \stackrel{def}{=} \text{---}$$

³The semantics in 9 ignores some finer points of [Kratzer, 1981], [Kratzer, 1991], most notably, ordering sources. So do all other current accounts of epistemic modality discussed in this chapter.

⁴In the semantic entries, I omit on the left side those evaluation parameters that do not appear on the right side of the entry.

⁵Solipsistic Contextualism can often be seen in the linguistic literature (for one of the many examples, see [Condoravdi, 2002]). It works reasonably well until one hits the disagreement data and other complications arising in multi-agent contexts.

Both Group and Ability Contextualism are simplifications of the standard contextualist proposals in [Hacking, 1967], [Teller, 1972] and [DeRose, 1991], to be discussed in more detail in Section 2.1.4. The argument against Group Contextualism in the main text applies to some extent to all three authors; the argument against Ability Contextualism applies to Hacking only.

⁶Note that the theories in 10-12, as well as my Practical Contextualism to be proposed below, are not only standard-contextualist, but also *non-indexical-contextualist*, using a term by [MacFarlane, 2009]. MacFarlane clarifies the distinction between contextualist theories that allow the context to specify the content of a given instance of the epistemic modal (indexical-contextualist theories), and those which have that content fixed across all contexts (non-indexical-contextualist theories). For instance, an indexical-contextualist theory could allow for the context to determine in each case whether to evaluate the modal according to 10, 11 or 12. An example of such a theory is [Dietz, 2008]. In contrast to that, a non-indexical contextualist theory takes the modal to always contribute the same content — for example, the content defined in 10.

$=^{def} \{w' \mid w' \text{ is compatible with the knowledge of } speaker(c) \text{ in } w\}$

(11) GROUP CONTEXTUALISM: $Epist.Modal.Base_{c,w} =^{def}$

$=^{def} \{w' \mid w' \text{ is compatible with the knowledge of the relevant group in } c \text{ in } w\}$

(12) ABILITY CONTEXTUALISM: $Epist.Modal.Base_{c,w} =^{def}$

$=^{def} \{w' \mid w' \text{ is compatible with what } speaker(c) \text{ could come to know in } w\}$

Let us start with Solipsistic Contextualism, which is in a sense the most straightforward variant of the theory. According to 10, the content of Sarah's assertion in 7a is roughly this: '*It is compatible with Sarah's knowledge that Bill is in Boston*'. Depending on one's choice of the norm for assertion (see [Lackey, 2007] and the references therein for discussion), Sarah should know, or reasonably believe, or find it reasonable to believe, that that proposition holds in order to assert 7a. Whatever one's choice of the norm is, if Sarah believes that her knowledge is compatible with Bill being in Boston, she should not hesitate to assert 7a, and thus Solipsistic Contextualism can explain **Assertion**.⁷

Unfortunately, the solipsistic analysis of 7a makes it impossible to explain **Disagreement**. Assuming the pronoun *that* in 7b refers to the content of Sarah's asser-

In a complete theory of modality, some degree of indexicality is required of a contextualist theory. For example, the context would need to determine whether in a given utterance we have an epistemic or a metaphysical *might*, which is exactly the determination of the content of a modal. (Though cf. [Braun, 2013] for a different opinion, and [Yanovich, 2013a] for criticism of that opinion.) But if we fix the context-sensitive properties such as modal flavors, the distinction between indexical and non-indexical contextualism becomes non-trivial.

⁷More accurately, if one's norm for assertion requires knowledge of p to assert p , then Sarah's 7a can be deemed improper under Solipsistic Contextualism if she is wrong about what beliefs of hers constitute knowledge. But under that norm, many assertions that seemed harmless to those who made them will have to be deemed improper.

Under the norms of assertion which grant that the status of an assertion is determined based on the speaker's reasoning rather than on the actual state of the world — in other words, those norms under which it is always under the control of the speaker to make a proper assertion — Solipsistic Contextualism explains **Assertion**.

tion in 7a,⁸ what George rejects in 7b is that ‘*it is compatible with Sarah’s knowledge that Bill is in Boston*’. George’s claim is thus predicted to be about Sarah’s state of mind, not about where Bill is or might be. But that clearly is wrong. While it is in principle possible for people to criticize other people for not realizing which propositions are compatible with their knowledge,⁹ George’s reply need not be a reproach of that kind. George can very well be certain that Sarah could not on her own rule out that Bill is in Boston, and at the same time assert 7b. Similarly, **Retraction** is also highly problematic under Solipsistic Contextualism: unless Sarah was wrong about her own state of mind, her assertion was proper and true, so there should be no reason for her to retract it later.

The analysis in 11 can be seen as a natural reaction to those problems with **Disagreement** and **Retraction**. Suppose that the relevant group of knowers consists of Sarah and George, and that all epistemic claims are relative to that group’s knowledge. Assume also that the knowledge of the group is always not weaker than the knowledge of any individual member or subgroup of the group. That is, assume that group knowledge is aggregated, so if George, but not Sarah, knows that *p*, then the group of Sarah and George also knows that *p*.

Now we can easily explain **Disagreement** and **Retraction**. Under the assumptions we just made, the content of 7a is something like ‘*It is compatible with everything that either Sarah or George know that Bill is in Boston*’. If George knows something which rules out Bill being in Boston, that proposition is false. Thus George’s disagreement in 7b is expected in such a situation. After George provides Sarah with the relevant piece of information about his knowledge, it should become clear to her as well that the content of her assertion was false, even though earlier she sincerely

⁸In this particular dialogue it might be possible to explain away **Disagreement** by saying that *that* refers to the prejacent of Sarah’s claim (that is, the argument of the modal) rather than her assertion as a whole. But when other data are taken into account, that hardly helps. See [von Fintel and Gillies, 2011a, Sec. 3] for more discussion.

⁹Compare the disagreement in 7b with: “*Why do you say that 13 times 3 is 42? You know the multiplication table perfectly well, and you know how one does multiplication all right. Just think a little harder!*”

believed it was true. This change of belief explains why she might be inclined to retract her assertion in 7c: she is no longer in a position to defend it.

Unfortunately, the cost of getting that explanation for **Disagreement** and **Retraction** is that we lose our explanation of **Assertion**. In order for Group Contextualism to work, Sarah's 7a must be a very strong statement, for it concerns not only Sarah's, but also George's state of mind. In a normal conversation, we might be willing to grant Sarah the privilege of making a claim about George's state of mind. But it is very easy to construct scenarios where Sarah's claim must be about the knowledge of agents completely unknown to Sarah. Suppose Sarah utters 7a talking to Mary in a coffee shop. George is at the table behind Sarah's back, and she is not even aware of his existence — but accidentally he knows what Sarah and Mary are talking about, and who Bill is. The fact that Sarah doesn't know George doesn't make it improper for him to jump into the conversation with 7b, so his knowledge should be included into the group knowledge under Group Contextualism. But how can Sarah make a claim about the knowledge of a group which includes people she does not know exist? (Or so the critics of standard contextualism say. We will see below that there is an important qualification regarding this argument.)

The Ability Contextualism in 12 also fails to explain **Assertion**, though **Disagreement** and **Retraction** pose no problem for it. Under Ability Contextualism, the content of Sarah's assertion in 7a is roughly this: '*Nothing Sarah knows or could come to know will rule out Bill being in Boston*'. Since George in 7 can provide to Sarah the piece of knowledge ruling out that Bill is in Boston, he knows that her statement was false, even though she believed otherwise. So George disagrees, and provides Sarah with that crucial piece of knowledge. That makes Sarah also realize her statement was false, and she retracts her earlier assertion.

So far so good, but the meaning that Ability Contextualism assigns to 7a is too strong. Suppose Sarah is in the middle of an investigation which should determine where Bill is. She is sure she will eventually succeed. Therefore she is confident that after she concludes the investigation, she will know the truth value of the proposition '*Nothing Sarah knows or could come to know will rule out Bill being in Boston*': if

she learns Bill is in Boston, the proposition is true, and if she learns he is somewhere else, the proposition is false.

We have two cases depending on our norm for assertion. In the first case, suppose that to assert p properly, you have to know (or to reasonably believe, or find it reasonable to believe) that p . Then in the scenario just described Sarah should be able to assert 7a only if she is sure Bill is actually in Boston. But then she should be able to assert the sentence “*Bill is in Boston*” just as well. That is wrong: in such a situation, one may very well find it OK to assert “*Bill might be in Boston*”, but not OK to assert “*Bill is in Boston*”.

For the second case, suppose we weaken the norm of assertion. For instance, we can make it permissible to assert things we do not believe are true. But then again, in our scenario Sarah should be able to assert “*Bill is in Boston*” just as well as 7a.

Thus no matter how we set up our norm for assertion, with Ability Contextualism we end up predicting that if Sarah is warranted to assert 7a, she should be as warranted to assert the sentence “*Bill is in Boston*”, contrary to fact. So while the problems are somewhat different for Group Contextualism and Ability Contextualism, both of them explain well **Disagreement** and **Retraction**, but fail on the seemingly innocent **Assertion**.

Let’s take stock. **Assertion** on the one hand and **Disagreement** and **Retraction** on the other seem to pull us in opposite directions. To explain **Assertion**, we want to keep the amount of knowledge bearing on Sarah’s assertion in 7a as small as possible, preferably restricted to her own knowledge. But to explain **Disagreement** and **Retraction**, we want to make that same amount of knowledge on which the truth of 7a hinges very large: it should be so large that it includes the knowledge of accidental eavesdroppers (such as George who happened to jump into the conversation in the coffee shop), the knowledge that will be obtained in the future, etc. etc.

[MacFarlane, 2011] and [von Fintel and Gillies, 2011a] conclude it is hopeless: standard contextualism just cannot accommodate both requirements at the same time. They argue that there is no meaning weak enough to make **Assertion** reasonable, and yet strong enough to explain **Disagreement** and **Retraction**. Therefore both

reject standard contextualism (we will review what they propose instead in Section 2.1.5).

2.1.2 Practical Contextualism

I will now introduce a new version of standard contextualism, called Practical Contextualism, that can explain **Assertion**, **Disagreement**, and **Retraction** at the same time. The proposal is not a radical departure from the intuitions behind the earlier philosophical standard-contextualist accounts of [Hacking, 1967], [Teller, 1972], and [DeRose, 1991], but it features three crucial additions. First, I assume a richer pragmatic picture of language use where the truth value of an assertion may depend on the practical goals of the interlocutors. Second, I define the epistemic modal base as the intersection of *relevant* pieces of knowledge where relevant pieces are those which may be obtained in time to affect the resolution of the current practical goal, but not later. Third, I argue that **Assertion** is actually not such a hard problem as it is often taken to be in the recent literature on epistemic modality, once parallels between epistemic and non-epistemic assertions are taken into account. All these three additions may be viewed as simply sharpening the earlier standard-contextualist accounts, though the reader will notice that the amount of sharpening to do is considerable.

I will start with the general pragmatic picture of discourse/inquiry (I make no distinction between the two here). Practical agents participating in a conversation do so to achieve some *practical goal*. Such goals may be more “conversation-internal” (such as the resolution of an accepted Question Under Discussion, or QUD) or less so (such as the goal to drink some water as soon as possible). Regardless of the kind of current goal, whatever we say is being said with the current practical goal of the conversation in mind. Just as speakers are normatively cooperative, their current goal is normatively common (later we will specifically discuss cases when interlocutors disagree with each other on the current goal).

The pursuit of each practical goal *resolves* in a *commitment*, and manifests itself in a *practical action* that gets registered in the context because of the very fact

it was undertaken.¹⁰ Such actions, just as goals themselves, may be more or less “conversation-internal”: both taking a public stance on some question and buying airplane tickets may count. Those actions would often be undertaken by only some of the interlocutors, with the goal determining who is supposed to perform them: e.g., the goal of drinking some water would be relative to a particular person who is thirsty, etc. Resolving a goal does not necessarily mean achieving it: a possible resolution is a refusal to pursue it any further.

Once the commitment is made and the resolving action is undertaken, the goal loses its relevance. Each goal has an associated set of practical constraints determining when exactly the commitment needs to be made. We can call that set of constraints *the boundaries of an investigation*. If the agents could reach the goal right away, they would not have been wasting time talking. They talk in order to find out which way they should commit: they investigate the options. An investigation of the practical options associated with the practical goal thus has a naturally corresponding QUD: a partition of the set of possible worlds into several classes in each of which a different practical action is undertaken.

Imagine you are in a grocery store, and need to choose which kind of sugar to buy for cookies that you plan to start making in an hour. Your current investigation is into the QUD Q which is a partition of the possible-world space into segments where you buy a particular kind of sugar. (Note that there need not be any explicit conversation taking place; a QUD is just a formal way of representing the object of your inquiry.) Now, it would be nice if you choose the right kind of sugar, so you consider a subordinated QUD R : ‘*Which kind of sugar would work best in my cookies?*’ If you manage to resolve R , that would allow you to resolve Q optimally and undertake the best possible practical action.

¹⁰In most cases, such actions would be publicly observable (e.g., the speaker may bring Stalnaker’s goat into the room), but they need not be. When in the process of reasoning someone makes a decision to commit to a particular solution, that changes the context of the inquiry, even though the decision may be not directly observable to anyone but the inquirer. The consequences of her decision *are* observable, and we can attribute such “invisible” changes to other people much like we can attribute beliefs to others based on their observable actions.

Now, you know there is a book in Harvard's Widener Library that can tell you which exact kind of sugar works best. However, if you go to Harvard, read the book, and then return to make your purchase, you will not be able to make the cookies when you planned. So while you'd in principle like to resolve R and therefore Q optimally, going to Widener would defeat the very purpose for which you considered R in the first place. Your current practical goal defines certain boundaries: you need to make the decision regarding sugar in the next couple of minutes, therefore you are only interested in such information bearing on R that you can realistically obtain within that couple of minutes. All other information is irrelevant for your investigation: while it may bear on the QUD associated with your practical goal, it does not help you to resolve it before you have to commit, undertaking an irrevocable action.

The cookies example illustrates the interplay between the current practical goal and the local QUD structure of discourse/inquiry (see [Roberts, 1996], [Roberts, 2012] for the latter). On the local level, the conversation involves addressing interrelated QUDs belonging to different levels, and that local-level development can be studied in its own right (e.g., see [Djalali et al., 2011], [Rojas-Esponda, 2013]). The current practical goal, on the other hand, is a part of the practical superstructure governing the conversation's development. The QUD naturally associated with the current investigation into the available practical options provides an interface between the discourse local level and the practical super-level: the resolution of local QUDs will normally bear upon the QUD associated with the current investigation. After all, if local QUDs do not bear on the practical superstructure QUDs, there is not much point in pursuing the local ones. In particular, in the cookies example, it only makes sense to consider the local QUD R about which kind of sugar works best because one needs to commit to buying a particular kind of sugar.

The general pragmatic picture I just sketched is an obvious descendant of [Stalnaker, 1984], and a development of the model of the intentional structure of discourse in [Roberts, 1996] and [Roberts, 2012]. Two important additions I make to Roberts' model are as follows: first, I add the practical goal superstructure upon the more usual conversational QUD structure; second, below I extend Roberts' notion of relevance (defined by her

for discourse moves) to pieces of knowledge.¹¹

The thesis of Practical Contextualism is that the truth conditions of epistemic modals are sensitive to the current practical goal and the investigation towards its resolution. Namely, I argue that it is exactly the knowledge falling within the boundaries of the current investigation that forms the epistemic modal base. The sphere of relevant knowledge in Practical Contextualism is thus determined by the practical actions the agents in the context intend to make. The definitions below formalize this thesis.

- (13) Each context of discourse/inquiry has a current **practical goal**. That goal is normatively common for the interlocutors, and the conversation normatively progresses so that the goal may be resolved; namely, that the relevant interlocutors may commit to one of the alternative practical actions resolving the goal.
- (14) The alternative options resolving the current practical goal form the answers to the **associated QUD**.
- (15) The interlocutors' progress towards the resolution of a current practical goal is an **investigation**. Each investigation has **boundaries** determined by the practical constraints on the resolution of the practical goal: what cannot affect the practical actions that would resolve the current goal falls outside of the current investigation's boundaries.
- (16) Proposition K_i is a **piece of knowledge** in context c in world w if that proposition is true in w .

¹¹Roberts distinguishes *discourse goals*, which are the goals to resolve one of the QUDs, and *domain goals*, which are defined as all the other goals in the context. My current practical goal constitutes, so to speak, a separate line on the discourse/inquiry scoreboard: a normatively shared goal that directs the flow of the conversation. By definition, it is also one of Roberts' goals (it can be either a discourse or a domain goal). The special status of the current practical goal is that it is normatively the common understanding of the parties involved that sooner or later a commitment should be made resolving the goal, and that it is the intention to make that commitment optimally that drives the conversation.

Piece of knowledge K_i is **relevant** in c at w iff:

- 1) obtaining K_i may affect the choice of the practical action resolving the current goal in c , and
- 2) K_i may be obtained by the interlocutors in w within the boundaries of the current investigation.

Thus the current investigation into which practical action to take defines a sphere of relevant knowledge: only the knowledge which can be accessed in time to affect the choice of a practical action resolving the goal is relevant for the undergoing discourse/inquiry. E.g., in the cookies example above, the knowledge from the book in Widener cannot be accessed in time, and hence is irrelevant for the practical goal at hand.

The epistemic modal base is defined as the intersection of all pieces of knowledge which fall within the boundaries of the current investigation:

(17) PRACTICAL CONTEXTUALISM:

Epist.Modal.Base, evaluated in context of utterance c and at world w ,
is the set $\{w' \mid w' \text{ is an element of every piece of knowledge } K_i$
relevant in c at w for the current investigation}\}.

As a notational convention, $Epist.Modal.Base_{c,w}$ denotes the set *Epist.Modal.Base* as evaluated at c and w . Thus c and w in $Epist.Modal.Base_{c,w}$ are not actual variables of the logical form: they are just convenient reminders of what the evaluation parameters on which *Epist.Modal.Base* depends are. We will sometimes abbreviate $Epist.Modal.Base_{c,w}$ as $EMB_{c,w}$.

How does Practical Contextualism 17 explain **Assertion**, **Disagreement**, and **Retraction**? Consider 18, repeated here from 7:

- (18)
- a. *Sarah*: Bill might be in Boston.
 - b. *George*: No, that's not true. I just saw him ten minutes ago here in Berkeley.
 - c. *Sarah*: Oh. Then I guess I was wrong.

Practical Contextualism cannot make predictions about any dialogue unless we spell out what the assumed context is, and in particular what the constraints imposed by the current investigation are. The practical goal behind 18 would normally be construed as depending on where Bill is. For simplicity, we can assume that the current goal is to find out Bill's spatial location. As for the limits of the investigation, when people discuss a certain question, usually they take the knowledge they can obtain during their discussion to be, to use the phrase from [Egan, 2007], within their epistemic reach, so we will assume that the sphere of relevant knowledge includes at least such knowledge.

The content of 18a in Practical Contextualism is then roughly this: '*No piece of knowledge which can be obtained by Sarah and George within the timeframe of several minutes rules out Bill being in Boston*'. Using that meaning for 18a, we can easily explain **Disagreement** and **Retraction**. When Sarah utters 18a, she would sincerely believe, according to our proposal, that no piece of knowledge available to her or George could rule out Bill being in Boston. However, that belief turns out to be false, as George is in command of exactly such a piece. Therefore George disagrees and provides to Sarah the information which shows that her sentence was in fact false. That explains **Disagreement**. Sarah accepts George's argument, and cancels her commitment to the claim she made. That explains **Retraction**. The explanation of those two facts under Practical Contextualism is thus very close to their explanation under Group Contextualism or Ability Contextualism.

The important part is how 17 handles **Assertion**. What right does Sarah have to assert something like 18a if its truth value depends on pieces of knowledge she does not have access to at the moment? I argue that there is nothing wrong with that because ordinary *non-epistemic* assertions often depend on such inaccessible pieces of knowledge just as well.

It will be useful to disentangle two different objections to standard contextualism that are often fused together in the literature. One of the objections is valid, and indeed dooms Group Contextualism. But the other one is not valid, and it is only the invalid objection that applies to Practical Contextualism.

(19) **The valid objection:** one normally is not warranted to make a claim about the state of mind of a person of whose existence one is not even aware.

The invalid objection: one is never warranted to think one is as good an authority as anyone on the subject under discussion.¹²

The problem with the invalid objection is that asserting a non-epistemic, modal-less claim already requires the speaker to assume that she is the best authority on the subject. So if the objection were valid, we probably would not speak at all.

For the epistemic claim in 20, assume that the QUD is ‘*Where do elephants live in the wild?*’, and also (rather unrealistically) that the current investigation is such that the aggregated knowledge of all people in the world falls into the relevant sphere of knowledge. (Recall that the aggregated knowledge of a group G is such that if any single member of G knows that p , then p is in the aggregated knowledge.) Sentence 20 then should be interpreted as 21 on our account.

(20) There might be elephants living in the wild in Brazil.

(21) “*The knowledge of all people in the world does not rule out that there are elephants living in the wild in Brazil*”

21 indeed seems to be a very strong thing to assert. How can one make a claim about everyone’s knowledge? But consider 22:

(22) There are no elephants living in the wild in Brazil.

22 is not less strong than 20. Suppose a professor who studied elephants all her life asserts 22. Even though the professor knows a lot about elephants, there can easily exist some elephant which was taken from a zoo and released somewhere in the

¹²Cf. this formulation from [MacFarlane, 2010, p. 5] which fuses the two objections: “*[Sarah] certainly isn’t warranted in thinking that nobody within earshot knows more about [Bill]’s whereabouts than [she] is*” (the names and pronouns are changed to match the names in 18; MacFarlane discusses the same kind of dialogue.)

A slightly different version of the same objection is given in [Weatherson and Egan, 2011, p. 8-9] under the name of the “argument from agreement”.

middle of the Amazon rainforest several months ago. Such an elephant would falsify 22, and it is obvious that the professor can never be absolutely sure there is no such creature. Yet she can assert 22, and no one would normally challenge her authority to do so.

Most non-modal statements we assert in our everyday lives can very easily happen to be false, and even when we realize that such a possibility exists, it does not force us to refrain from making them. To sincerely assert 22, we must have a high level of confidence that our opinion about whether there are elephants in Brazil is as good an opinion as there can be. But that does not preclude us from acknowledging the possibility that we might be mistaken. In fact, if we were to refrain from asserting things which we do not infallibly know, we would not have been able to talk much.

Bearing that in mind, let us return to 20 and 21. The truth conditions in 21 concern an objective fact about the world: the aggregated knowledge of the humankind either rules out that some elephants live in the wild in Brazil, or it doesn't. Of course, the speaker cannot reasonably believe that she has access to all knowledge in the world, and thus she cannot be absolutely certain what the truth of the matter is in that case. But the professor asserting 22 also cannot be absolutely certain she knows everything there is to know about each particular elephant. The two cases are parallel.

It is enough for the following two conditions to hold for the speaker to believe she knows that 21 is true:

- (23) 1) The speaker believes that her knowledge does not rule out that elephants live in Brazil.
- 2) The speaker believes nobody in the world is a better authority on the question than her.

The first condition ensures that the speaker believes that her own pieces of knowledge do not rule out the prejacent. If they did, then clearly the epistemic claim would have been false. It is the second condition that is crucial: it ensures that the speaker believes that no addition of further pieces of knowledge could significantly improve

her knowledge on the matter. Of course, it would be crazy to deny that such belief can easily turn out to be wrong. It is equally crazy for the professor who asserted 22 to deny that her belief that there are no elephants in the wild in Brazil could prove wrong. But in both situations it can be normal to believe you know the state of affairs as well as one could, while at the same time acknowledging the possibility that there might be some crucial fact you are not aware of.

The kind of authority needed in order to assert an epistemic claim is the same kind of authority speakers assume when they make regular non-modal claims. Consider a professor giving a lecture; or a colleague of yours who just returned from lunch and tells you whether it is raining; or somebody who just went to the Louvre, and is asked where the classical part of the collection is. The professor, the colleague, and the Louvre visitor would all normally consider themselves to be as good an authority on their respective subjects as anybody could be. Depending on what their opinion on the subject is, they can issue a non-modal or an epistemic claim.

If anything, it is often easier to be knowledgeable enough to assert an epistemic claim than a non-epistemic claim, other things being equal. An epistemic claim like 20 may be made relative to a rather small sphere of knowledge, so that it is relatively easy to be the best authority on what's in it. But the truth of a non-modal claim like 22 depends on all the relevant facts about the world.

I will finish this section by discussing why Practical Contextualism avoids the particular problems we saw in Section 2.1.1 which falsified Group and Ability Contextualism. As for Group Contextualism, the problematic case we discussed was when George, of whose existence Sarah is not aware, overhears her from the next table at a coffee shop saying 18a. George jumps into the conversation volunteering the crucial piece of information he has about Bill's whereabouts, and Sarah retracts her earlier statement, so George's knowledge has to be included into the group knowledge — but it is hard to see how Sarah can make claims about the knowledge of people she doesn't even know exist.

Under Practical Contextualism, there is no problem with this case. The very fact that George was nearby is enough for his evidence to count under Practical Contextu-

alism: Sarah gets access to his knowledge within the established spatial and temporal boundaries of the investigation, so it's relevant. This explains **Disagreement** and **Retraction**. At the same time, Sarah's claim was not about George's state of mind at all: it was about the sphere of knowledge she can get access to within a few minutes. She turned out to be wrong about the knowledge that falls within that sphere, but speakers asserting most statements risk being wrong in the same way, so no problem with **Assertion** arises.

It is worth noting that Practical Contextualism does not say that *any* epistemic statement automatically meets the assertion norm, so the explanation above does not apply simply because we made assertions easy. Consider the case when Sarah is talking to Mary in the presence of Ann, and she knows that Ann has more information about Bill's whereabouts than she herself does. In this kind of situation, it is inappropriate for Sarah to say *Bill might be in Boston* to Mary: the proper thing would be to check with Ann, as her knowledge is within reach.¹³ Sarah's epistemic claim would be inappropriate in this situation because it fails the norm of assertion.

Turning to Ability Contextualism in 12, the problem with it was that it predicted that in many cases the truth value of an epistemic claim should coincide with the truth value of its prejacent. This was so because Ability Contextualism did not put any boundary outside of which no new knowledge may bear on the truth of an epistemic claim. Practical Contextualism puts just such a limit: unless the current practical goal allows for waiting indefinitely before committing to the choice of a practical action, some future knowledge can only be ruled in up to a certain moment in time.

Let me briefly review the theory just introduced. It is built within the framework of a particular pragmatic picture of discourse/inquiry that features a current practical goal guiding the inquiry. Only those pieces of knowledge that are obtainable in time to influence the practical actions resolving the current goal are relevant for the current practical purposes, and the epistemic modal base is determined as the intersection of all such relevant pieces of knowledge. An epistemic claim may thus concern not only

¹³This type of scenario is similar to the phenomenon of *disagreement by ignorants*, discovered by [Dietz, 2008] and discussed below in Section 2.1.5.

presently accessible, but also future knowledge and the knowledge of other people, which raises the issue of whether any speaker should ever be warranted in asserting epistemic claims. But when we compare the kind of assumed authority required for asserting non-epistemic claims, it turns out that asserting epistemic claims does not require any more, so there is no problem here.

Note that all three novel pieces of this theory are crucial. The pragmatic picture based on current practical goals does not on its own predict that there should be natural language expressions sensitive to exactly the knowledge relevant relative to those goals. It is easy to imagine a language which would not have expressions like that. Furthermore, our account of **Assertion** by itself does not explain all the puzzles. In particular, if we combine the account for **Assertion** with Group Contextualism, we predict that epistemic claims should only be justified when the speaker is the best authority on the mental states of particular individuals, for some of which she might not know that they exist. Similarly, if we combine the account for **Assertion** with Ability Contextualism, we do not gain much either: the speaker who expects to learn whether p , would know that the future version of herself is a better authority, so the epistemic claim *might p* should be unassertable. Thus we need all three pieces to account for the (dis)agreement puzzles which seemed to our predecessors to falsify standard contextualism.

2.1.3 The role of context under Practical Contextualism

In this section, I will discuss several examples that illustrate what exact role the context plays under Practical Contextualism, and how the current investigation determined by the context affects the appropriateness and truth of epistemic claims. If in the previous section we were mostly concerned with checking how the new account deals with the previously discussed cases, here we will check its novel predictions. It will be particularly important throughout this section how small changes in the context affect the truth values of epistemic claims.

Consider the following scenario (a practical-action-oriented descendant of the cancer test scenarios of [DeRose, 1991]), where the doctor suspects Pat may have a ter-

minal condition. If he does, he will die in a few days. Pat had some tests done which may either confirm the doctor's fears, or rule out that Pat is going to die soon. The doctor must have seen the test results by now.

Jen, Pat's daughter, will soon call the doctor and find out what the doctor knows, but right now, she is talking to Megan, Pat's sister. Jen and Megan's goal is to figure out whether Megan should fly in. They need to make a decision about it right now, before Jen calls the doctor: if they decide Megan should fly in tomorrow, it may be too late for her to book the tickets if they wait any longer. Jen says:

(24) *Jen*: (Look, just think about it.) Pat might die in a few days. (Book your tickets for tomorrow already!)

Suppose the test results show that Pat is all right, and the doctor, having already seen them, knows that. Does it make Jen's epistemic claim in 24 false *in the context of the conversation*? No, it does not. Even though there exists knowledge which settles the question of whether Pat has a terminal condition, that knowledge cannot be obtained fast enough to help Jen and Megan decide whether to book the tickets now.

The practical action at stake in this context is buying the tickets, with the alternative options being roughly "buying the tickets right now" and "not buying the tickets at all". Those alternatives naturally form the associated QUD *Q*. Jen's actual epistemic claim in 24 addresses its sub-QUD *R*: '*What is Pat's health status?*' While both Jen and Megan are in general very interested in finding out the complete true answer to *R*, right now they are more pressingly concerned with buying or not buying the tickets. So the only information relevant for their current investigation is the information that arrives in time to affect their decision. In this particular context, no new knowledge is obtained within the investigation's boundaries, and the present knowledge does not rule out Pat's dying in a few days, so Jen's epistemic claim is true.

Let's modify the context a little bit, adding the following continuation. Right after Jen asserts the sentence *Pat might die in a few days*, Megan unexpectedly receives a

text message from the doctor's office that says that the results of the test show Pat is not in any immediate danger.

(25) *Jen*: Pat might die in a few days.

Megan: You know what? That's actually not so. I just got a text message from the doctor's office. The results are good. Pat is going to live.

Even though neither Megan nor Jen could predict that the text message would arrive, after they receive it, they will both accept that Jen's assertion was actually false. What makes the new and unpredicted piece of knowledge to count is that it arrives just in time to affect the practical action of buying the tickets.

Consider a yet different continuation of the same context, modeled after cases discussed by [von Fintel and Gillies, 2008] under the label of "time lag". The basic context is the same, and Jen makes the same assertion in 24. But there is no text message, and Megan is convinced by Jen, buys the tickets, and flies in the next day. When she arrives, it is already clear to everyone involved that Pat is not in any immediate danger. But, as von Fintel and Gillies observe regarding a similar case, it is "silly" to reject the assertion Jen made in 24 on the next day. Even though the same sentence uttered then would be false, there is no reason to say that Jen spoke falsely at the time of her assertion.

In our Practical Contextualism, that pattern of judgments is expected. On the next day, the practical purpose which Jen's assertion was meant to fulfill is already irrelevant. We have exceeded the bounds of the investigation which took place in the context where her assertion was made. New knowledge that we receive after the practical action was taken cannot retroactively affect the action. Therefore such knowledge does not bear on the truth or falsity of our epistemic claim.

However, if we consider the same claim in 24 anew on the next day, with a *different* practical goal, that seemingly same claim would be judged false. For instance, if a neighbor were to say to Jen: "*But Pat might die in a few days, didn't you say so yourself yesterday?*", Jen may very well answer something like: "*I did, but that's not true*". Thus our judgements in the time lag cases depend on what we take the

epistemic claim to be used for. If we take it to be used towards the resolution of some past goal, then the relevant knowledge is that which was obtained before the commitment for that goal. If we take the epistemic claim to be used for some present goal of ours, then our present knowledge will normally bear on it.

In the next scenario, the interplay between different QUDs and different practical goals is yet more complex. Sarah and George are looking for the keys, and the following assertions are made:

- (26) a. *Sarah*: Check on the fridge. The keys might be there.
b. *George (after checking on the fridge)*: No, they're not.

The big practical goal in this context is to find the keys. However, it is not the big practical goal that Sarah has in mind asserting 26a: what she wants to achieve is getting George to check on the fridge. That smaller current practical goal is subordinated to the big practical goal of finding the keys, as its successful resolution will move the big investigation forward.

The reason Sarah wants to get George to check the fridge is that such checking will resolve the QUD R 'Are the keys on the fridge?', which in turn bears on the QUD Q 'Where are the keys?' associated with the main practical goal of the overall inquiry. Now, it only makes sense to check the fridge if R is still unresolved, and Sarah points out that it indeed is by asserting 26a which addresses R . Thus R plays a double role in this context: first, R is the QUD that Sarah wants to resolve by asking George to check on the fridge, and second, Sarah addresses the same R to show it is still unresolved in order to get George to do the checking.

As the purpose of Sarah's claim is to get George check the fridge, her claim is only useful until the point at which it is determined whether George will do so. Thus the current investigation of R in this context excludes whatever happens after George commits to checking or not checking the fridge. Therefore whatever new knowledge George obtains after checking is irrelevant for Sarah's claim, even though it resolves R addressed by it.

As a different variant of the scenario, suppose that Mary is also present during

the conversation, and she just checked on the fridge and found no keys there. Mary's knowledge already resolves *R*, eliminating the need to check on the fridge, and thus affecting whether George should. Her knowledge is relevant within the current investigation. Therefore Mary is predicted to be able to properly disagree with Sarah, and that prediction is borne out.

Comparing the case without Mary to the case with Mary, we can see that whether the same piece of knowledge '*There are no keys on the fridge*' is relevant for the epistemic claim is directly dependent on when that piece of knowledge is obtained. If it is obtained after the practical action is taken, it is not relevant. If it is obtained in time to affect the choice of practical action, then it is within the sphere of knowledge relevant for the epistemic claim.

The boundaries of an investigation may be extremely wide in some cases, as the following example shows. Suzan works at NASA in a lab that is trying to figure out whether there are living bacteria on Mars. Being a specialist in that area, Suzan knows that to get any significant results at all, her lab will have to work for at least another decade. So when pressured to say whether there might be life on Mars, she answers:

(27) *Suzan*: Might there be life on Mars? It is not possible to answer that question yet.

In this context, nothing Suzan or anybody else knows right now rules out the possibility that there is life on Mars, so the epistemic statement she declines to pass a judgement on is quite mild. An average person in the street would hardly criticize Suzan even if she endorsed it now and it turned out some 10 years later that in fact there is no life on Mars after all. Nevertheless Suzan refrains from either endorsing or rejecting the epistemic statement. She hopes that in a decade or so, there would be more definitive data allowing her and her colleagues to commit to a particular public stance on the question. She knows how little she knows at the moment, and chooses not to be hasty.

The investigation in this case creates a particularly wide sphere of relevant knowl-

edge — so wide that the speaker does not consider herself the best possible authority. She expects that 10 years later, she herself or somebody else at that time will be a much better authority on the subject than she is now, so she declines to evaluate the truth value of the epistemic claim.

The sphere of relevant knowledge is so wide in this case because the practical action itself to which the current investigation leads is very far in the future. If we modify the context so that the practical action becomes much closer, Suzan is predicted to become more willing to pass a judgement on the epistemic claim. Suppose Suzan is called to testify before a commission that will determine funding levels for the Mars lab for the next year, and she is asked whether there might be life on Mars. In this situation, there is a good chance she will not refrain from either endorsing or rejecting the epistemic statement: in this context, the practical actions depending on the epistemic claim are quite close, and thus she may potentially consider herself the best possible authority on the much smaller sphere of knowledge.

Finally, consider a scenario which on the face of it looks like it is the knowledge of a particular person that is excluded: the Mastermind scenario by [von Fintel and Gillies, 2008].

(28) **Mastermind:** *Pascal and Mordecai are playing Mastermind. Mordecai has selected several pins of different colors, and is giving Pascal hints which should help Pascal to figure out which pins Mordecai has.*

At the moment, it is consistent with the hints given so far, but not entailed by them, that there are two reds.

Mordecai: There might be two reds.

Given how the game is played, Mordecai knows full well whether there are two reds. Suppose he knows there is only one red. That, however, does not make his assertion in 28 improper. How come his own knowledge, clearly immediately available to him, does not matter for the epistemic claim he asserts?

Even though the knowledge is available, it is irrelevant in the context. The big practical goal of Mordecai and Pascal is to play Mastermind by its rules. The smaller current practical goal behind Mordecai's assertion in 28 presumably is to either remind

Pascal, or make it obvious to him, that a particular possibility is still not ruled out by the public information in the game. If Pascal gets information about the hidden pins from any other source that the hints as such, that would be cheating, and defeats the purpose of the game. Therefore for the purposes of his exchange with Pascal, Mordecai's own knowledge is off limits. It is only the public knowledge in the game that is relevant.

Again, if we modify the scenario a little bit, the dependence of the interlocutors' behavior on practical goals becomes apparent. If Eloise, who does not know the rules of the game, enters the room and sees Mordecai's side of the board with the hidden pins, she can very well disagree with Mordecai, saying that obviously there can't be two reds as there is actually only one, and sincerely criticize him for being mean to Pascal. What happens in such a case is that Eloise misconstrues the context so that the sphere of relevant knowledge includes Mordecai's and her knowledge, and in that context, Mordecai's epistemic claim is obviously false.

Using the notion of an investigation which determines the practical bounds of the domain of relevant knowledge, we were able to explain all the cases of context sensitivity above. The flexibility of our proposal may make its predictions similar to those of other proposals in particular cases. For instance, in the Mars scenario 27, Ability Contextualism could explain why Suzan is hesitant to either accept or reject the epistemic claim about life of Mars, and in the Mastermind scenario 28, Group Contextualism could exclude Mordecai as an irrelevant knower. But neither of them would be able to explain the changes in the truth conditions that go along with changes of the context.

Across different contexts, the range of predictions our approach makes is wider than that of either the simplistic Group and Ability Contextualism, or the more sophisticated actual theories of [Hacking, 1967], [Teller, 1972], and [DeRose, 1991]. But *within* a given context, Practical Contextualism makes very narrow and inflexible predictions. We have just seen in this section that those predictions turn out to agree quite well with the actual judgments.¹⁴

¹⁴ As is well-known, overt constituents such as "*as far as Ann knows*" may affect the computation

2.1.4 Standard-contextualist cousins of our approach

Above, I noted that Practical Contextualism is in many respects not a radical departure from the earlier standard-contextualist proposals. In this section, I will compare our new approach to its predecessors, discussing where it borrows, and where it departs from them.

I will start with the version of standard contextualism proposed by [Hacking, 1967]:

- (29) [Hacking, 1967]: “*It is possible that p*”/“*may p*” means that *p* is not known to be false in a certain community of speakers, nor would any practicable investigations establish that it is false.¹⁵

Hacking does not elaborate on how exactly the relevant community of speakers is to be selected. Letting into the modal base not only what is known at the moment, but also the results of practicable investigations, Hacking allows future knowledge to bear on the truth of an epistemic claim. By “practicable investigations” Hacking means those which can be performed by (modern) humans. Hacking’s example of what would *not* be a practicable investigation is as follows: take a lottery which is not rigged, so that everybody with a ticket in principle has a chance to win. Suppose

of the epistemic modal base. There are two natural questions to ask in this regard.

First, how should Practical Contextualism analyze such sentences in the first place? My inclination is to say that the modifier “*as far as Ann knows*” signals that we are considering a mini-investigation undertaken from Ann’s personal perspective. Technically, we make sure such an investigation is present in the context (that is, we accommodate it if need be), and temporarily make it the current one for the purposes of evaluation of the modified clause.

Second, once we have an account of “*as far as Ann knows*”, can we use covert constituents of that sort to explain the context sensitivity of epistemic claims? The answer to that question is no. We have seen in this section that the interpretation of an epistemic claim is heavily restricted by the context. Introducing covert “*as far as X knows*”, without a theory of how X is selected, will not explain that dependence.

¹⁵The definition 29 is not a direct quote from Hacking. It is put together using what Hacking says in his Sections 3 (the connection between *possible* and *may*), 5 (the reference to a community of speakers), 6 (an explanation of what *practicable* means) and 10 (the base definition into which I plugged the other parts).

that the world is deterministic, and thus the past events fully determine who the winner will actually be. Then Laplace's demon can easily determine the winner. Yet that is hardly reason enough to say that for somebody who did not actually win it was not even possible to do so. That is because Laplace's demon's investigation, while conceivable, is not a practicable investigation.

Thus Hacking's notion does not coincide with our technical notion of an investigation: Hacking considers only what can in principle be learned, while we consider what can be learned in time for the new knowledge to affect our actions towards a certain practical purpose.

In terms of our Section 2.1.1, Hacking's theory is a combination of Group and Ability Contextualism. The arguments against Group Contextualism apply to Hacking's proposal as well, unless we supplement it with an explanation we used in Section 2.1.2 regarding a distinction between making claims about other people's minds and making claims assuming that one is the best authority on the subject. For the Ability Contextualism component, the argument against Ability Contextualism we cited in Section 2.1.1 also applies to Hacking's theory. In fact, that particular argument was an adaptation of an argument formulated specifically against Hacking's theory by [MacFarlane, 2011].

While our Practical Contextualism dodges those arguments, it is easy to see how some of the intuitions behind Hacking's proposal are shared by our theory. First, Hacking's treatment of epistemic claims is very "objectivist": such claims are taken to be not about some single person's private information, but rather about how the world is. Many linguistic accounts of epistemic modality are solipsistic, and [Teller, 1972] and [DeRose, 1991], who aim to improve Hacking's proposal, stipulate solipsistic readings at least for some instances of epistemics. But both Hacking's theory and ours do not do that. Second, both Hacking's theory and our account allow future knowledge to bear on epistemic claims. The difference between Hacking's theory and ours is that the technical notion of an investigation in our Practical Contextualism puts very specific limits on what future knowledge counts, whereas for Hacking, all tests which can be performed by humans generate relevant future knowledge.

[Teller, 1972] criticizes the Ability Contextualism component of Hacking's theory on the grounds that it rules in too much information. His criticism can be illustrated using our example repeated from 6:

- (30) It has been decided who he will meet with but I don't know who it is. He may see the dean. He may see the provost.

There clearly is a very simple "practicable investigation", surely possible for ordinary humans to perform, which can determine who he will see. If so, then one of the two epistemic claims in 30 is predicted to be necessarily false. Yet the intuition is that they can easily be both true. For Practical Contextualism, it is not a problem as long as the truth of the two claims cannot be determined before the relevant moment, but for Hacking, who does not use such a cutoff point, such examples are indeed problematic.

Having established that some "practicable investigations" in Hacking's sense rule in too much information, Teller goes on to discuss whether it is possible to circumvent the problem by restricting the range of considered investigations to "appropriate practicable investigations". He concludes that it is not possible, on the basis of the following argument. If there is a lottery, an epistemic claim "*The lottery may be crooked*" may be either true or false. Now, if one has serious reasons to think that the lottery could be run by the Mafia, then a practicable investigation can be "appropriate". But if one trusts the vendor, knows of nothing which would suggest that the lottery is crooked, etc. etc., then the same investigation is hardly appropriate or reasonable. But, Teller argues, it does not feel like the circumstances which determine appropriateness of that practicable investigation actually bear on the truth of the epistemic claim about the lottery, contrary to expectation.

Instead of Hacking's 29, Teller proposes 31. The idea behind Teller's analysis is that exchange of knowledge between the members of the community, and perhaps acquisition of knowledge from reference manuals and such, is OK, but performing new experiments is not. Thus only the aggregated common knowledge at the moment when the epistemic claim is uttered counts, and no future knowledge does.

(31) [Teller, 1972]’s D4, p. 310-311:

It is possible that p if and only if

a) p is not known to be false by any member of community C ,

nor b) is there a member, t , of community C , such that if t were to know all the propositions known to community C , then he could, on the strength of his knowledge of these propositions as basis, data, or evidence, come to know that p is false.

Regarding the issue of future knowledge, our account takes the middle ground between Teller’s and Hacking’s. We do not rule in all future knowledge as Hacking does. But we do not rule out all of it either, as Teller does. The discussion in Section 2.1.3 above shows why our approach better fits the facts than the two extremes proposed by Hacking and Teller: in 25, some future knowledge counts (contra Teller), but not all of it (contra Hacking).

Turning to the Group Contextualism component of 31, Teller explicitly discusses the fact that his definition is relativized to a specific community C . He notes what he considers variation in truth-value judgements about epistemic claims, and attributes that variation to the possibility to supply different communities, including one-member communities, as the value for C . He does not, however, discuss how exactly different contexts would influence the choice of that value (explicitly admitting that his account is incomplete without that, and that the simple stipulation that C is supplied by the context is “unhelpful”).

There are two ways in which our account differs from Teller’s on that issue. First, Practical Contextualism never discriminates against specific sources of knowledge. Instead, the context determines the modal base through limits on the practical availability of knowledge. Second, our account contains a precise characterization of how the context determines the modal base, and in that sense it is a complete account of epistemic modality, as opposed to Teller’s incomplete account.

[DeRose, 1991] agrees with Teller’s criticism of Hacking’s proposal, but rejects Teller’s solution, aiming for a position in between the two. DeRose’s reasons for

rejecting Teller's theory are based on examples like 27: there are cases when it is perfectly fine for the speaker to refuse to either endorse or reject an epistemic claim, and at the same time be confident that after some time, she will actually be able to pass a judgement. Unless some knowledge which genuinely belongs to the future is ruled in, it seems impossible to explain such cases.

While Teller's account only allows contextual flexibility by virtue of changing the relevant community C , DeRose argues that a different kind of flexibility is needed: Flexibility of Relevant Epistemic Situations. It is the situation which determines which "practicable investigations", or, more generally for DeRose, "relevant ways in which one can come to know something", should bear on the truth value of an epistemic claim.

(32) [DeRose, 1991, p. 593-594]:

S's [=the speaker's - IY] assertion "*it is possible that p* " is true if and only if

- (1) no member of the relevant community knows that p is false, and
- (2) there is no relevant way by which members of the relevant community can come to know that p is false.

Our Practical Contextualism is thus a direct development of DeRose's proposal. It takes the general form of DeRose's account minus his reference to a relevant community, and adds to it specific rules for *how exactly* the context determines the epistemic modal base. I will illustrate how the two theories are related using as an example an argument against DeRose's general account made in [von Fintel and Gillies, 2011a, p. 112, fn. 9].

Consider the following case: Alex, looking for the keys together with Billy, asserts *The keys might be in the car*. What Alex implies is that Billy should go and check the car now. Checking the car is a clear way of learning whether the keys are there. Moreover, it is contextually relevant, say von Fintel and Gillies, for it is precisely Alex's intention to make Billy perform such checking that caused her to make that epistemic assertion. Given that the inspection is contextually relevant, its results should bear on the truth of the epistemic claim, the argument goes, and yet we do

not feel that the truth of what Alex said depends on whether the keys are indeed in the car. Therefore, von Fintel and Gillies conclude, DeRose's proposal cannot be quite right.

I find it hard to read DeRose as suggesting that *any* salient way of learning something should be counted as contextually relevant for the purpose of determining the epistemic modal base. In particular, consider a pair of DeRose's examples that involves test results in a sealed envelope which determine whether John has cancer. The results are there, but we need to open the envelope to actually learn them. DeRose observes that it is possible in such a situation both to endorse the claim that John might have cancer (DeRose's case CTC-2A), and to refrain from either endorsing or rejecting that claim (DeRose's CTC-2B). In both cases, the possibility to learn the results from the envelope is salient. Yet only in one of them DeRose deems it contextually relevant. Therefore mere salience of a way of learning something does not automatically render it contextually relevant for DeRose. However, given that DeRose does not spell out precisely how contextual relevance should be determined, one could imagine ways of choosing the notion of contextual relevance which would make von Fintel and Gillies's argument a valid objection.

Our Practical Contextualism adds to the general framework of DeRose's a precise definition of contextual relevance, in effect removing that uncertainty. The resulting theory readily explains von Fintel and Gillies's example as follows. The practical action which Alex's epistemic claim was asserted to induce was Billy checking the car. Whatever is learned after Billy's inspection of the car is learned later than the practical action which the epistemic claim was intended to make happen. Therefore the results of the inspection are outside of the sphere of relevant knowledge. What Alex said was true, unless Alex or Billy could already exclude the possibility of the keys being in the car before actually checking the car.

While our proposal does constitute a more spelled out variant of the general form of DeRose's proposal, our way of spelling it out differs from DeRose's suggestions about how to do that. DeRose employs direct discrimination of specific sources of knowledge (as Teller does), and hopes to find constraints on such discrimination which

would strengthen the predictions of his proposal. In contrast to that, we argued it is the possible practical actions on which the assertion of an epistemic claim bears that determine the boundaries of relevant knowledge, and rejected direct discrimination of specific sources of knowledge.

To sum up our discussion of [Hacking, 1967], [Teller, 1972], and [DeRose, 1991], our account is based on the same general principles those authors assume, and shares many important intuitions with them. Where we part ways with those three theories is in providing a specific account of how the context should determine the epistemic modal base: first, we never exclude specific knowers, and second, we define relevance through the notion of an investigation bounded by the need to take practical actions. Tying the epistemic modal base to the current investigation in the context of utterance, we make the predictions stricter *within* any particular context, and at the same time seemingly more flexible *across* different contexts than Hacking's and Teller's predictions were.

2.1.5 Practical Contextualism vs. CIA and CCCP

In this section I compare Practical Contextualism with two beyond-contextualism accounts that have been put forward in order to account for **Assertion**, **Disagreement**, and **Retraction** in 18, which standard contextualism allegedly could not do. All three accounts can deal with the data in 18 reasonably well. However, Practical Contextualism is simpler and more uniform in how it handles epistemic and non-epistemic disagreements. Moreover, it directly predicts some phenomena for which the two beyond-contextualism competitors need to say something extra.

Let us briefly review how Practical Contextualism accounts for 18:

(33) **Practical-contextualist explanation for 18:**

- **Assertion:** Sarah believes she knows 18a is true, but in fact it is false (in this case, because of what George knows).
- **Disagreement:** George knows that 18a is false, so he points it out, and provides the falsifying piece of knowledge to Sarah.

- **Retraction:** Sarah realizes 18a was false, and retracts it.

The truth value of Sarah’s assertion in 18a remains stable throughout the dialogue, and furthermore, the conversational moves by Sarah and George concern one and the same object — the content of Sarah’s first assertion. Both types of beyond-standard-contextualism approaches proposed in the literature reject one of those two assumptions.

We start with relativism about epistemic modality (see [Egan et al., 2005], [Stephenson, 2007], [MacFarlane, 2011], a.o.; cf. also [Lasersohn, 2005]). Relativism, also known as the CIA account (because it involves evaluating sentences at **C**ontexts of utterance, **I**ndices of evaluation, and contexts of **A**ssessment), can provide an explanation of 18 that rejects the first property of the two we just mentioned: it can say that the truth value of 18a does not remain the same throughout the dialogue. (All relativist theories about epistemic modality currently on the market would say so; but adopting such explanation is not a logical consequence of adopting relativism. In the next section, I will introduce a new variant of relativism that uses practical-contextualist explanation for 18.)

Relativism introduces a new evaluation parameter to which contents may be sensitive, a context of assessment, which is usually said to contain a center of assessment, or a “judge”. In the CIA world, the content of an assertion is a function from contexts of assessment to propositions (or, in some variants, simply from judges to propositions). In order to get a proposition from what was said, one needs to feed a specific context of assessment to such a function. For most expressions, the function they denote is constant anyway, so much of the standard semantics is conservatively preserved. There are, however, a bunch of expressions sensitive to the context of assessment. Relativism about epistemic modality says that epistemic modals are among them. Namely, the epistemic modal base is defined as the knowledge of the judge of the context of assessment.

Here is the explanation of the crucial properties of 18 according to CIA:

(34) **Relativist explanation for 18:**

- **Assertion:** When Sarah asserts 18a, she is the judge, and 18a is true.
- **Disagreement:** George re-evaluates 18a with himself as the judge. Relative to George's knowledge, 18a is false, so he disagrees.
- **Retraction:** Sarah, upon learning new information, re-evaluates her earlier claim in 18a. Relative to her new state of mind, it is false, so she retracts it.

Under this relativist explanation, the content of what was asserted in 18a is stable throughout the dialogue. But that content is a more complex object than a proposition: it is a function from contexts of assessment, or judges, into propositions. So even though the *content* of the assertion is stable, its *truth value* is not: the sentence is true when Sarah asserts it, but it is false when George disagrees with it, and when Sarah retracts it.

This contrasts with our standard-contextualist explanation. In our story, what changes between 18a and 18c is Sarah's beliefs about the truth of 18a. The truth value itself remains stable, but people may have different, possibly wrong and possibly changing, convictions about it. In contrast to that, in the relativist explanation of 18, everyone has correct beliefs about the truth value of 18a at any particular time. But the truth value itself varies depending on who is the judge.

However, for *non-epistemic* disagreement and retraction as in 35, relativism still has to rely on the change of beliefs about the truth value of Sarah's initial claim.

- (35) a. *Sarah:* There are elephants living in the wild in Brazil.
- b. *George:* That is wrong. My friend Mary, who is a biologist, recently told me all about where wild elephants live. There are none in Brazil.
- c. *Sarah:* Oh. Then I guess I was wrong.

The content of 35a under relativism is a constant function from contexts of assessment into propositions, and thus its truth value remains stable throughout the whole dialogue in 35. Therefore a relativist cannot appeal to anything else to explain 35 but to a change in beliefs: first Sarah says something she believes to be true; George

thinks it is false, and gives Sarah the piece of knowledge showing that; finally, Sarah realizes she was wrong, and retracts. This explanation has exactly the same form as the explanation of the epistemic disagreement in our Practical Contextualism, 33.

Thus Practical Contextualism uses the same mechanism involving change of beliefs to account for both non-epistemic and epistemic disagreement, but the relativist explanation of 18 stipulates a change of beliefs in non-epistemic cases, and a change of truth values in epistemic cases, even though the surface effects in non-epistemic and epistemic disagreement dialogues seem to be exactly the same.

Another phenomenon problematic for the relativist explanation of 18 and similar cases is *disagreement by ignorants*, discovered by [Dietz, 2008]¹⁶. Whenever the potential disagreeer is evidently a worse authority on the subject, disagreement becomes improper:

- (36) a. *Sarah the Mathematician*: I am a mathematician who knows a lot about this conjecture. There cannot be a counterexample to it.
- b. *George the Ignorant*: #You are wrong. I never studied even basic calculus, so it is perfectly compatible with what I know that there is a counterexample.

George's reply in 36 is inappropriate. The fact that *he* does not know one way or the other does not give him the right to properly disagree with Sarah who clearly knows more. This pattern is stable across different kinds of scenarios: if somebody hearing an epistemic claim knows less than the person who asserted the claim, it is

¹⁶Dietz uses examples of improper disagreement of this type to argue against relativism about epistemic modality, and wants to maintain standard contextualism. But while his attack I adopt without hesitation, the positive parts of our respective proposals are very different. For Dietz, 18a is ambiguous between readings that roughly correspond to a solipsistic, a group, and an ability readings, along the lines of 10, 11 and 12 respectively. He agrees that none of those readings can explain **Assertion**, **Disagreement**, and **Retraction** at the same time, and argues that one should not even try: according to him, those three features never hold together in the same context. His account is thus very different from mine, as Practical Contextualism aims to explain those three at the same time.

inappropriate for them to express disagreement. In fact, if instead of George the Ignorant, a certain Bill the Specialized Mathematician replied to Sarah “*You are wrong. I’ve discovered a counterexample yesterday*”, his disagreement would be appropriate.¹⁷

That pattern is exactly what Practical Contextualism predicts. If the potential disagreeer is a worse authority on the subject than the speaker, he cannot reasonably claim he knows more than her about what’s in the sphere of relevant knowledge. Therefore he cannot properly challenge the assertion made.

But under the relativist explanation, the phenomenon of disagreement by ignorants is completely unexpected. Accounting for it requires adding an *ad hoc* constraint formulated specifically for such cases, as is done in [MacFarlane, 2011, Sec. 8.2].

Let’s now turn to another beyond-standard-contextualism theory: the CCCP account of [von Fintel and Gillies, 2011a]. (CCCP stands for **C**loudy **C**ontextualism **C**um **P**luralism.) Unlike in CIA, there are no extra evaluation parameters in CCCP. The main idea of the cloudy contextualist explanation of 18 is that an assertion sometimes introduces into the conversation more propositions than one. If so, then what is targeted by disagreement and retraction may be a different proposition from the one which was literally asserted.

In addition to that idea, the pluralism part of von Fintel and Gillies’s account says that not all disagreements should be treated equally. For instance, some disagreements may simply target the prejacent of an epistemic claim rather than the epistemic claim as a whole, in which case the problem of accounting for the disagreement has nothing to do with epistemic modality.

Here is the CCCP explanation for 18, assuming it is the epistemic claim that is targeted, and not just the prejacent of the epistemic claim:

(37) **Cloudy-contextualist explanation of 18:**

- **Assertion:** When Sarah utters 18a, she asserts a Solipsistic Contextu-

¹⁷Unlike in the rest of the chapter, I use a negative existential in 36. The ignorant disagreeing with a positive existential epistemic in such a scenario must be wrong about his own knowledge, while in 36, he can be innocent in that respect, having no false beliefs. Therefore 36 shows that the source of the problem is improper disagreement rather than wrong beliefs about one’s own knowledge.

alism proposition along the lines of 10, and simultaneously “puts into play” a Group Contextualism proposition relative to Sarah and George’s aggregated knowledge along the lines of 11. Since she does not literally assert the Group Contextualism proposition, the norms for assertion do not apply to it.

- **Disagreement:** Under normal circumstances, George cannot challenge the Solipsistic Contextualism proposition that Sarah asserted. But he knows that the Group Contextualism proposition Sarah put into play is false. When he disagrees, it is with the put-into-play group proposition, not with the literally asserted solipsistic proposition.
- **Retraction:** Sarah, after acquiring new knowledge from George, realizes that the Group Contextualism proposition she put into play was false. On these grounds, she retracts her earlier statement, even though what she literally asserted was, and still is, true.

In the CCCP explanation, the truth value of Sarah’s claim 18a does not change as it does under the relativist explanations. Beliefs about the truth values of propositions also do not change, unlike in Practical Contextualism. What changes instead is which proposition is the *object* of asserting, disagreeing, and retracting.

An important argument seemingly in favor of von Fintel and Gillies’s CCCP story comes from the fact that Sarah may try to stick to her guns after receiving the new piece of knowledge:

- (38)
- a. *Sarah:* The keys might be on the fridge.
 - b. *George:* You are wrong. I already checked the fridge.
 - c. *Sarah:* No, what I said was true! The keys might have been there!

Under CCCP, 38 is said to feature Sarah refusing to switch from her literally asserted proposition to the one she simply put into play, as suggested by George.

Under Practical Contextualism, the explanation for 38 is different. In our theory, Sarah and George in 38 implicitly disagree about what the current practical goal

is, and therefore what the boundaries of the current investigation are. Effectively, they disagree about which exact context they are in. Sarah assumes the goal to be something like stating her current state of knowledge on the subject. George assumes the current goal to be finding the keys. The boundaries which Sarah's goal creates are very narrow, and exclude George's knowledge. The epistemic claim indeed comes out as true if the practical goal is so chosen, but we get the impression that Sarah is not particularly interested in finding the keys. George, on the other hand, is genuinely concerned with the search for the keys at the moment. Therefore the boundaries he uses to evaluate Sarah's claim are wider, and include the knowledge he can transfer to her right away. If the boundaries are set this way, Sarah's assertion comes out as false.

Thus for von Fintel and Gillies, 38 is an instance of Sarah defending a solipsistic proposition which only concerns her own state of mind, and for our account, the root of the disagreement in 38 lies in the fact that Sarah and George have different opinions as to what the practical goal of their dialogue is.

A slight modification of 38 further highlights the differences between CCCP and Practical Contextualism. If Sarah's sticking to her guns is proper in 38 because she can fall back to the solipsistic proposition, then it could in principle be proper for her to stick to her guns in any context where her actual knowledge does not rule out the keys being on the fridge. But in the following dialogue, Sarah's mental state is the same as it was in 38, and yet her sticking to her guns becomes improper:

- (39) a. *George*: I checked on the fridge. The keys are not there.
b. *Sarah (2 minutes later, having forgotten what George told her)*: The keys might be on the fridge.
c. *George*: You are wrong. I told you I checked there.
d. *Sarah*: No, what I said was true! The keys might have been there!

In 39, Sarah clearly is in the wrong: sticking to her guns is not really an option here, even though it was in 38. That is predicted by Practical Contextualism: even though Sarah forgot the crucial piece of knowledge George gave her, that piece was

already made available to her, and thus falls within the sphere of relevant knowledge. Therefore her statement is false.

Under CCCP, the explanation of 39 would have to be somewhat different. Kai von Fintel (p.c.) suggests that forgotten knowledge may still with a good reason be considered knowledge. After all, we can say “Come on, you *know* that!” even when our addressee actually forgot the thing. If forgotten knowledge is still knowledge, then the solipsistic proposition “*It is compatible with Sarah’s knowledge that the keys are on the fridge*” would be false in 39, though it was true in 38. Then the difference between the two scenarios could be derived from whether the solipsistic reading of the modal is true or not.

While this explanation does explain the observed facts, it needs to be augmented by yet further explanations. For example, it is far from clear that the crucial premise that forgotten prior knowledge counts as actual knowledge is universally valid. After all, just as we can say “Come on, you *know* that!”, our addressee may answer “Well, maybe I knew it one day, but now I clearly don’t”. But if it is equivocal whether forgotten knowledge counts as actual knowledge, it should be possible for Sarah to stick to her guns in 39, at least under the right conditions. But that doesn’t seem to be the case.

Or consider a yet different scenario: all assertions are the same as in 39, but between 39a and 39b, Claire enters the room, and both Sarah and George know that Claire has no idea about where the keys are or how the search is going. One of the propositions in the cloud introduced by 39b is then “*It is compatible with Claire’s knowledge that the keys are on the fridge*”, and that proposition is true. If Sarah may fall back to a single proposition in the cloud which she is justified to assert, it could be the true proposition about Claire rather than the proposition about Sarah’s own knowledge. Then under the CCCP explanation we may expect the appearance of Claire to improve Sarah’s chances of successfully sticking to her guns. But it doesn’t seem to happen.

Of course, this does not necessarily doom Cloudy Contextualism. But the fact that CCCP allows the speaker to choose which proposition from the cloud to fall back

to makes the theory very permissive, which in turn makes it harder to explain the cases when the speaker is clearly in the wrong. No such problems arise under the practical-contextualist explanation.

To sum up, when we compare the treatment of epistemic disagreement in Practical Contextualism and in its beyond-standard contextualism competitors, namely relativism of [MacFarlane, 2011] and others, and cloudy contextualism cum pluralism of [von Fintel and Gillies, 2011a], we see that our theory not only successfully deals with the disagreement data, but also explains phenomena such as disagreement by ignorants and sticking to one's guns without any need for additional assumptions.

2.1.6 Practical Relativism

Consider the case of hidden eavesdropper. Sarah says to Mary: "Bill might be in Boston", and Mary answers: "Oh yes, that's true!" In the meantime George, hidden in the closet and intentionally eavesdropping, whispers to himself: "Ha-ha, that's false: Bill is in San Francisco!" The question is, can both Mary's and Bill's assessment of the truth of Sarah's statement be correct? If you think they cannot — because Sarah's assertion is either true or false, period, but cannot be both — then you can figure out which assessment you want to deem the right one, define the context of utterance accordingly, and use Practical Contextualism for the truth conditions of the epistemic claim.

But if we view their assessments on their own terms, relative to their own purposes, it is also a sensible position to hold that both Mary and George are right. And in that case, Practical Contextualism is not enough. Regardless of who is judging Sarah's statement, and with what purposes, the context of utterance for her assertion by definition remains the same: one utterance, one context of utterance. Our practical-contextualist definition of *Epist.Modal.Base* in 17 is relative to context of utterance *c*, and thus the epistemic modal base will be the same for Mary and for George. But then their assessments cannot both be right.

(17) PRACTICAL CONTEXTUALISM:

Epist.Modal.Base, evaluated in context **of utterance** c and at world w ,
is the set $\{w' \mid w' \text{ is an element of every piece of knowledge } K_i$
relevant in c at w for the current investigation}\}.

I will not attempt to argue here for or against the position that the truth value of an assertion may be relativized to the situation of assessment — I only note that both positions on the question are sensible, and that personally I am inclined towards the relativist, multiple-value position. For example, suppose I am conducting some scientific study, and assert today: “X might be caused by Y”. Suppose also that by 2pm tomorrow, I will have ruled out that Y causes X. I find it reasonable to say that the very same assertion I make today was true for me when I asserted it, but false for me tomorrow after 2pm. If we accept such multiplicity of truth values, we need a slightly different definition for the epistemic modal base. But the change we need to make in 17 is minimal: instead of making *Epist.Modal.Base* relativized to the context of utterance, we make it relativized to the context of assessment, 40.

(40) PRACTICAL RELATIVISM:

Epist.Modal.Base, evaluated in context **of assessment** c and at world w ,
is the set $\{w' \mid w' \text{ is an element of every piece of knowledge } K_i$
relevant in c at w for the current investigation}\}.

When an epistemic statement is assessed from the same context where it was asserted, Practical Contextualism and Practical Relativism coincide. I assume that it is a very common case: as discussed in Section 2.1.5 above, with the help of *disagreement by ignorants*, it should not be very easy to switch to a different context of assessment within a single conversation. But relativism as such does not require that we allow for such rapid switches of assessment context, even though practicing relativists employed them to explain puzzles about epistemic modality. I hope that I have shown above that in most cases one does not need such switches in order to get the truth conditions of an epistemic claim right, and that in fact it may even hurt to allow them. But in some cases, there are indeed two distinct, and usually temporally or spatially distant, situations from where the same assertion gets assessed. In such

cases Practical Contextualism would declare one of them privileged, while Practical Relativism is happy with treating the two equally.

In the rest of this chapter, I will continue to use Practical Contextualism as the default variant of the theory. The purpose of the discussion of Practical Relativism is to highlight that the practical approach to epistemic modality does not necessitate contextualism, and that my critique of particular relativist *explanations* of as **Assertion**, **Disagreement** and **Retraction** by no means serves as an argument against relativism in its general form.

2.2 Epistemic modals under attitude verbs

Epistemics embedded under attitude verbs have been argued to be problematic for standard contextualism as a whole (cf. [Weatherson and Egan, 2011], a.o.) There are two possible ways for extending our theory to such contexts. One way is to preserve some of standard contextualism's core, but make the epistemic modal base relative to the attitude bearer in one way or another ([Hacquard, 2010] is one example of that approach). If one chooses this path, one essentially has to build, in addition to our theory for matrix epistemics, another theory for epistemics embedded under attitudes. The second option is to try to maintain that even the truth values of epistemic modals under attitudes directly depend on the matrix investigation. In this case, we have the very same theory for both matrix and embedded epistemics, but the question here is whether we can account for the intuitions which made a number of people, starting with [Antinucci and Parisi, 1971], to assume that embedded epistemics directly depend on the attitude holder's mental state, and not on the matrix context. I will take this second, more restrictive route, and show that in fact the resulting account fares quite well. For cases that have been taken to indicate dependence of the epistemic modal on the local environment of the attitude, I will show that adopting plain Practical Contextualism without any special fixes actually makes quite harmless predictions, similar to those of other theories. In addition to that, I will also show that in a number of cases we can observe dependence of the modal on

the matrix context of the exact kind expected under Practical Contextualism, but not under other current theories.

Before embarking on a detailed analysis, I would like to introduce two naturally occurred examples motivating the idea that it is always the matrix context that fixes the epistemic modal base of embedded epistemic modals. Consider the last sentence by Mo, the main character of Alison Bechdel's comic-strip soap-opera series *Dykes to Watch Out For*:



Figure 2-1: Extract from *High Anxiety*, © Alison Bechdel, 1987

The example in Figure 2-1 clearly features epistemic *might* rather than metaphysical or circumstantial *might*: what is at issue is not whether somebody has the objective possibility to have AIDS, but rather whether them having AIDS cannot be ruled out given some limited knowledge. Can we tell whether that knowledge pertains to the epistemic situation of the people who are bombing abortion clinics and the sort, or to the epistemic situation of Mo and her friends and interlocutors? I argue it does not make sense to make such a distinction. What is relevant in this case is the knowledge available for a particular practical purpose, namely choosing whether to quarantine a person, and its limits are determined by the practical intentions of who is going to make the decision. So in a sense it is more the knowledge of "them" than of Mo. But Mo herself does not contrast that with her own knowledge. She does not intend to say that those people who could be quarantined *might not*

have AIDS. The context determines the relevant investigation, and even though the agents who are directly responsible for it are not among the interlocutors, that is the investigation that determines what knowledge is relevant. In other words, the matrix context determines one single epistemic modal base, and there is no shift between the epistemic modal base for the matrix and the embedded context.

Consider also 41, cited here from *The Creation of Inequality* by Kent Flannery and Joyce Marcus (Harvard University Press, 2012), featuring epistemic *could* embedded under attitude verb *conclude*.

- (41) Some linguistic evidence for the Siberian origins of Native American people seems to have survived. In 2008 Edward Vajda **concluded** that Ket, an indigenous language of Siberia, **could** be linked to a Native American language family called Na-Dené.

My approach to extending Practical Contextualism to attitude contexts suggests the following analysis of 41. First, there is some investigation pertaining to the matrix context, and whether Ket is related to Na-Dené or not bears on it. Second, the reported content of Vajda's conclusion is that for the practical purposes of that investigation, it is possible that Ket is related to Na-Dené. This is stronger content than what [Stephenson, 2007], [Yalcin, 2007] or [Hacquard, 2010] would assign to 41: they would say that the content of the attitude attribution is about some body of knowledge centered on Vajda's state of mind. Under their views, more work will be required to explain why people take that attribution to bear upon the authors' concerns in the matrix context.

The intuition that I want to draw from those two examples is that embedded epistemics often quite transparently address an issue which is *shared* between the matrix and the embedded context. It is the cases where it may at first seem that only the local context matters which require attention in my theory. For theories of epistemics under attitudes such as [Hacquard, 2010], on the other hand, the embedded modal is always relative to the attitude bearer's state of mind. The connection between the embedded epistemic and the matrix context then needs to be somehow

explained. I do not claim it cannot be explained: on the contrary, I suspect that some appeal to the pragmatic relevance of the statement made could more or less do the trick. My point in this section is simply to explore the other logical option, and to show that it is far from crazy to assume that the modal base of an embedded epistemic always depends on the matrix context — in fact, it turns out to be quite beneficial in some cases to say so.

2.2.1 Doxastic attitudes

The first kind of attitude verbs we will consider is doxastic attitudes like *believe* and *think*. My goal for this type of attitudes is quite modest: I will demonstrate that, first, adopting Practical Contextualism is harmless in the sense that our new theory gets decent predictions for cases that motivated the earlier theories, and second, that we can also see how the matrix context affects embedded epistemic claims in a way expected under our account.

What does Practical Contextualism predict about sentences like 42?

(42) Mary thinks Bill might be in Boston.

In our theory, the set of worlds that the modal quantifies over, *Epist.Modal.Base*, is defined relative to evaluation parameters c and w , see 17. Those two parameters play different roles in our analysis of 42: context c ties the epistemic claim to the current discourse/inquiry, while evaluation world w connects it to the doxastic alternatives of the attitude bearer. Above we only considered matrix epistemic claims, where the division of labor between c and w is much less evident, so now I will spell out in some detail how exactly c and w contribute to the determination of *Epist.Modal.Base*.

Context c is an evaluation parameter that cannot be shifted by sentence-internal operators, and in our theory it is that non-shiftable parameter that determines the practical boundaries of the investigation currently going on. The practical constraints in c can be represented by an intensional entity: a function from worlds to spatio-temporal spheres of relevant knowledge within them. Recall the terminal-health-

condition scenario associated with 24. The practical actions in that scenario were buying and not buying the tickets within the next several minutes. In different possible worlds, the knowledge accessible to Megan and Jen in the next several minutes may differ. In some worlds, Megan receives a text message from the doctor immediately after Jen asserts 24. In others, Megan doesn't. The boundaries of the investigation from the actual context determine for each possible world what exact knowledge is relevant *in that world*: the sphere is defined the same way in each world, but what falls into it differs.

The shiftable parameter, world w , is plugged into the function from worlds to spheres of knowledge. For each w , the function returns the pieces of knowledge K_i that fall within the sphere in that particular w .

Thus context c determines intensionally what the epistemic modal base is, and after we supply a specific possible world w , we can compute the actual set of worlds that the modal quantifies over in w . In case of 42, the matrix context determines what knowledge is in principle relevant within the current investigation. In each of Mary's belief worlds w' , the investigation selects a particular sphere of knowledge. That sphere is then used to define the modal base, which may be different in different belief worlds w' .

We can informally paraphrase 42 as 43 under Practical Contextualism, underscoring that in our theory an embedded epistemic claim is always about the current investigation of the actual context:

(43) Informal paraphrase of 42 under Practical Contextualism:

“Mary thinks that *for the purposes of our current investigation*, Bill might be in Boston”

More formally, the truth conditions that Practical Contextualism assigns to 42 are given in 44:

(44) Truth conditions for 42 under Practical Contextualism:

In each of Mary's belief worlds w' , that Bill is in Boston is compatible with every piece of knowledge K_i that 1) potentially affects, if obtained, the practical

action resolving the current practical goal, and 2) can be obtained within the boundaries of the current investigation.

The truth conditions in 44 are quite different from those assigned to 42 by other theories on the market. The truth conditions that [Stephenson, 2007], see 45, and [Hacquard, 2010], see 46, assign to 42 differ from each other (which will become significant when we turn to other types of attitudes), but in both cases, it is only the content of the belief state which matters for the truth of the ascription, and not what is going on in the matrix context. Other theories sharing that feature include [Antinucci and Parisi, 1971] and [Yalcin, 2007].

(45) Truth conditions for 42 under [Stephenson, 2007]:

In Mary's belief worlds, her knowledge is compatible with Bill being in Boston.

(46) Truth conditions for 42 under [Hacquard, 2010]:

Mary's beliefs are compatible with Bill being in Boston.

So for Hacquard and Stephenson it is only the attitude bearer's mental state that is relevant for its truth, but for our theory, the context plays that role. The life-on-Mars scenario we built for 27 and example 47 show that in fact it is good to predict the dependence on the matrix context.¹⁸ Recall that in that context, Suzan is reluctant to endorse or reject the claim that there might be life on Mars. At the same time, it is clearly compatible with her knowledge that there is life on Mars (cf. 45), and in some of her belief worlds, there is life on Mars (cf. 46). Thus Stephenson and Hacquard predict 47 to be true. And yet intuitively it is false when Suzan explicitly refrains from passing a judgement at the moment.

(47) Suzan believes that there might be life on Mars.

¹⁸A somewhat milder observation pointing in the same direction is made in [von Fintel and Gillies, 2011b], who argue that one needs to allow for the knowledge of more people than just the attitude holder to possibly bear on an embedded epistemic. In support of that, they use the following example, modeled after [DeRose, 1991], which does not make any sense if *might* is relative only to the attitude holder's knowledge: "*I don't know whether John might have cancer. The doctors know but they won't tell us until Monday.*"

Practical Contextualism, in which the embedded modal is not directly dependent on the attitude bearer's mental state, is not bound to make the wrong prediction that 47 is true. But what prediction does it actually make in the scenario we considered? To determine that, we need to fix the practical goal behind 47 first. Our main goal when we used 47 was to describe the scenario. A sub-goal of that goal is to report Suzan's attitude towards life on Mars. We can easily argue that in doing that, we empathize with her and "import" her investigation of that question into our context. The imported investigation, while being a different particular, will have exactly the same boundaries as Suzan's in all possible worlds, so it will pick the same knowledge in her belief worlds.

It might seem that we have cheated as theorists when we allowed ourselves to import Suzan's investigation. The following observation demonstrates we actually did not. Imagine we are actually in the middle of our own investigation of the same QUD, but with much narrower boundaries: we need to report our findings at an important committee hearing in several hours. If one of us asserts 47 in this context, we will judge it to be true: what would be relevant for us is whether Suzan's opinion as a current expert on the topic already rules out life on Mars or not. In this context, 47 will be almost synonymous with "*It is compatible with Suzan's knowledge that there is life on Mars*".¹⁹

Suzan's state of mind is the same in both scenarios, and the truth value of 47 depends on what we in our context choose to be the current investigation. Even

¹⁹As an anonymous reviewer notes, an important subcase is when the interlocutors believe they know in which cell of the "imported" QUD they are, and thus in a sense have resolved it:

- (i) You and I both know that there is no life on Mars, but Suzan thinks there might be.

In the context of (i), there are two QUDs in play: first, the QUD regarding life on Mars, which the speaker believes she has settled; second, the QUD about what the speaker, the hearer and Suzan think about the first QUD. The sentence directly addresses the latter, stating that the interlocutors and Suzan disagree. In order for disagreement to make sense at all, both the reports about the interlocutors and about Suzan need to address the same question, so the QUD relevant for the epistemic report has to belong to the matrix context.

when we import Suzan’s investigation, it is our choice to do so, made in the matrix context.

[Weatherson and Egan, 2011, p. 10] use an example similar to 48 to illustrate what they take to be a failure of standard contextualism. They think 48 constitutes a problem because the speaker’s knowledge does not seem to affect the truth value of the sentence, and they believe under standard contextualism it should. But in Practical Contextualism it is actually not expected at all that the speaker’s knowledge would be relevant for 48.

(48) [Every student]_i thinks she_i might have failed the exam.

A natural choice of the practical goal behind 48 would have the following associated QUD: ‘*What do the students think about how they did on the exam?*’ The speaker’s knowledge is not relevant to that QUD whatsoever, but each individual student’s knowledge is. Given that the inquiry is about the students’ present thoughts, it is the knowledge they presently think they command that is relevant. If student x_i ’s self-ascribed knowledge does not rule out that she failed, then in her belief worlds she might have failed, for the purposes of the matrix investigation. Thus no problem arises.²⁰

The next example shows in more detail how importing investigations happens in realistic dialogues. In this scenario, Sarah and George are observing their roommate Bill, who is frantically taking everything out of the fridge. The following dialogue occurs:

- (49) a. *Sarah*: What is Bill doing?
b. *George*: He thinks the keys might be in the fridge.

²⁰Another take on 48 would involve stipulating that the interlocutors import a number of investigations from the students’ heads, and then 48 involves quantification over those multiple imported investigations. To do that successfully, we’d need to introduce finer theoretical apparatus, allowing for several current investigations, and for quantification into them. But constructing a single current investigation that concerns each of the students is enough to explain the example as well, as is shown in the main text, so these complications seem to be unnecessary.

The main practical goal here is to figure out why Bill is taking everything out of the fridge. George apparently knows that Bill's bouletic state is such that he wants to find the keys. It thus becomes useful for Sarah and George's big investigation to figure out what Bill thinks about the keys. George's response presupposes that Bill's investigation of that question has been imported into Sarah and George's context, and resolves that accommodated investigation.

This explanation assumes that a lot of covert work is going on between Sarah's question and George's reply. But most of it would have to be stipulated under any theory. For instance, unless it is accommodated that Bill desires to find the keys, George's statement would not advance the big inquiry. So it is not just the importing of an investigation that happens covertly in this scenario.

On the level of QUDs, accommodation of sub-QUDs is a normal process. Speakers assume that the hearers with sufficient knowledge of the discussed domain will be able to accommodate new sub-QUDs very efficiently, and rely on that assumption in their linguistic behavior (see [Djalali et al., 2011] for evidence). The only extra thing which Practical Contextualism requires in order for our explanation to come through is to assume that not only QUDs, but associated investigations as well can be accommodated in a similar manner. This seems to be a natural assumption to make in our general pragmatic framework.

I will finish this section with an example that [Stephenson, 2007] argues supports her analysis in which the modal base of the embedded epistemic only depends on the attitude bearer's mental state. The scenario in the Embedded Mastermind example 50 is just the same as in 28. Yet while speakers are OK with a matrix epistemic claim by Mordecai in 28, they tend to reject a belief attribution of the very same epistemic claim to the very same person. So it seems that with 28 and 50 we have a pattern opposite to the one we had for 27 and 47: the truth value for the embedded modal seems to be different from the one for the matrix modal in the same context.

(50) **Embedded Mastermind** (the setup of the context is the same as in 28):

Pascal and Mordecai are playing Mastermind. Mordecai has selected several

pins of different colors, and is giving Pascal hints which should help Pascal to figure out which pins Mordecai has.

At the moment, it is consistent with the hints so far that there are two reds, but it is not entailed by the hints.

Mordecai believes there might be two reds.

Stephenson's and Hacquard's truth conditions as in 45 and 46, respectively, straightforwardly predict that the sentence in 50 should be false: in both, it is not the matrix context, but only Mordecai's belief state that determines the modal base. How can we reconcile that observation with what we saw earlier for 47, where the matrix context does affect the truth value of the belief report?

I argue the problem with 50 is that the context as provided does not specify what exactly the speaker wants to achieve with their statement. If the goal is to describe what Mordecai believes to be actually the case regarding the pins, then of course the sentence in 50 is false. But note that when Mordecai speaks in 28, he clearly does not intend to report his own knowledge on the subject: he wants to provide to Pascal some information about what possibilities are still not ruled out given the public information in the game. Now, when we set up a richer context for the belief report in 50 where the investigation behind the report concerns the public information and not Mordecai's knowledge due to his being the player who chose the pins, the same sentence is actually judged true by a number of speakers:

(51) **Embedded Mastermind for Four Voices:**

Pascal and Mordecai are still playing Mastermind, just as they did in 28 and 50, but this time, Eloise is also watching.

Mordecai: You know, there might be two reds.

Pascal: No, there can't be. You are just trying to deceive me.

A dispute ensues. Abelard enters the room.

Abelard: What is this all about?

Eloise: Mordecai believes there still might be two red pins, but Pascal thinks there can't be, and that Mordecai wants to deceive him so he could win. I think Mordecai is sincere, though.

Some speakers still find Eloise's attribution of an epistemic belief in 51 rather false than true. But the contrast between a matrix statement and a belief attribution of (what seems to be) the same claim can be replicated without epistemic modals as well. While 52 is accepted as a normal and truthful assertion in the Mastermind context, 53 sounds degraded in the same circumstances. Thus whatever makes speakers to like 28 better than 50, it is hardly caused by the presence of the epistemic modal.²¹

(52) **Mordecai:** There are either one or two reds.

(53) Mordecai believes there are either one or two reds.

Summing up, though I have presented some evidence that the matrix context does affect the truth conditions of belief reports with epistemics in them, namely in 47 and 51, it should be stressed that by itself that does not falsify [Stephenson, 2007] and [Hacquard, 2010]: both can be extended to accommodate dependence on the matrix context. All these theories need to do is to stipulate silent constituents in the embedded clause as in 54 and 55. Now, stipulations like that have to be supported by some theory about how exactly silent constituents are selected (cf. fn. 14), but perhaps such a theory might be formulated.

(54) Suzan believes that *according to the humankind's knowledge 10 years from now*, there might be life on Mars.

(55) Mordecai believes that *according to the current public information in the game*, there still might be two red pins.

Given that such adjustments are possible, it is hard to draw any definite conclusions from doxastic attitude data at this point. On the one hand, Practical Contextualism can account for cases the earlier theories accounted for, and makes some correct

²¹Of course, in case disjunction in 52 and 53 is analyzed as essentially epistemic, those examples would not provide any additional support to my case.

new predictions about dependence of embedded epistemics on the matrix context. But on the other hand, there is no decisive evidence in favor of our standard-contextualist theory either. As we will see shortly, data from some other types of attitudes turns out to be much more conclusive.

2.2.2 Factive verbs: the case of *know*

Consider 56. It presupposes 57²², which is not dependent on Mary's knowledge or beliefs. Under Practical Contextualism, that presupposition is derived right away, and the same is true for the relativist account of [Stephenson, 2007]. But under [Hacquard, 2010], it is not easy to derive 57 and not something like 58, which is actually entailed and not presupposed by 56. In the rest of this section, I will spell out the compositional semantics of the three theories considered to show why those facts hold.

(56) Mary knows Bill might be in Boston.

(57) **Presupposed by 56:** *Bill might be in Boston.*

(58) **Not presupposed by 56:** *According to Mary, Bill might be in Boston.*

Under Practical Contextualism, the context of utterance determines the boundaries of the current investigation — the intension for the sphere of relevant knowledge. The sentence 56 then attributes to Mary a belief that the sphere of knowledge does not rule out Bill being in Boston, and presupposes that belief is actually true:²³

²²For simplicity, I assume that the only way in which knowing that p is different from believing that p (in the actual world) is that with knowing, there is a presupposition that p is actually true. That will be enough for our arguments to go through. As far as I can see, adding further constraints on knowledge should not make those arguments invalid.

Similarly, I will not discuss the issue of presupposition projection, only using examples where the factive verb is in the matrix clause.

²³I use the following lambda notation for partial functions: $\lambda x. [presupposition | assertion]$. I assume a functional application rule that simply passes down the matrix context and world evaluation parameters. As was noted in fn. 4, on the left side of definitions I omit evaluation parameters that do not appear on the right side, so that it were more obvious which parameters affect the interpretation.

$$(59) \quad [[\text{that Bill might be in Boston}]]^c = \lambda v . \exists u \in EMB_{c,v} : Boston(Bill)(u),$$

where $EMB_{c,v} = Epist.Modal.Base_{c,v}$

$$(60) \quad [[\text{know}]]^w = \lambda p_{(s,t)} . \lambda x_e . [p(w) \mid \forall w' \in B(x)(w) : p(w')]$$

$$(61) \quad [[\text{knows that Bill might be in Boston}]]^{c,w} =$$

$$\lambda x_e . [\exists u \in EMB_{c,w} : Boston(Bill)(u) \mid \\ \mid \forall w' \in B(x)(w) : \exists w'' \in EMB_{c,w'} : Boston(Bill)(w'')]$$

The modal base in Practical Contextualism directly depends on the evaluation world parameter. In the presupposition part of 61, the modal base is formed by the knowledge falling within the boundaries of the investigation in the actual world w . In the assertion part, the modal base is formed by the relevant knowledge in the attitude bearer's doxastic alternatives w' . The presupposition is thus about the actual situation, and the assertion, about Mary's beliefs, just as it should be.

In the relativist theory of [Stephenson, 2007], the same simple assumption that the presupposition of 56 is the meaning of its embedded clause evaluated at the matrix index also derives the right predictions:

$$(62) \quad [[\text{know}]]^{w,speaker} = \lambda p_{(e,st)} . \lambda x . [p(speaker)(w) \mid \forall v \in B(x)(w) : p(x)(v)]$$

$$(63) \quad [[\text{know that Bill might be in Boston}]]^{w,speaker} =$$

$$= \lambda x . [\exists w' \in K(speaker)(w) : Boston(Bill)(w') \mid \\ \mid \forall v \in B(x)(w) : \exists u \in K(x)(v) : Boston(Bill)(u)]$$

But not all analyses of epistemic modals under doxastic attitudes can be as straightforwardly extended to *know*. For the theory of [Hacquard, 2010], no obvious extrapolation derives the right presupposition.

[Hacquard, 2010] (see also [Hacquard, 2006]) uses the following schema for making the embedded modal directly dependent on the matrix subject's beliefs: the embedded epistemic quantifies over the set of worlds $CONTENT(e)$, where e is an event variable that must be bound by the closest appropriate lambda-abstractor, [Percus, 2000]-style. The syntactic structure of an attitude report, 64, ensures that e is the believing event. Furthermore, the lexical entry for *believe* defines $CONTENT(e)$

as the set of belief worlds of the belief bearer $B(\iota x.Experiencer(e)(x))(w)$, where w is the evaluation world of the attitude verb, and we derive 65 for an epistemic belief report.

$$(64) \text{ Asp } [\lambda e_1. [[\text{believe}] [e_1]] [\text{that Bill might-}e_1 \text{ be in Boston}]]$$

$$(65) \text{ [[believe that Bill might be in Boston]]} = \\ = \lambda e_1.\lambda x.\lambda w. \text{Experiencer}(e_1)(x) \wedge \text{belief}(e_1)(w) \wedge \\ \wedge \exists w'' \in B(\iota x.Experiencer(e_1)(x))(w) : \text{Boston}(\text{Bill})(w'')$$

With *know*, this setup leads to wrong predictions. The event variable in the presupposed “copy” of the embedded clause, being a Percus-style variable, gets bound by the same lambda operator as in the assertion, resulting in the presupposition entailed by the assertion along the lines of 58:²⁴

$$(66) \text{ [[knows that Bill might be in Boston]]} = \\ = \lambda e_1.\lambda x.\lambda w. [\exists v \in B(\iota x.Experiencer(e_1)(x))(w) : \text{Boston}(\text{Bill})(v) \mid \\ \mid \text{Experiencer}(e_1)(x) \wedge \text{belief}(e_1)(w) \wedge \\ \wedge \exists w'' \in B(\iota x.Experiencer(e_1)(x))(w) : \text{Boston}(\text{Bill})(w'')]$$

2.2.3 Demonstrating attitudes

What is it that must have been shown by Sarah in order for 67 to be true?²⁵

²⁴Simply locating the presupposition outside of the scope of that lambda-operator would not help unless one stipulates that event variables behave differently from variables over individuals under *know*. Copies of individual variables in the assertion and presupposition have to be bound by the same lambda operator:

- (i) [Every father]_{*j*} knows his_{*j*} daughter plays soccer.
- (ii) Presupposed by (i): *For every father x, the daughter of x plays soccer*
- (iii) Not presupposed by (i): *For some y, the daughter of y plays soccer.*

²⁵It is particularly easy to interpret the example in 67 as containing a non-epistemic *might*. But an epistemic reading of the example is also available, though it will normally be remarkably non-Sarah-centered.

(67) Sarah showed/demonstrated that Bill might be in Boston.

The answer given by our Practical Contextualism is simple: she must have shown that the proposition $p = \text{'no piece of information relevant in the current context rules out Bill being in Boston'}$ holds in the actual world. I will assume the following meaning for *show*, based on the notion of proof validity taken as primitive.²⁶

(68) $show(p)(x)$ is true in w iff for all w' compatible with x 's valid proof in w , $p(w')$ holds.

Whatever valid proofs may be, they must only make use of reliable facts, which means that any valid proof is implicitly dependent on the world in which it is made.

Combining 68 with the regular Practical Contextualism analysis of the epistemic modal, we get the following:

(69) The meaning of 67, Practical Contextualism + 68:

For all possible worlds w' compatible with Sarah's valid proof made in w , the proposition $p = \text{'no piece of information relevant in the current context rules out Bill being in Boston'}$ holds in w' .

The meaning we just derived did not require us to do any extra work: we just combined our meaning for *show* with the analysis of epistemic modality in Practical Contextualism. Intuitively, 69 can quite possibly be the right meaning for 67: it says that Sarah proved that the relevant knowledge does not exclude the possibility of Bill being in Boston, and that seems to be pretty close to what 67, on the epistemic meaning of *might*, conveys.

An important feature of our predicted meaning for 67 is that it involves showing something positive: whether or not the sphere of relevant knowledge rules out a certain proposition is a fact about the world. If Sarah showed that Bill might be

²⁶I do not try to give a precise definition of what constitutes a valid proof. Such a definition will have to take into account a vast number of factors. For instance, the particular kind of rigor required of a mathematical proof may be of a different nature than the rigor involved in establishing the ecological validity of an argument in biology.

in Boston, we can learn from that something about how the world is that we didn't know before.

That feature is not specific to showing contexts: an epistemic claim is always something positive in our theory. What makes it particularly important for *show* and its kin is that such verbs highlight a conceptual difference between our standard-contextualist position and the position of the authors like [Hacquard, 2010] and [Yalcin, 2007]. In Hacquard's and Yalcin's accounts epistemic modals do not introduce a new level of modal embedding, but rather test (cf. [Veltman, 1996]) the presence of a certain kind of world in a set of worlds introduced by a different operator. For instance, in Hacquard's analysis of epistemic modals under doxastic attitudes, the modal checks if there are p -worlds in a given belief state. We will now see that in a theory of this type, it is hard to find a proper object of showing for examples like 67.

The epistemic modal base in [Hacquard, 2010] is provided by the CONTENT of some event. We will consider two possibilities regarding what the content of a showing event might be. First, let's combine the general framework of [Hacquard, 2010], the meaning in 68, and the assumption that the CONTENT of a showing event is the set of worlds compatible with the valid proof:

(70) The meaning of 67, under [Hacquard, 2010] + 68:

For some of the possible worlds w' compatible with Sarah's valid proof in w , Bill is in Boston in w' .

Intuitively that amounts to the following: Sarah has built a valid proof which restricts the range of epistemic options for what the actual world w could be, and in some of those options, Bill is in Boston. The problem with these truth conditions is that *most* valid proofs do not rule out that Bill is in Boston. For instance, a proof that $2 + 2 = 4$ hardly can. The truth conditions in 70 imply that 67 can be used to describe such a proof, which cannot be right. The actual sentence has much stronger truth conditions.²⁷

²⁷It should be noted that the strategy of *modal resolutions* that [Yalcin, 2008] uses for a similar problem with doxastic attitudes will not help here. For reasons of space, I can only note that for

Turning to another possibility, [Anand and Hacquard, 2009] list *demonstrate* as a member of the class of what they call *proffering attitudes*, which also includes *assume*, *claim*, *convince*, *imply*, *presuppose*, *suggest*. Working in the general framework of [Hacquard, 2006] and [Hacquard, 2010], Anand and Hacquard argue that these verbs describe discourse moves that propose changing the common ground.

[Anand and Hacquard, 2009] analyze the CONTENT of proffering events to be the common ground proposed by the proffering act. Thus *Sarah claimed that Bill might be in Boston* is true in their analysis iff Sarah made a claim whose aim was to arrive at a common ground in which there are some worlds where Bill is in Boston (see Anand and Hacquard’s (43), and their Sections 3.3 and 3.4). Anand and Hacquard do not explicitly analyze other verbs from their proffering class, but if we were to extend their strategy to *show/demonstrate*, we would arrive at something like this:

(71) Extending [Anand and Hacquard, 2009] to verb *show*:

[[Sarah showed that Bill might be in Boston]] = *Sarah constructed a valid proof the goal of which was to turn the current common ground into a new one where there are worlds in which Bill is in Boston.*

What do the truth conditions in 71 predict about the behavior of 67 in different contexts? Suppose the old common ground already contained worlds where Bill is in Boston. Then the truth conditions in 71 are satisfied even if after Sarah’s action it simply remains the same. For instance, it suffices for Sarah to prove that $2 + 2 = 4$ in order for 67 to be declared true in this context. On the other hand, if the old common ground did not contain a single world where Bill was in Boston, then arriving at a new common ground would involve a process of re-introduction of some worlds into the common ground. In that case, the truth of 71 would imply that some positive change on the part of the agents has taken place, namely a non-trivial revision of what they were taking for granted before Sarah’s proof.

Yalcin’s strategy to work in the proof case, it must be possible for a proposition like “Bill might be in Boston” to be distinguished in the information state associated with the proof. But for Hacquard and Yalcin, there is no such proposition, and one ends up collapsing *Sarah showed that Bill is in Boston* and *Sarah showed that Bill might be in Boston*.

Thus 71 has non-vacuous truth conditions only when the common ground ruled out Bill being in Boston altogether before 71 was asserted. But this does not fit how 67 is actually used.

Thus if we analyze epistemics embedded under *show* as quantifying over a certain set of worlds introduced by the verb rather than contributing an independent layer of modal embedding, the truth conditions we derive for 67 end up being too weak. In contrast to that, our theory of Practical Contextualism derives plausible truth conditions for 67 without any additional work needed.

Finally, let us consider what the relativist theory of [Stephenson, 2007] predicts regarding 67. In Stephenson’s brand of relativism, the meaning of the *that*-clause is not a proposition, but a function from judges to propositions, so the embedded clause of 67 has the meaning in 72.

$$(72) \quad [[\text{that Bill might be in Boston}]] = \lambda j_e. \lambda v. \exists u \in K(j)(v) : Boston(Bill)(u)$$

What can it mean to “show” the function in 72? A judge-dependent version of our semantics for *show* in 68 is given in 73, where who the judge l is is left unresolved:

$$(73) \quad \textit{show}(\lambda k.p(k))(x)(j) \text{ is true in } w \text{ for judge } j \text{ iff}$$

$$x \text{ provided in } w \text{ a valid proof that } p(l) \text{ must obtain in } w \text{ for some judge } l.$$

Together, 72 and 73 produce the following truth conditions for 67:

$$(74) \quad x \text{ provided in } w \text{ a valid proof that } \exists u \in K(l)(w): Boston(Bill)(u), \text{ for judge } l.$$

But the contents of the valid proof witnessing the truth of 67 are not about the knowledge of any particular judge l , be it the prover, the speaker, or somebody else.

To conclude the discussion of demonstrating attitudes, our Practical Contextualism makes straightforward predictions about epistemic modals under such verbs that agree with the judgements. But for the other theories currently on the market, additional work will have to be done to figure out whether they can be extended to account for epistemic modals in these contexts.

2.2.4 Inquisitive attitudes

When one is wondering whether p , for some non-epistemic p , one wants to know whether that p holds or not. But what is Sarah wondering about in 75?

(75) Sarah is wondering whether Bill might be in Boston.

Under our Practical Contextualism, the embedded clause denotes a simple proposition about the sphere of relevant knowledge determined by the context of utterance. Thus wondering about an epistemic p is not different from wondering about a non-modal p under our standard-contextualist account: both modal and non-modal embedded clauses describe how a certain aspect of the actual world could be, and are thus proper objects of wondering.

But if we define the modal base in 75 as relative to the attitude bearer, applying the strategy which [Hacquard, 2010] and [Stephenson, 2007] use for epistemics under *believe*, the resulting semantics would make no sense: we will end up saying that 75 is true when Sarah is wondering about her own state of mind. For both [Hacquard, 2010] and [Stephenson, 2007], a successful extension of their theories to 75 would require finding a value, either of the modal's event variable or of the judge parameter, which would generate a proposition that can be a proper object of Sarah's wonderings.

Thus in Practical Contextualism the analysis of matrix epistemic cases already provides us with a suitable object for wondering, but Hacquard's and Stephenson's theories have to say something different from what they say for matrix cases in order to deal with 75.

2.2.5 Suppositions and *if*-clauses

Consider epistemic *might* embedded under imperative *suppose*²⁸ or in a conditional clause:

- (76) Suppose Bill might be in Boston.
- (77) If Bill might be in Boston, we should send a team there.

[Schnieder, 2010] and [Crabill, 2013] argue that bare epistemic modals cannot occur in such contexts. Regarding *if*-clauses, a similar point has been made in the earlier literature, too; e.g., [Bybee et al., 1994, p. 208] discuss the sentence *If he may help me, I would finish sooner*, and note that *may* in it “indicates permission rather than epistemic possibility”.

Our Practical Contextualism does not say that *might* should be forbidden in those contexts. However, the usual meaning it assigns to the epistemic *might* is such that we would not expect examples like 76 and 77 to be very frequent. For 76, that meaning would be as follows:

- (78) *Adopt as true, for the purposes of this discussion, that the sphere of relevant knowledge does not rule out Bill being in Boston.*

How would a context where 78 would make sense look like? That should be a context where after making the supposition about the sphere of knowledge, one would draw certain conclusions from it. A natural environment for such activity would be an exam. Suppose the addressee is taking an examination assessing her skills as a

²⁸ Natural occurrences of sentences like (i), with *suppose* in the indicative rather than the imperative, are usually instances of a doxastic attitude ascription, and not of the ascription of a true supposition, where a “true supposition” involves somebody entertaining its propositional argument as true.

- (i) # Sarah supposed that Bill might be in Boston.

Some uses of sentences like (i) do describe true suppositions, though, as in *Mary supposed that x equals y , and then proved that in that case, the lemma holds*. Imperative uses of *suppose*, however, seem to always involve true suppositions, so I will be using only imperatives in this section.

senior police investigator, and her task is to come up with an action plan to find Bill as soon as possible spending the least possible amount of resources. In that context, the following is OK, on the epistemic reading of *might*:

- (79) Suppose Bill might be in Boston. What would you do, given that you have teams already working in Worcester and Gloucester?

Similarly, the person taking the exam can start her answer to that problem with the following:

- (80) If Bill might be in Boston, then we need to cover that area, so I'll divide the Gloucester team into two halves and send one of them to Boston.

Thus in contexts where Practical Contextualism predicts that we should find epistemic *might*, we indeed find it, and the meaning our theory assigns to it matches the observed meaning.

[Yalcin, 2007] uses data from suppositions and *if*-clauses in an argument against standard contextualism, of which our Practical Contextualism is a variant. Yalcin's argument is based on the observation that the following examples seem abnormal:

- (81) # Suppose that Bill might be in Boston and that Bill is not in Boston.

- (82) # If Bill might be in Boston and Bill is not in Boston, ...

Yalcin's argument against standard contextualism goes as follows. In standard contextualism, '*Bill might be in Boston*' does not entail that Bill is in Boston, and thus is logically compatible with '*Bill is not in Boston*'. And yet, Yalcin argues, those two are not co-supposable, 81, and cannot co-occur conjoined in an *if*-clause, 82. Therefore, Yalcin concludes, there is something wrong with the standard-contextualist analysis of epistemic modals, or for that matter with any analysis under which '*Bill might be in Boston*' and '*Bill is not in Boston*' are logically compatible. Yalcin then proposes an analysis where '*Bill might be in Boston*' and '*Bill is not in Boston*' are not logically compatible.

Let's see what Practical Contextualism has to say about 81 (it is easy to build the case for 82 in parallel manner). Just as Yalcin argues regarding standard contextualism in general, our theory does not deem 81 and 82 semantically defective. For instance, the predicted meaning for 81 would be as follows:

(83) *Adopt as true, for the purposes of this discussion, the following:*

1. *the sphere of relevant knowledge does not rule out Bill being in Boston;*
2. *furthermore, Bill is not in Boston.*

That this meaning as such is not defective is shown by the fact that the following paraphrase is OK:

(84) Suppose that Bill is actually not in Boston, but the available information does not rule out his being there.

Let's find a context where the seemingly non-defective paraphrase in 84 is appropriate, and then check whether 81 is abnormal there. The exam setting we introduced above is a suitable context to apply this test. Consider the following exam problem:

(85) Suppose that Bill is actually not in Boston, but the available information does not rule out his being there.

What will be the costs incurred by the most efficient plan of action adopted on the basis of information available at the moment, compared to the case when no resources are spent on a search in Boston?

Now that we have a context where the paraphrase from 84 is OK, let's replace it with a sentence analogous to 81, with *might* embedded under *suppose*:

(86) Suppose that Bill is actually not in Boston, but he might be there.

What will be the costs incurred by the most efficient plan of action adopted on the basis of information available at the moment, compared to the case when no resources are spent on a search in Boston?

Given this context, the allegedly impossible combination of a supposition of *might* p and $\neg p$ becomes better than it was when uttered out of the blue. This is unexpected under Yalcin's account: if the two are logically incompatible, then no speakers at all should accept 86, contrary to fact.

What is *not* predicted by Practical Contextualism by itself is that some speakers find 86 degraded compared to 85. Future research is needed to determine why exactly that would be so, but for now, I can provide an educated guess.

An examination of actual examples with *might* embedded under the true suppositional *suppose* shows that epistemic *might* very rarely occurs in such examples. Instead, we mostly see metaphysical *might* and "empty" *might*.²⁹ Why would that be

²⁹It is hard to conduct a precise corpus study of the phenomenon due to the rarity of the construction. E.g., the British National Corpus of 100M words only contains about a hundred of instances of *might* under *suppose*, and the absolute majority of those feature the doxastic *suppose* of the kind discussed in fn. 28, not the true suppositional *suppose*. As the next best thing, I conducted a random examination of several dozens of Google hits for the search phrases "*let's suppose it/she/he/I/you might*", where the attitude is guaranteed to be suppositional. I found it hard to find any epistemic examples, though there have been plenty of metaphysical *might* as in (i) and "empty" *might* as in (ii).

- (i) But let's suppose that all kinds of insulin MIGHT cause cancer (I don't believe it does, but let's suppose it might...) So now I have to decide which road do I want to travel? Shall I go down the road where my blood sugar is "rarely" above 125 mg/dl? Or shall I go down the road where my blood sugar is "rarely" above 100 mg/dl, and according to somebody, perhaps I have a higher risk of cancer?
- (ii) Let's suppose you might be a person who needs a good car to get to and from work everyday, but you don't like to pay the gasoline credit card bill every month. So you go out one morning and take a sledge hammer to your car and smash it to pieces.

(i) is asserted within a dialogue about whether taking insulin may cause cancer in some people. It is fairly clear from the discussion (cf. the last sentence of (i)) that what's at stake is only higher risk of developing cancer, and not the necessity of it. Thus *might* in (i) concerns the property of the actual situation, and the metaphysical analysis makes perfect sense. Furthermore, the speaker clearly takes "*Insulin causes cancer*" to be false, which is incompatible with the epistemic reading, so *only* the metaphysical reading is fine.

relevant to the puzzle at hand? Analyzing an ambiguous construction, speakers tend to choose the more frequent variant, and in the case when relative frequencies of different kinds of *might* under *suppose* are so strongly skewed towards the non-epistemic variants, we can expect speakers to strongly prefer non-epistemic interpretations. But for metaphysical *might*, propositions *might p* and $\neg p$ are indeed logically incompatible: if the world is such way that $\neg p$, that entails $\neg(\textit{might } p)$. For “empty” *might*, *might p* amounts (perhaps roughly) to *p* itself, and so is also incompatible with $\neg p$. Hence the speakers’ unease with 86: even though under the intended epistemic interpretation it is fine, and for some speakers that is quite enough to judge it well-formed and semantically non-trivial, for other speakers the interference from the dominant non-epistemic interpretations is very strong, and makes them feel bad about the example. When roughly the same meaning is conveyed by an unambiguous construction as in 85, no problem of this sort arises, hence 85 is judged to be better than 86.

Needless to say, more research is needed to either confirm or disprove this explanation, but what it shows is that there may very well be a principled explanation compatible with Practical Contextualism for why some speakers dislike 86 compared to 85. But I cannot quite see how Yalcin’s theory predicting logical incompatibility of $\neg p$ and epistemic *might p* would explain the fact that some speakers like 86.

2.2.6 Epistemics under attitudes: taking stock

In this section, we have reviewed the predictions of Practical Contextualism for epistemic modals embedded under several types of attitude verbs. Our theory derived reasonable truth conditions for the types of cases discussed in the earlier literature, and made novel and correct predictions regarding a number of cases not considered

In (ii), unless it was supposed after the first sentence that you do have a car, the second sentence does not make sense. Therefore whatever *might*’s contribution in (ii) may be, it does not contribute a \diamond to the assertion of the first sentence, hence we can somewhat sloppily call it “empty”. ([Portner, 1997] analyzes a special *may* restricted to complements of several kinds of attitude verbs with similar semantics, arguing that it contributes to the presuppositional part of the semantics, though not to the assertion part.)

before.

As for the other accounts proposed for epistemics embedded under attitude verbs, in several contexts that we discussed extra work needs to be done to even find out if those theories *can* be extended to account for the data. I do not have a proof that they necessarily cannot, and for all we know, by the end of the day their extended versions may fare better than Practical Contextualism. But at least for now, our standard-contextualist account has as good a chance of being true as any other. Moreover, if theories like those in [Hacquard, 2010] and [Stephenson, 2007] can be extended to cover the types of attitude verbs we discussed in this section, their stories about different kinds of contexts would have to be much less uniform than the story that Practical Contextualism tells.

2.3 Conclusion

In this chapter, I have developed Practical Contextualism, a theory of epistemic modality within the framework of standard contextualism, which achieves the following: 1) it accounts for the data from epistemic (dis)agreement dialogues which have been claimed to falsify any possible standard-contextualist account; and 2) it accounts for a wide range of data from epistemic modals embedded under attitude verbs, in some cases more successfully than any of the current competitor accounts.

This serves as an existence proof that a reasonable standard-contextualist theory with wide coverage can be constructed. The criticism of standard contextualism in the recent years has led to the discovery of a number of important cases which any theory of epistemic modality needs to account for in order to be considered plausible. Our Practical Contextualism manages to explain those cases, and in addition to that it also makes correct predictions about types of cases not considered before, being particularly successful in its account of how slight differences in the context of utterance may lead to differences in the truth values of epistemic claims. Whether Practical Contextualism will turn out to be the correct theory of epistemic modality, or even simply on the right track, studying its predictions forces us to enlarge the

range of data which any subsequent theory of epistemics would have to account for.

Chapter 3

The rise of *may-under-hope* construction in Early Modern English

The present chapter has three aims.¹ The first aim, which organizes the overall narrative of the chapter, is to account for the historical rise of the *may-under-hope* construction as in 87.

(87) (1891) Dearest, I hope we may be on such terms twenty years hence.

(*The Letters of Sidney and Beatrice Webb*,
from CLMEP [Denison et al., 1994])

¹The paper on which the present chapter is based was presented at the Modality@Ottawa workshop in April 2012, and benefitted from the comments of the audiences at MIT and at Ottawa, and from comments by Kai von Fintel. A version of the paper, [Yanovich, 2012], is under review as a part of a volume edited by Ana Arregui, María Luisa Rivero and Andrés Pablo Salanova, with Oxford University Press. Kai von Fintel, Irene Heim and Sabine Iatridou have greatly helped me to improve the present version in their capacity as my dissertation committee.

Working on the project, I have drawn on the data from the following corpora: the British National Corpus [BNC, 2007], the Corpus of Late Modern English Prose (CLMEP) [Denison et al., 1994], the Corpus of Contemporary American English (COCA, available at <http://corpus.byu.edu/coca/>), the Corpus of American Soap Operas (CASO, available at <http://corpus2.byu.edu/soap/>), the York-Helsinki Parsed Corpus of Early English Correspondence (PCEEC) [PCEEC, 2006], the York-Toronto-Helsinki Parsed Corpus of Old English Prose (YCOE) [Taylor et al., 2003]. The searches in the parsed corpora PCEEC and YCOE were performed with the help of the search utility *CorpusSearch 2* written by Beth Randall at UPenn.

The interesting feature of that construction is that *may* in it does not contribute existential quantificational force: speakers perceive that the object of the reported hope is to remain on such terms, not for it to be merely possible to remain on them. Despite the archaic feel to the construction, it turns out to be a very recent innovation that arose not earlier than the 16th century. I conjecture that its elevated flavor does not stem from its old age, but rather was inherited from another construction, with the inflectional subjunctive under *hope*, which the *may*-under-*hope* construction replaced, according to my hypothesis.

The second aim of the chapter is purely descriptive. In order to understand the rise of the particular construction in 87, we need to know how the modal system in the complements of hoping attitudes functioned as a whole in the historical periods of interest. I provide the description of that in this chapter, at times deviating from the main narrative in order to do so. The rationale for that is that a complete description of the modal system under verbs of hoping may then in future research be compared to the modal system in other semantically defined contexts.

Finally, the third aim is to prove, in Section 3.4, a relatively uncontroversial fact: in order to predict the empirical distributional profile of a given type of linguistic expressions, it is sometimes insufficient to know the compositional semantic properties of all expressions involved. In other words, there exist distributional facts that are not reducible to semantic facts.

The plan of the chapter is as follows. In Section 3.1, I provide the background on the modern *may*-under-*hope* construction, highlighting the fact that it features a lexical variant of the modal that is confined to a very particular syntactic context. After briefly reviewing the formal semantics of hoping attitudes in Section 3.2, I note in Section 3.3 that *may* under verbs of hoping was completely absent in Old English. Section 3.4 describes the results of an analysis of the complements of attitude verbs of hoping in the earliest section of the Parsed Corpus of Early English Correspondence [PCEEC, 2006], which, among other things, shows that *may* was still marginal under verbs of hoping well into the 16th century. Another conclusion that can be drawn from a comparison between the data from the 15th and early 16th centuries and the

Present-Day English data is that the marginal status of *may* in this syntactic context cannot be explained by semantic factors alone: some further constraint, not belonging to the compositional semantics, must have been in place. In Section 3.5, I discuss the data from the latest section of the PCEEC corpus, covering the period of 1630-1681. By that time, the special variant of *may* under *hope* that we can see in 87 was already in place. In Section 3.6, I put forward a hypothesis about how exactly *may* entered in numbers into the complements of hoping attitudes. The core of the hypothesis is that the driving force of the change was a preference for preserving the special elevated category of hopes about good health that were earlier expressed with the inflectional subjunctive, and the replacement of the disappearing subjunctive with *may* led to the creation of a new semantic variant of the modal restricted to the context of hope reports. Section 3.7 concludes the chapter.

3.1 *may* under *hope*: a syntactically restricted semantic variant of a lexeme

The semantics of natural language is largely compositional, which explains how language users may generate novel sentences and understand sentences they never heard before. However, some constructions require the introduction of lexical meanings restricted to certain syntactic contexts. Though on the technical level, we can introduce for them meanings and syntactic restrictions that would result in a formally compositional analysis, on the intuitive level such constructions are not compositional in the strongest sense: in order to use them correctly, a language speaker needs to know the construction itself; simply deducing the properties of its parts from other contexts in the language is not sufficient for grasping the semantic import of the construction in question.

One such construction in modern English is the *may*-under-*hope* construction, exemplified in 87 above and here in 88:

- (88) While investigators hope for a break in technology, they also **hope** there **may**

be a crack in the kidnapper's conscience. (from COCA)

What the investigators 88 hope for is clearly not just the *possibility* of there being a crack in the kidnapper's conscience: it is the actual crack. The meaning of possibility normally conveyed by *may* is absent from this example. At the same time, speakers perceive subtle difference, which might be attributed to style or register, between sentences with *may* under *hope* such as in 87 and 88, and their counterparts with *will*, as in 89 and 90. The examples with *may* feel to speakers elevated, more solemn, more pronouncement-like, less ordinary.

(89) Dearest, I hope we will be on such terms twenty years hence.

(90) The investigators hope there will be a crack in the kidnapper's conscience.

Not having the usual existential semantics and adding the elevated feel to the sentence go hand in hand for *may* under *hope*: there are examples where the modal in that syntactic context has a perfectly regular meaning, and does not convey any solemn flavor. For instance, 91 features regular deontic *may* that occurs in other matrix and embedded contexts, and 92 arguably features something close to a regular epistemic *might* (it may be a bit too much for the police to hope that the owners would indeed recognize their belongings, but hoping that at least it's not *impossible* for them to do so is perfectly rational).

(91) I do hope I may remain a member? (from [BNC, 2007])

(92) Serial numbers are missing from much of the electrical equipment but police properties officers hope people might recognise their belongings.

(from [BNC, 2007])

[Portner, 1997] argues that *may* in examples like 87 and 88 is "mood-indicating". To account for its special semantics, Portner introduces a separate lexical entry restricted to a small range of syntactic contexts. Portner proposes that *may* as in 87 and 88 conveys the presupposition that its propositional argument is doxastically possible for the hoper (that is, that the hoper believes the described situation to be possible), and contributes nothing to the assertion. I do not endorse the presupposition that

Portner assigns to *may*,² but I accept his claim that the modal in the construction does not contribute anything directly to the assertive component. I assume that the elevated flavor of *may* under *hope* should be analyzed as pertaining not to the narrow compositional semantics, but rather as a special expressive marker that signals that a particular register of the language is being used. That marker can be analyzed as other expressives, cf., for example, [Potts, 2005].

Given the special nature of the *may*-under-*hope* construction, two natural questions arise. First, how could such a construction be created by language users in the first place? Second, once created, how did it develop and how was it retained? I will have nothing useful to say about the second question: I assume that the usual considerations of inertia of use and faithful transfer of language to new speakers should take care of that. As for the first question, I will propose a particular hypothesis that explains the rise of *may* under *hope* and the elevated flavor it now conveys.

3.2 Semantics of hoping

Before we turn to historical data, it is useful to formally analyze the semantics of hoping. What makes the attitude of hoping special is the way it relates beliefs and desires (see [Anand and Hacquard, 2012] for both an overview of the literature and an approach to the semantics of hoping close to the one described below). A number

²The reason I do not endorse Portner's presupposition is that there is no way to empirically test for its presence: given the lexical semantics of *hope*, Portner's presupposition would have no effect. Note that a non-modal complement of *hope* is presupposed to be doxastically possible for the subject of hoping. E.g., if the speaker knows that Gillian believes she cannot win, she cannot utter (i) truly, and (ii) is a contradiction. But if so, then the presupposition that Portner ascribes to *may* as in 87 and 88 simply doubles the presupposition triggered by *hope*. If *may* triggers no presupposition, the end result would be the same as when it does.

- (i) Gillian hopes she will win.
- (ii) # Gillian knows she won't win, but she hopes she will.

of tests suggest that a hope report conveys information both regarding the agent's beliefs and the agent's desires. Namely, one can only hope that p if one A) considers p possible; B) does not consider p necessary; and C) prefers p to its alternatives. A and B form the belief part, and C forms the desire part of the attitude.

That a hope report conveys some measure of doxastic uncertainty about p (that is, a combination of meaning components A and B above) is shown by the following examples modeled after [Scheffler, 2008]:

(93) Mark: Is Peter coming today?

a. Bill: *OK*I hope he is.

b. Bill: * I want him to.

(94) It is raining. That's exactly what I {*hope/*OK*want}.

In 93b, the report of a desire for Peter to be coming today cannot serve as a direct answer: simply expressing a preference for his coming does not help with resolving the question of whether he is.³ The fact that *hope* is felicitous in 93a shows, according to Scheffler, and to Anand and Hacquard, that a hope report may convey a belief about its complement along with a preference for it.

The contrast in 94 shows that in the situation of epistemic certainty about p , hoping for p is inappropriate. That *want* is OK in 94 demonstrates that there is nothing wrong with wanting something that one knows to be actual. Therefore *hope*'s inappropriateness in 94 must have something to do with the attitude's doxastic component. If a hope report conveys that the agent considers p possible and at the same time not-necessary, we expect exactly the pattern we see in 93 and 94.

What the examples in 93 and 94 show is that in addition to the preference component similar to *want*'s, *hope* also has a belief component in its semantics. The status of both the meaning components seems to be that of assertion. Consider B's utterance in 95. Being a felicitous answer to A's question, it must assert that Mary's doxastic

³93b in this context would often *implicate* an answer to the question: a cooperative speaker who knows whether Peter is coming would not use 93b, which can trigger an inference on the part of the hearer.

state allows both rain and its absence (that is, that her beliefs leave it open whether it rains or not). At the same time, C's reply targets the preference component of B's sentence: C argues that B's assertion cannot be true appealing to the structure of Mary's preferences regarding the weather. This is as expected if B asserted both a statement about Mary's beliefs and Mary's desires.

(95) A: Does Mary think it is raining?

B: Well, she certainly hopes so.

C: That cannot be true. Mary prefers sunny weather to rain.

Another source of evidence for the parity status of the doxastic (that is, belief) and bouletic (that is, desire) components of the semantics of *hope* is the behavior of adverbial modifiers: they may target either part of the meaning.

In 96 the degree modifier *very much* signals the strength of Ann's preference, and has nothing to do with her beliefs:

(96) Ann hopes very much that Mary will be elected.

In 97 as well, the continuation favors interpreting the temporal adverbial *still* as modifying the preference component: we do not know if Ann's opinion on Mary's electoral chances changed, but the structure of her preferences has been adjusted recently, as we learn from the second clause, which favors interpreting *still* as belonging to the desire component.

(97) Ann still hopes that Mary will be elected, though she was really disappointed by her position on the nuclear power plant.

But in 98, both the degree modifier *a little bit* and the temporal modifier *still* attach to the doxastic component, not the desire component as in 97: *a little bit* conveys that the likelihood of Mary's win is not that great according to Ann, and *still* signals that Ann continues to consider Mary's win a live option.

(98) Ann still hopes a little bit that Mary will be elected, though she considers it quite unlikely.

I adopt the following lexical entry for *hope*, in line with [Anand and Hacquard, 2012].⁴ If one wishes to have a preference semantics along the lines of [Villalta, 2008] for *hope*, modifying 99 accordingly is straightforward.

$$(99) \quad [[\textit{hope}]]^w = \lambda p. \lambda x. (\textit{Dox}_x(w) \cap p \neq \emptyset) \wedge (\textit{Dox}_x(w) \cap \neg p \neq \emptyset) \wedge \\ \wedge \forall w' \in \textit{Dox}_x(w): p\text{-worlds most similar to } w' \text{ are} \\ \text{more desirable for } x \text{ in } w \text{ than } \neg p\text{-worlds most similar to } w'$$

The only other class of attitudes that relates beliefs and desires in the same way as attitudes of hoping do is the class of attitudes of fearing. The difference between hoping that *p* and fearing that *p* is that in the latter case, one prefers *p*'s alternatives to *p*, not the other way round. But both for hoping and for fearing one has to consider argument *p* possible and not-necessary. [Anand and Hacquard, 2012] call the natural class of attitudes of hoping and fearing *emotive doxastics*.

In this paper, I will only discuss verbs of hoping, leaving verbs of fearing aside. The reason for that is more practical than theoretical: in the Early Modern English samples I used, verbs of hoping with finite complements outnumber verbs of fearing more than 4 times in each historical section. There were too few examples with verbs of fearing to perform meaningful analysis. In case there were significant differences between the modal system under hoping and fearing attitudes, the scarcity of data in my sample would not have allowed to distinguish that from random fluctuations.

3.3 Modals under verbs of hoping in Old English

Unfortunately, the existing literature does not provide precise dating for the appearance of the *may-under-hope* construction. One reason for that is that verbs of hoping are rarely discussed as a natural class rather than as a member of a much wider class of preference attitudes. For instance, [Visser, 1973], a fundamental study of, among other things, the distribution of modals in different syntactic contexts from early Old

⁴More accurately, in line with Anand and Hacquard's informal analysis, but not with their technical implementation within the event semantics.

English to 20th-century English, does not single out *may* under verbs of hoping as a special case.⁵

The use of *may* and *might* in clauses depending on such verbs as wish, demand, desire, beseech, hope, pray, etc., and their allied nouns, is common in all periods. [Visser, 1973, §1678]

However, the very first example of *may/might* under a hoping attitude that Visser provides is from the early 15th century, which is quite late as far as “all periods” of the recorded history of English go. This absence is not an accident due to Visser’s choice of examples: in Old English (OE), there is no indication whatsoever that *may* (or, rather, its OE ancestor *magan*) was ever embedded under hoping attitude verbs.

[Ogawa, 1989] reviews the Old English distribution of modals in the complements of six groups of attitude verbs which he collectively calls “dependent desires”. The six classes of Ogawa’s include such groups as verbs of commanding or verbs of asking. Ogawa shows that for different classes of attitudes he considers, the distribution of modals is very different in Old English. Thus lumping all those attitudes together as Visser does we are bound to lose important information.

Still, even though [Ogawa, 1989] divides attitude verbs into much smaller classes than Visser, his classes are still not small enough for our purposes. The OE verbs of hoping *hopian* and *hyhtan* are put by Ogawa into the same class with such verbs as *willan* ‘to will’, *wilnian* ‘to desire’, *wyscan* ‘to wish’, *geweorþan* ‘to agree’, and *myntan* ‘to intend’. Fortunately, Ogawa also lists individually all examples in his sample, which makes it possible to see what exactly he found for verbs of hoping. The sample turns out to provide only a tiny overall number of examples, none of them featuring *may/magan*:

The only modal verbs we see under verbs of hoping in Ogawa’s sample are **motan* (> modern *must*), **sculan* (> modern *shall*) and *willan* (> modern *will*). There is no

⁵It should be noted that on other occasions [Visser, 1973] does discuss verbs of hoping alone, or verbs of hoping and fearing together, as a separate group worthy to be examined on its own. It is just that he does not do so discussing *may* and *might*.

Table 3.1: Modals under *hopian* and *hyhtan* in the sample of [Ogawa, 1989]

	<i>*motan</i>	<i>*sculan</i>	<i>willan</i>	total
OE poetry	3	0	0	3
Early OE prose	1	0	0	1
Late OE prose	1	1	2	4
Total	5	1	2	8

magan (> modern *may*), contrary to what [Visser, 1973] implies.⁶ It could be that *magan* sometimes appeared in the complements of verbs of hoping in OE, but if so, we have absolutely no indication of that, despite the considerable corpus of survived OE texts. Furthermore, the prominent presence of **motan* in these complements marks a large difference between the OE usage and the Late Middle English and Early Modern English usage, in which *mote* and *must* (< Old English **motan*) are absent from the complements of verbs of hoping. To conclude, the rise of the *may-under-hope* construction clearly did not yet start in the Old English period.

3.4 Modals under verbs of hoping in the 15th century

Searching for the moment when *may* embedded under *hope* was established, I examined a 411K-words dataset covering the period of years 1425-1520, drawn from the Parsed Corpus of Early English Correspondence (PCEEC) [PCEEC, 2006].⁷ The

⁶I cross-checked Ogawa’s counts against the 1,5-million-word York-Toronto-Helsinki Parsed Corpus of Old English Prose (YCOE) [Taylor et al., 2003]. My search did not reveal any extra examples, and in fact missed one which Ogawa found in *Byrhtferth’s Manual*, as the part of that work where Ogawa’s example was situated was not included into YCOE.

⁷My 1425-1520 subcorpus consisted of the following collections (the approximate word count for each is given in the parentheses): *The Cely Letters* (51K) [Hanham, 1975], *Letters of Richard Fox* (11K) [Allen and Allen, 1929], *The Marchall Letters* (5K) [Keränen et al., 1999], *The Paston letters* (234K) [Davis, 71 6], *Plumpton Correspondence* (37K) [Stapleton, 1968], *Rerum Britannicarum* (6K) [Gairdner, 61 3], *The manuscripts of the Duke of Rutland* (1K) [Lyte, 1888], *Letters and Papers*

dataset forms the earliest section of this corpus of historical letters. PCEEC was chosen for this study for three reasons: first, it exists in a parsed form which allows for rapid and accurate searching, with the help of the *CorpusSearch 2* utility written by Beth Randall at UPenn; second, consisting of letters, PCEEC is uniform in terms of genre and register to a larger degree than corpora intentionally featuring a selection of texts of multiple genres; and third, early letters to a large extent represent functional writing, and thus may be closer to the contemporary vernacular than texts of many other genres.

It turned out that in the 15th century *may* was still practically absent from the complements of hope attitudes. Moreover, so was *can*, despite the fact it frequently occurs under *hope* in Present-Day English. Modal *must*, which was relatively common under *hopian* and *hyhtan* in Old English, was also absent. The 15th-century distribution was thus markedly different both from the Old English one and from the modern one.

Below in this section, I will first describe the distribution of modals, the unambiguous non-modal subjunctive, and other non-modal forms in the complements of verbs of hoping in the 1425-1520 subcorpus of PCEEC. Second, I will show that the absence of *may* in that sample is in fact surprising given the compositional semantics of the modal at the time. Together, the facts described here will form the basis for comparison with the mid-17th-century situation discussed in the next section.

In a pilot study using a 177K-words part of the 1425-1520 subcorpus (it contained

of John Shillingford, Mayor of Exeter (14K) [Moore, 1965], *The signet letters of Henry V* (15K) [Fisher et al., 1984], *The Stonor Letters* (38K) [Kingsford, 1919] and [Kingsford, 1923].

In the collections as a whole, there are several letters written before 1425, but none of them contains a hope report. At the other end of the period, the Plumpton Correspondence contains several letters written after 1520, but as their usage does not seem to be different from that of the earlier letters, and they belong to the same circle of authors and recipients as the earlier letters in the collection, I chose to include them in the analysis. In those later letters included into the sample, there were 2 examples with *shall*, 2 with *will*, 1 with *would*, and 5 non-modal examples, of which 3 feature a non-ambiguous subjunctive (two instances of the subjunctive are in formulaic wishes of good health, and one is in a sentence conveying a non-performative hope regarding a certain future situation).

all letter collections from the actual sample except the Paston letters), I went over all examples with verbs with a *that*-clause complement in order to determine the precise membership in the class of verbs of hoping at the time. I concluded that two verbs were used predominantly for expression of hopes in that period: *hope* and *trust*. According to lexicographers (cf. *hōpen* and *trusten* in [MED, 2002]), both of them could express both the meaning of hoping and several other meanings, including that of being confident. But in my data sample, where the context provides enough support for disambiguation, both verbs denote a hoping attitude. E.g., in 100 the wife of the recipient asks the author to recommend her to her husband in the letter, and can hardly be *confident* that he received a lock she sent in her previous letter: there was no communication between her and him from the moment she sent the lock. However, a *hope* that he received it makes sense in the context.

(100) Syr, my masterys youre wyffe recomaund har harteley vnto you, sche en-
 forming you that sche sent a lettere vnto you the last weke be on Rechard
 Cartar of Darbey, in the wyche lettere sche sent vnto you a lytell locke of
 gould y-closed in the sayd lettere, **the wyche sche trust to God ye haue
 ressayved.** CELY,223.142.3134

‘Sir, my maistress your wife recommends her heartly to you, she informing
 you that she sent a letter to you last week with Richard Carter of Darby, in
 which letter she sent you a little golden lock enclosed in the said letter, which
 she hopes to God you have received.’

In the analysis, I included all instances of *hope* and *trust* taking finite complement clauses, with the understanding that in a few cases they might have been used to express a different attitude, for instance, that of being confident. Such cases, however, must have been quite rare, and no crucial conclusions hinge on such cases. Analyzing all instances of a given verb together rather than trying to divide them by the semantics is common in the historical research on modals, see, e.g., [Visser, 1973] and [Ogawa, 1989].

In 100 and other examples from PCEEC in what follows, the orthography is as in the

corpus. For examples from the 1425-1520 subcorpus, I provide “translations”. Their purpose is not to be perfect sentences of Present-Day English, but rather to help the reader unfamiliar with Late Middle English to understand the structure and the meaning of the original examples, so I often preserve the not-so-modern constructions of the original. Tags such as CELY,223.142.3134 are from PCEEC, and uniquely identify the passage within the corpus. The structure of a tag is as follows: CELY denotes the letter collection (in this case, the Cely letters); 223 is the page number in the print edition of the collection; 142 is the number of the letter in the collection; and 3134 is the number of the syntactic tree representing the example in the corpus, starting from the beginning of the collection.

3.4.1 Modals under verbs of hoping in the 15th century: an overview

The overall distribution of modals and finite forms under *hope* and *trust* in the 1425-1520 subcorpus is given in Table 3.4.1. Non-modal complements are counted in the columns *nm subj* and *nm other*. The *nm subj* column counts the examples where the embedded verb is unambiguously in the form of the inflectional subjunctive. The *nm other* column counts both the examples of the unambiguous indicative and those with ambiguous forms (as we will see, this grouping is justified by the different roles these two groups play in the dataset).

may	might	can	must	shall	should	will	would	nm subj	nm other	ALL
1.2%	0.4%	0.4%	0%	45.6%	10.2%	20.7%	4.9%	8.9%	11.8%	100% (N=246)

Table 3.2: Complements of verbs of hoping, 1425-1520, PCEEC

The main features of this distribution are: 1) virtual absence of *may*, *might*, *can*, and *must*; 2) predominance of *shall* (and *should*); 3) a relatively high proportion of unambiguous non-modal subjunctives. At least the first two features are not trivial, as we can see from a comparison with the distribution of modals under attitude verbs of asking, cf. Table 3.4.1, cited from [Castle et al., 2012].⁸

⁸[Castle et al., 2012] reports the results of an investigation into the modal system under verbs of asking, namely *beseech*, *desire*, *labor*, *pray* and *request*, in the same 411K-words 1425-1520 subcor-

may	might	can	must	shall	should	will	would	nm all	ALL
17.4%	3.7%	0%	0.4%	0.3%	7.0%	27.2%	7.0%	37.0%	100% (N=702)

Table 3.3: Complements of verbs of asking, 1425-1520, PCEEC (from [Castle et al., 2012])

Consider the absence of *may* and *mote* first. In Old English, the complements of both verbs of hoping and verbs of asking frequently contained **motan* > modern *must*, [Ogawa, 1989]. In particular, for verbs of asking, **motan* was very common when the matrix subject had the same reference with the embedded subject, who usually was the beneficiary of the request. In the 1425-1520 segment of PCEEC, in that type of context with verbs of asking, we largely find *may* and *might*, which must have replaced **motan* at some point. But in contrast to that, under verbs of hoping **motan*, though relatively frequent here in OE, was not replaced by *may* in our 15th-century subcorpus. The absence of *may* is thus a significant fact about the particular context of hoping attitudes.

For the second feature of the distribution, while *shall* is the most frequent modal under verbs of hoping in our sample, it's almost absent from the complements of verbs of asking. Both the complements of verbs of hoping and verbs of asking denote desirable states of affairs, so there is no semantic explanation of such a large numerical difference that readily suggests itself.

To understand the actual distribution of modals under verbs of hoping, we need to look more closely at individual examples rather than at the broad distributional profile alone. The rest of this section will describe the distribution of different modal verbs and the non-modal subjunctive under verbs of hoping in the 1425-1520 subcorpus. I will not systematically compare what we find in this type of context with the distribution of those forms elsewhere in the language. Eventually that should be done, but in the present work I restrict myself to describing as fully as possible what we observe in this particular context.

pus of PCEEC. The data on verbs of hoping reported here and the data on verbs of asking from [Castle et al., 2012] are thus directly comparable.

3.4.2 *will* and *would*

When verbs of hoping have *will* in their complement, the embedded clause predominantly (48 out of 51 instances) has 2nd person and 3rd person animate subjects. In most cases (44 out of 51), whether the desired situation described in the complement will actually happen, is under the control of the addressee (as in 101 and 102) or the embedded subject (as in 103).

(101) and allsoo John Delowppys sayd vnto Gyesbryght that he wold make ower as myche mony yn thys martt as schull content the hole som off yowre byllys, **trustyng that zowre masterschyppys wyll doo them as grett plesser yn tyme to come**, etc. CELY,190.136.2977

‘and also John Deloupes said to Gyesbright that he wants to make over as much money at this mart as shall pay off the whole sum of your bills, hoping that your mastership will do them the same great pleasure in the future, etc.’

(102) but I trvst ze wyl be pacient. PASTON,I,150.041.1045
‘but I hope you will be patient.’

(103) and be the tyme my lord hathe herde me **I trust to good he wylle be my good lorde**, ho have yow, my good modyr, and alle yowrs yn hys one fyfull kepeyng, STONOR,I,121.022.340

‘and by the time my lord has heard me, I hope to God that he will be my good lord; who [=God] may have you, my good mother, and all yours, in his one faithful keeping’

Some examples deviate from this pattern; e.g., in 104 the embedded subject is not animate (though the addressee has the control over the desired situation), and in 105 the control over whether the desired outcome will obtain is definitely not in human hands. Thus the distributional generalizations regarding *will* have exceptions.

(104) I trust, thou I be fer fro yow, that **bis lytyll byll this cold whedere, and my erand wull make me and shew me present**.

‘I hope that even though I am far from you, this little letter Land my errand will make me, in this cold weather, present (by you), and show me so.’

- (105) I pray you se a fayre weder or ye take youre passage for onny haste, for the weche I tryste to God **Wyll Maryon and ze wyll se that weder and wynde be fayre.** CELY,33.029.567

‘I pray you see fair weather before you take your passage in any haste, for which I trust to God Will Marion and you will see that the weather and wind are fair.’

would appears to mostly function as the regular past tense of *will*, occurring under a past-tense matrix clause. In some examples it also appears to convey additional politeness, as in 106, when an expression of hope is in fact an indirect form of request.

- (106) And this considered in your wise discrecion, I trost, my lord, thow here prisonyng were of oderes labore **ye wuld help here;** PASTON,I,81.025.481
 ‘And this having being considered at your wise discretion, I hope, my lord, that though her prisoning could have been done by another, you would help her.’

Overall, *will* and *would* function in the sample as significantly restricted forms, signalling that the situation described in the embedded clause requires an animate agent’s will to happen.

3.4.3 *shall* and *should*

The most frequent modal in the complements of verbs of hoping, *shall*, seems to be an almost unmarked option in this context. It appears with the 2nd and 3rd person animate subjects (where *will* also appears), with 1st person and inanimate subjects, and with expletive *it* and *there*.

- (107) and yf it lyke yowe to com on Thursday at nyght, <...> I trusty to God **pat ze schall so speke to myn husbonde,** PASTON,II,436.467.11971

‘and if you’d like to come on Thursday at night, ... I hope to God that you would be able to speak that way with my husband,’

Sometimes in examples with *shall* it is clear that the addressee has little control over the matter. 107 is one such case: from the larger context it is clear that it is the addressee who really needs the author’s husband to speak to him, not the other way round. However, it is hard to say with certainty whether there are examples where the embedded subject or the addressee are assumed to have the control: there are examples which can be interpreted this way, but I did not find any which had to be. For example, in 108 the addressee should most probably have control over whether he does anything to satisfy his correspondent, but it is possible that the author is concerned not so much with the addressee’s willingness to do the work, but rather with whether it would be in fact possible to obtain the desired outcome given the circumstances.

(108) <...> Walsyngham, whych y trust to God **by your help shall be corryged.**

PASTON,II,191.352.9514

‘Walsingham, which I hope to God will be corrected with your help.’

I do not find the present evidence to be enough to decide whether *shall* in this context specifically conveyed that the matters depend on the circumstances rather than on the will of the embedded subject and the addressee, or was a neutral modal conveying something close to pure future, perhaps with a certain kind of implicature based on the fact that a more restricted option like *will* was not used. Needless to say, the third option, namely that in the speech of some people *shall* marked dependence on external circumstances, while in the speech of others it was something like a pure future marker, also cannot be ruled out.

The form *should*, as was the case with *would*, mostly functions as the past tense form of *shall*. In addition to its sequence-of-tense uses, 109, *should* is also used in irrealis consequents of conditionals as in 110. Note that *should* in that example occurs embedded under a present-tense attitude verb, and yet bears “counterfactual” morphology.

(109) ffor in trowth I hadde will hopid **that your horsis shulde a ben here as
bis night;** STONOR,II,11.047.773

‘for in truth I had well hoped that your horses would have been here that
night’

(110) And if ye comaund me so for to do, I trist **I shuld sey nothyng to my
ladys displesure, but to youre profyt;** PASTON,I,666.229.6881

‘And if you command me to do so, I hope I would say nothing to my lady’s
displeasure, but [at the same time] only to your profit.’

Interestingly, while deontic interpretations could be sensible in some of the exam-
ples, I did not find any instance of *should* in this type of context where a deontic
reading would be the only one possible, or even the best one.

3.4.4 Non-modal forms except the unambiguous subjunctive

Complements with *will* and *shall* in them describe future situations. However, hopes
targeted at the present or the past are also possible, and when such hopes are reported,
we see non-modal complements. The finite verb in such cases in our sample is either
in the unambiguous indicative form, 111, or a form ambiguous between the indicative
and the subjunctive, 112.

(111) but I hope and trust verrayly **þe matier of his informacion is vntrewe.**
PASTON,I,5.003.37

‘But I very much hope that the content of his news is untrue.’

(112) <...> like as I have writon to you in a letter sent ouer at Shorfftyde, the whch
I truste **ye have receyued /** CELY,229.143.3150

‘<...> like as I have written to you in a letter sent over at Shorfftyde, which
I hope you have received’

3.4.5 Unambiguous inflectional subjunctive

22 out of the 51 non-modal complements in the subcorpus feature a verb in an unambiguously subjunctive form. 21 of those 22 contain the same form *be*, and the remaining one contains *have*.⁹ This is not too different from other non-modal complements: out of the 17 cases where we have the unambiguous indicative, 14 feature forms of *be*. Overall, there are only 4 non-modal complements, out of 51, that feature a finite verb other than *be*, *have* or *do*. However, once we look closely at the unambiguous subjunctive examples, it becomes apparent that in addition to the “lexical poverty”, many of them (namely, 15 out of 22) contain relatively formulaic, and almost ceremonial, expression of hopes pertaining to good health and recovery from illness, 113-115. (I intentionally omit the exact translation of the subjunctive form in these examples, in order to not smuggle my analysis.)

- (113) Ryght reuerent Syr and my specyall frende, I recomaund me vnto you, euermor deseiryng to her of yowre wellfare, for yt hat be sayd vnto vs her that ye hath be sore seke, but Y trust to Good **ye be now amended**.

CELY,62.048.1041

‘Right reverend Sir and my special friend, I recommend myself to you, constantly asking to here of your welfare, for it had been said to us that you have been very sick, but I hope to God that you ___ now amended.’

- (114) And yf it lyke you ser to her of my helthe, at the makyng of thys sympyll letter I was in good helthe of bode, blessyd be Jhesu as I troste **pat ye be**, or I wold be ryght sorye.

CELY,222.141.3108

‘And if you’d like, sir, to hear about my health, at the making of this simple letter I was of good health of body, blessed by Jesus, just as I hope you ____, or I would be very sorry.’

⁹The corresponding indicative forms would have been *are* or *is* (or forms corresponding to those), and *hap/has* for *have*. For a concise introduction into the Middle English morphology, cf. [Fulk, 2012].

- (115) Right worshipfull, in my most hartiest maner I commend me to you and likewise to my good Mistres your wife, trusting to Jesus **that you and all your children and famila be in good health.** PLUMPTO,242.109.1795
'Right worshipful [sir], in my most heartiest manner I recommend myself to you and also to my good maistress your wife, hoping to Jesus that you and all your children and familia ___ in good health.'

The three examples above all come from beginnings of letters, which in general follow fairly formulaic templates. It should be noted, though, that such expression of hopes is not a necessary part of those templates. For instance, 113 is from a letter by William Maryon to George Cely, and we can compare it to 11 other letters by the same author to George Cely or Richard Cely Jr, from the same collection. All of those letters start with a self-recommendation, and in three of them, a simple self-recommendation is followed by the phrase about being constantly eager to hear about the recipients welfare. But only the one letter cited in 113 reports specifically a hope regarding the good health of the recipient. This fits well with the general choices made by William Maryon in his letters: they usually consist of very brief descriptions of important matters of business. Apparently, it is only when the author heard about a serious illness of the recipient that he spared significantly more space and time on something not directly related to business as such. Thus even though expression of hopes about good health is formulaic to some extent, it is not a necessary or fixed part of the contemporary letter template. Examples 114 and 115 further support this conclusion: while both sentences belong to the initial block of their respective letters, they show that the exact content of the reported hope may vary.

Furthermore, there are some cases where a hope about good health with an unambiguous subjunctive appears in the main part of the letter, as in 116, which closes a long account of the author's brother's illness that describes in detail several days that the author spent with him.

- (116) and thusse I hope **he be sauffe.** PASTON,I,498.157.4864
'and thus I hope he ___ cured.'

Not all examples with the unambiguous subjunctive belong to this good-health group, but the subjunctive in those that do not seems to have had little semantic import, as can be seen in 117.

- (117) Syr, I wndyrstonde be yowr letter that aull the whowlschypys ar cwm to Calles sauynge vij, qwherof ij be spent. I trwste to God **that the Crystowyr of Rayname be cwm to Calleys be thys.** CELY,126.099.2220

‘Sir, I learned from your letter that all the wool-ships have come to Calais except for seven, whereof two are wrecked. I hope to God that the Christopher of Rayname has come to Calais by [the time you receive] this.’

Once we consider the pattern of use of the subjunctive in the language as a whole, this concentration in hopes about good health requires attention. English has been losing the subjunctive gradually, and in the 15th century, it was still widely used in many kinds of contexts. Just in the examples above, we can observe subjunctive forms such as *be fayre* in the complement of *se* ‘see’ in 105, and *lyke* in the *if*-clause in 114). What is surprising about the subjunctive’s distribution under verbs of hoping is the unusual focussed nature of the distribution: rather than occurring under hoping attitudes across the board, the subjunctive was concentrated in utterances with a single narrow communicative function. Such restriction of a grammatical form to a narrow set of semi-fossilized contexts is generally a sign that the form is fading away.

It is worth stressing just how narrow the subjunctive’s special niche was in the considered data: not all hopes which may be taken to be ceremonial or formulaic are expressed with the subjunctive. For instance, hopes about the recipient’s “good speed” (i.e. success) are not less formulaic than hopes regarding good health, but nevertheless they are not expressed with the subjunctive, cf. 118 with modal *shall*.

- (118) And I praye God sende yow as goode speede in þat mater as I wolde ye hadde, and as I hope **ye shall have er thys letter come to yow;**

PASTON,I,501.161.4937

‘And I pray that God sends you such success in that matter as I would like you to have, and as I hope that you will have [success] before this letter comes

to you;’

Taking those facts together, we may conclude that in the language of our 1425-1520 sample, the subjunctive is likely on its way out of the system of hope reports: the single kind of example where the subjunctive is still well entrenched is hopes regarding the addressee’s good health.

3.4.6 *may, might and can*

Turning to *may* and *can*, there are only 4 examples with *may/might*, and 1 example with *can* in our 1425-1520 subcorpus. Three of those five clearly exhibit a dynamic modal flavor: in 119 with *can* and 120 with *may*, the meaning is close to that of internal ability, and in 121 with *might*, to that of circumstantial possibility (the past tense of *might* is due to the sequence of tense).

(119) Cosyn, I trust **that ye and all the jentilmen of the shire** which have had knowleche of myn lordys seruauuntys **kan sey** that her-to-for they have not ben of that disposicion to be lavas of theyr tvngys when they had moore cause of booldnes than they have nowe. PASTON,II,445.474.12057

‘Cousin, I hope that you and all the gentlemen of the shire that knew my lord’s servants can say that up to now they have not been of the disposition to say too much (lit. be wasteful with their tongues) when they had more cause for boldness than they have now.’

(120) And as I conceiue to my grete comfort and gladnesse, my saide brothre is wele recouered and amended, thanked be God, and soo I truste **he may nowe spare you**. Wherupon I haue writen vnto him, if he may soo doo, to licence you to come ouer vnto me ayen; PASTON,II,439.470.12026

‘And as I understand to my great comfort and gladness, my brother mentioned above is well recovered and cured, God be thanked, and so I hope he can now do without you. Given that, I have asked to him, if he can do so, to let you come over to me again;’

(121) And sire, I was with my lady of Southfolke at this day hopyng **that I myght have hade hyre at sume leysyre** that I myght a spokyn to hyr ffor the money, but trwly sche was very besy to make hyre redy, ffor sche is redyne to Cauntyrbery as this same day, STONOR,II,14.049.830

‘And sir, I was with my lady of Suffolk at this day, hoping that I could have her at some leisure so that I could speak to her about the money, but actually she was very busy to make her ready, as she was riding to Canterbury that same day.’

The remaining two examples, in 122 and 123, are less clear, and allow for different interpretations. On the one hand, they could be taken to exhibit a circumstantial possibility meaning. On the other, in both cases the hope report is given in the context of a request, and the content of the hope is essentially the situation which the speaker asks the addressee to create. In direct requests where the beneficiary is themselves the requester, *may* is commonly used in the embedded clause in our subcorpus, as found by [Castle et al., 2012]. So it could be that the choice of the modal in the hope reports in 122 and 123 is influenced by the pragmatic role of an indirect request that the sentence plays. Finally, for the particular example in 122 it can also be argued that *may* in it has the permission meaning.

(122) I beseche your good fadyrhod that yt wylle plese yov to speke with the Abbot of Dorchester that I may have suche fe as Marmyun had with hym with every thyng acordyng as he had: for I trust **thorov your good fadyrhod that I may have hyt.** STONOR,I,140.031.514

‘I beseech your good fatherhood that it will please you to ask the Abbot of Dorchester that I have such a fee as Marmyun had with him, with everything just as he had: **for I hope that through your good fatherhood I ___ have it.**’

(123) I pray your good maistership to send to the shirreve that my seid kynnesman may ben casid <...> and I hope, if God vouchsaf **that the mater may come to reson,** to sauf hym harmles, <...> PASTON,II,86.282.8122

‘I ask your good mastership to send to the sherif [and ask him that] that kinsman of mine were let out [from jail] <...> and I hope, God permit, **that the matter can be set right**, to save him harmless, <...>’

The range of meanings that *may/might* and *can* could have in hope reports in our subcorpus is not surprising: those are all normal meanings for those modals at the time. We can use as a quantitative benchmark the study of [Gotti et al., 2002], who classified about a thousand uses of *may* in M3 and E3 subcorpora of the Helsinki historical corpus of English, with the M3 subcorpus featuring texts from the period of 1350-1420 (and thus immediately preceding the period we are considering in this section), and the E3 subcorpus containing texts from 1640 to 1710. [Gotti et al., 2002, p. 94] analyze 19% of the 677 instances of *may* in their 1350-1420 subcorpus as conveying internal ability, and 53% as conveying circumstantial possibility. For the 1640-1710 subcorpus, they give the ratios of 6% for internal ability, and 35% for circumstantial possibility. Furthermore, the innovative meaning of deontic possibility, or permission, is counted at 6%.

Extrapolating from [Gotti et al., 2002]’s data, we can conclude that in our subcorpus containing texts from 1425 to 1520, *may*’s distributional profile in terms of shares of particular modal flavors is very close to that of *can* in Present-Day English (for the latter, see [Coates, 1983, p. 86]).

Despite that semantic similarity, there is a vast discrepancy between the present-day rates of the use of *can* under *hope*, and the use of *may* in our 1425-1520 sample. For the present-day distribution, we can use the following estimates. Table 3.4.6 is based on the Corpus of Contemporary American English (COCA), covering 1990-2012, with 450M words. The table provides the number of occurrences of strings “hope”, “hopes”, “hoped” followed by the strings “can”, “will”, “ll”, and “shall”, within a 5-word right window. Not all of those examples would feature a genuine modal embedded under verb *hope*, but a brief examination shows that the sought constructions are frequent enough among the results that we can use the obtained frequencies as decent estimates.

	hope, hopes, hoped
can	2890
will	9348
'll	1690
shall	28
TOTAL	13956

Table 3.4: Estimates of *can* vs. future markers in COCA (1990-2012)

Table 3.4.6 provides the results of identical searches within the Corpus of American Soap Operas (CASO), covering 2000-2012, with 100M words. In that corpus, consisting of scripted dialogues intended to imitate everyday speech, the prevalence of *can* is even higher than in the multi-genre COCA.

	hope, hopes, hoped
can	2505
will	1345
'll	1306
shall	3
TOTAL	13956

Table 3.5: Estimates of *can* vs. future markers in CASO (2001-2012)

If we now compare the present-day data with the similar data from the 15th century provided in the same format, the difference becomes apparent:

	PCEEC 1425-1520	COCA 1990-2012	CASO 2001-2012
can/may	may: 2%	can: 21%	can: 49%
will, shall, 'll	98%	79%	51%

Table 3.6: 15-century *may* vs. present-day *can* under verbs of hoping

NB: The figures for COCA and CASO are estimates.

One might try to argue that perhaps the difference in usage between the two periods is due to some difference in what kind of hopes were expressed by the speakers of the time. But that does not seem to be likely, as a considerable number of examples from our subcorpus that does not feature *may* or *can* may be rendered into Present-Day English with *can*:

(124) I truste to God ye schall com home to London or Crystemese.

CELY,65.050.1088

≈ ‘I hope you can come home to London before Christmas.’

(125) Iff she be my verry goode ladye, as she hathe seyde hertoffore þat she wolde be, I hope þat she wolle speke wyth hym. PASTON,I,453.142.4417

≈ ‘If she is my very good lady, as she said before that she’d like to be, I hope that she can speak with him.’

I am not arguing here that the Present-Day English renderings in 124 and 125 have exactly the same meanings as the 15-century examples: I do not think they do. Yet in the discourse situation where the 15-century examples were used, my renderings with *can* in 124 and 125 would serve the speaker’s intentions reasonably well. Yet we only see possibility modals under verbs of hoping very infrequently in PCEEC 1425-1520. We cannot predict that fact from the compositional semantics alone: some other factors must be at play as well:

(126) **Insufficiency of the compositional semantics:**

The absence of *may* from the complements of hoping in PCEEC 1425-1520 is due to a non-semantic factor.

To sum up, there are two significant facts about *may* under verbs of hoping in the 15th-century subcorpus of PCEEC: first, the modal is almost absent from that context, and second, as a comparison with Present-Day English shows, the absence of *may* cannot be explained merely on the basis of the range of its meanings and the semantics of hoping attitudes. Some further extra-semantic factors must have caused the modal’s absence.

What can such factors be? It is possible that the force at play here is the simple inertia of use. The grammar creates a wide space of possibilities for language users, and we have no reason to believe that *may* was grammatically ruled out under verbs of hoping — in fact, we do observe some such occurrences. But language users are not required to exhaust all the possibilities provided by the grammar at the same rate. In particular, it is conceivable that speakers would use frequently only those expressions

that are either heard frequently, or else are highly preferable due to some pragmatic factors. But if a compositionally possible expression is neither, we can easily not see it used very often. In the next section, however, we will see a synchronic slice of Early Modern English where *may* became a relatively frequent modal under *hope*, and after that, I will suggest what change could have led both to the increase of *may*'s frequency under *hope*, and to the creation of the *may-under-hope* construction with elevated flavor and without the usual existential semantic contribution by the modal.

3.5 Modals under verbs of hoping in the 17th century

In the data from a second subcorpus of [PCEEC, 2006] that I examined, covering the period of 1630-1681, and containing about 356K words,¹⁰ the modal and non-modal complements of verbs of hoping are distributed as follows:

may	might	can	must	shall	should	will	would	nm subj	nm other	ALL
7.5%	1.2%	0.9%	0%	12.1%	1.7%	47.0%	2.0%	0%	27.7%	100% (N=347)

Table 3.7: Complements of verbs of hoping, 1630-1681, PCEEC

Comparing the data in Table 3.5 to the 15-century data in Table 3.4.1, we can note the following major changes: 1) in the second half of the 17th century the role of the most frequent modal was taken over by *will*, while in the 15th century it belonged

¹⁰The subcorpus included the following collections of [PCEEC, 2006]: *The Works of Sir Thomas Browne, letters* (21K) [Keynes, 1964], *The Conway Letters* (58K) [Marjorie Hope Nicolson, 1992], *The Correspondence of Thomas Corie* (5K) [Hill, 1956], *The Correspondence of Bishop Duppa and Sir Isham* (28K) [Isham, 1951], *The Correspondence of Arthur Capel, Earl of Essex* (25K) [Pike, 1913], *The Flemings in Oxford* (40K) [Magrath, 1904], *The Correspondence of the Family of Haddock* (6K) [Thompson, 1965], *The letters of Andrew Marvell* (11K) [H. M. Margoliouth, 1971], *The letters between Charles II and his sister Henrietta* (8K) [Norrington, 1996], *The Letters of Dorothy Osborne to William Temple* (71K) [Smith, 1959], *The letters of Samuel Pepys and his family circle* (42K) [Heath, 1955], *The Petty-Southwell correspondence* (22K) [Marquis of Lansdowne, 1967], (8K) [Thompson, 1875], *The Tixall letters* (12K) [Clifford, 1815].

to *shall*; 2) the unambiguous inflectional subjunctive completely disappeared from hope reports; and 3) *may/might*, unlike in the 15 century, were used in a significant share of the complements of hoping attitudes.

3.5.1 *will and shall*

In the 15-century subcorpus, *will* was mostly restricted to 2nd person and 3rd person animate subjects, but *shall* was close to being a default form, being used with all kinds of subjects. In the 1630-1681 subcorpus, the situation is changed: *shall* is mostly restricted to 1st person subjects (37 out of 42 instances), while *will* never occurs with a 1st person subject. The two modals thus almost reach a complementary distribution. Besides the restrictions on their subjects, there seems to be no significant distributional restrictions put on either modal. For instance, 127 and 128 illustrate that both *shall* and *will* may be used in hope reports that pragmatically serve as requests, and 129 and 130 both feature hopes about circumstances which the speaker has little control over.

(127) and I hope I **shall** heare of your health by the next Poste.

CONWAY,57.011.338

(128) I hope you **will** acquaint none but my sister with my wife's concernment,

CONWAY,153.029.935

(129) I hope when our Case of Clay is broaken by Naturall Death, Wee **shall** no longer peep through its Craks and Cranyes, but then look round about us freely, and see cleerely the things which wee now do but grope after.

PETTY,10.003.66

(130) But I hope all these rugged paths **will** best conduct me to my Journeyes end.

PETTY,88.046.1194

3.5.2 Non-modal non-subjunctive forms

Non-modal non-subjunctive complements in the 1630-1681 subcorpus perform more or less the same function as they did in the 15-century corpus: they are used when the content of a hope is a past or present situation rather than a future one. 131 and 132 are representative examples.

- (131) Sir - I wrot you the 24th of December by my Lord Arlingtons special order,
and doe hope **it came safe to you.** CORIE,30.009.108
- (132) but hearing that he getts the better of them in the House of Lords, I hope **he
is in no great danger,** CONWAY,447.087.2533

In rare cases, a present-tense non-modal form may be oriented towards the future, as in 133 and 134, though a modal form should have been just as appropriate. It is hard to see any semantic import of the use of a finite form instead of a modal in these examples.

- (133) I hope **you find some Company with whom you may delight to Con-
vers;** BROWNE,201.048.940
- (134) Kind Unckle I rec~d y^r letter and the 20^s shillings y^u sent me, my Tutor
likewise the ten pounds, for which I hope, y^u **expect noe other recompence
then dutifull obedience, and a gratefull mind,** which I haue had, haue,
and will god willing retaine to the end. FLEMING,111.024.391

3.5.3 The absence of the subjunctive

The main difference between the non-modal complements of verbs of hoping in the 15th and the 17th subcorpora of PCEEC is the complete disappearance of the inflectional subjunctive in the later one. While in the 15-century subcorpus 8.9% examples featured an unambiguous subjunctive, in the 1630-1681 subcorpus there are no such examples whatsoever.

Hopes about good health, in which the subjunctive was so frequent in the 15th century, are still used in the 17th century. But with the disappearance of the sub-

junctive, its role has been taken up by other, non-specialized forms. Thus some of hopes about good health feature an indicative lexical verb, 135, while others, a modal, 136. As the forms used are no longer specialized for this context, hopes about health do not form a distinguished category anymore. For instance, in 137 we see a hope concerning the addressee's health and his chariot at the same time.

(135) Soe hoping that you **are** all well and with my duty to your selfe, and my loue to my brothers and sisters I rest S^r Your dutifull Son, Henry Fleming.

FLEMING,266.101.1691

(136) and I hope in God that you **will** now recover your health

CONWAY,265.069.1965

(137) I hope your health and chariot too **will** be settled in that due proportion and improvement as either you or Sir John Werden can covet.

PETTY,54.027.741

3.5.4 *can*

With only 3 occurrences out of the 347 complements of verbs of hoping in the sub-corpus, *can* remains a very rare modal in this context. When it is used, it has the expected meaning of internal ability or circumstantial possibility (those two may be hard to distinguish, as, e.g., in 138 which could be construed as either).

(138) and therefore I am the more desirous to presse you to a constant correspondance, as well because your letters will make a cheif part of my entertainment there as because it will be an argument that I am retained in your memory, in which I shold be loath to loose a place, if I may hope **you can continue your favour to one that so little knowes to meritt it, at so great a distance.**

CONWAY,191.040.1209

3.5.5 *may*

Unlike in the 15-century subcorpus where it was almost absent, *may* (together with *might*) is used in 8.6% of cases in the 1630-1681 subcorpus.¹¹ Semantically, examples with *may* do not form a single “focused” group, exhibiting instead a wide range of meanings for the modal. 139 illustrates the meaning of circumstantial possibility (and features the past-tense form *might* apparently agreeing with the past-tense form *could* from the higher clause). In 140, the modal can be interpreted as conveying either circumstantial possibility or perhaps epistemic possibility. In 141, the modal might have been a genuine deontic, or perhaps a less semanticized instance of *may* in an indirect request having the form of a hope report.

(139) and in Earnest if I could hope **it might ever bee in my power to serve him** I would promise something for my self; OSBORNE,76.034.1765

(140) I hope travayling and taking the fresh ayre and surceasing some time from my studyes, may recruitt my spiritts so much and chauff the mass of my blood that this coolness and obstructedness of my arme may be dissipated, CONWAY,208.048.1446

(141) Dearest Unkle, I hope **now I may venter to say something for myself.** TIXALL,59.022.406

Despite the difficulty of confidently assigning the modal to a single semantic category in each of these examples and others like them in the sample, it should be clear from 139-141 that in our 1630-1681 dataset *may* in the complements of verbs of hoping can have a range of modal flavors. That range is mostly the same as the range the modal is known to exhibit in the language as a whole at that time.

However, what is unexpected given the semantics of the modal in other contexts is *may*'s contribution in 10 examples (out of the total 30) that feature a precursor of the Present-Day English construction in 87 and 88:

¹¹[Visser, 1973, §1678] implies that *may* was once very frequent under *hope*, and then replaced in later English by *will* and non-modal forms. Our data show that actually there was never a stage when *may* was more frequent than *will* or non-modal forms.

(142) But I hope **in time your Ladiship may at least recover to that measure of health** you had before you went into Ireland. CONWAY,231.062.1811

(143) I hope **y^t our next interview may be with the greater ioy and comfort.** HADDOCK,1.001.6

Three of these examples, including 142, describe hopes regarding someone’s good health. The other seven, including 143, concern other subjects, but exhibit at least some degree of ceremoniality/elevatedness: they not only report a hope, but seem to do it in a solemn and relatively formal way. Determining whether a given hope report belongs to that category or not involves a judgement call, and it should be stressed that a different analyst may have marked more or less examples out of the sample of 30 as belonging to this semantic group. But while my analysis of any individual example may be questionable, I believe that the very existence of such a category of cases in the data is hardly disputable.

3.6 Hypothesis: *may* replaced the subjunctive in elevated hopes about good health

Consider the following differences between the 15th and the 17th century distributions of modals in the complements of hoping attitudes:

(144) **Some of the changes in the complements of hoping attitudes:**

15th century	mid-17th century
<i>may</i> is almost absent	<i>may</i> is prominent
the subjunctive is prominent	the subjunctive is completely absent
the subjunctive is used in elevated hopes about good health	<i>may</i> is used in elevated hopes, including hopes about good health

I propose a hypothesis which takes the changes in 144 to be related to each other. In short, I propose that *may* became prominent under verbs of hoping thanks to its taking over the function that the subjunctive performed — that of signaling that an

elevated hope about a serious matter is being expressed. A more detailed form of the proposal is as follows:

(145) **The good-health hypothesis for *may* under *hope*:**

Stage 1. The subjunctive has almost disappeared from under verbs of hoping. It is only retained in hopes about good health.

Stage 2. The subjunctive dies out completely in that context. However, the speakers still perceive the need to use distinctive marking for the category of hopes about good health formerly expressed with the subjunctive. They choose *may* as the marker of an elevated, ceremonial hope about good health. The distributional replacement is the primary change, and the lexical meaning of the modal gets deduced by the speakers based on the meaning of the construction as a whole (cf. “meaning equations” of [Eckardt, 2006]). The reconstructed meaning for the modal in this syntactic context does not contain existential quantification over worlds as the construction as a whole does not.

Stage 3. The elevated construction with non-quantificational *may* generalizes its meaning from hopes about good health to all high-register hopes about serious matters. At the same time, the rise of *may* under *hope* with special semantics makes it easier for the speakers to use all semantic variants of *may* in that syntactic context, leading to an across-the-board rise in prominence, bringing about the distribution of the mid-17th century.

In the data, we observe directly Stage 1 and the end result of Stage 3. Stage 2 was not directly registered in the data we discussed above. Moreover, to cut a long story (to be told below) short, at the moment there is no solid evidence either for or against that stage’s actual existence. Therefore 145 remains a hypothesis at this point. In what follows, I will discuss why the individual components of the hypothesis are plausible, and what kind of evidence is lacking in order to prove or disprove it.

First, consider the disappearance of the subjunctive. As English has been losing distinctions between inflectional endings, the subjunctive was gradually fading out from the language. The story of the loss of the subjunctive is complicated: it

is not that certain inflectional forms disappeared from all syntactic contexts across the board. Instead, the loss happened at different times for different syntactic environments. For example, Old English used the subjunctive in matrix questions like “Whether your mother **be** not the said Mary”, but, as [Visser, 1973, §854] observes, it has been losing its frequency throughout the Middle English period, and virtually died out by the end of it, replaced by the indicative and by modal constructions with *shall*. On the other hand, the subjunctive in matrix wishes and prayers, not restricted to fossils like “Long **live** the kind”, has still been used in the times of Shakespeare, and even beyond, with a number of different verbs, cf. [Visser, 1973, 841], though generally the function of the subjunctive in such wishes and prayers has been taken over by *may*. The bottom line is, the subjunctive has been losing ground for many centuries, and we currently have little understanding of why it was lost in a particular syntactico-semantic context at that particular time.¹² So while we do not know why the subjunctive disappeared from under verbs of hoping between the 15th and the mid-17th centuries, we can take its disappearance to be a fact that was likely caused by some independent reason.

Second, why should the speakers of Early Modern English use *may* to replace the disappearing subjunctive, especially given that it required them to construct a special semantic variant for the modal? The partial answer for that is that English speakers used *may* to replace the subjunctive many times, in different contexts. I will use several examples described by [Visser, 1973] to illustrate:¹³

(146) *may* replacing the subjunctive in different contexts:

a. Matrix wishes and prayers

- The subjunctive: Old English through the 17th century, and in iso-

¹²For the subjunctive in Present-Day English, see the detailed description in [Chiba, 1987]; in particular, pp. 3-4 contain the most extensive list of modern verbs, adjectives and nouns that at least sometimes allow subjunctive complements.

¹³One should be cautious using Visser’s conclusions, as they come from the pre-corpus era when it was prohibitively hard to test rigorously statements about the rise and disappearance of particular forms, cf. fn. 11 above. Still, Visser’s data serves as a useful first approximation.

lated fossils after that, [Visser, 1973, §841]

- *may*: isolated examples in Middle English, well-established since the 16th century, [Visser, 1973, §1680]

b. Concessive clauses (without a concessive conjunction)

- The subjunctive: “with great frequency in all periods, with the exception of Present-Day English”, [Visser, 1973, §884]
- *may*: starting in the 14th century, [Visser, 1973, §1666]

c. Relative clauses “with final import” (e.g., “*to find a salve which may her life preserve*”)

- The subjunctive: common in Old English and Middle English, but no examples after Shakespeare, [Visser, 1973, §876]
- *may*: examples throughout all the periods, including Early and Late Modern English, [Visser, 1973, §1677]

As we can see from 146, it was not unusual for the fading out subjunctive to be replaced by *may*. That replacement could happen at different times in the history of the language, and at different pace in different contexts. Given that in a number of contexts the subjunctive and *may* coexisted, performing the same function, and hence presumably with similar semantics, for centuries, the affinity between the two forms must have been evident to the speakers who, of course, often would not have known about the history of non-current replacements. Summing up, it is not unusual in itself that the speakers may have chosen *may* to replace the subjunctive in hope reports.

Third, even though *may* could replace the subjunctive, so could other forms: *must*, *shall*, and the indicative. So we need to explain why it was *may* that, by hypothesis, took over the niche for expressing hopes about good health. Once we recall the distribution of those other forms in the 15th century data we discussed, the choice of *may* appears natural. As for *shall* and the indicative, they already were very prominent, unmarked forms under verbs of hoping, and thus their expansion

into hopes about good health would have erased the markedness of the construction. If the speakers wanted to preserve that markedness, they had to choose a different replacement form. *may* was a good choice precisely because it was very rare in the context, and thus could easily serve as a marked form. As for *must*, though it could replace the subjunctive in a few constructions, its successes in that belong to Late Middle English at the latest. In fact, in matrix wishes *must*, having gained prominence at the expense of the subjunctive in the Middle English period, has been being ousted from the context by *may* since the 15th century, [Visser, 1973, §1692]. Even more strikingly, [Castle et al., 2012] report that in the 15th-century part of PCEEC, *must* has virtually disappeared from the complements of verbs of asking, replaced by *may*, even though *must* was frequent in that context earlier. In other words, out of *may* and *must* as candidates for replacing the subjunctive, *may* was clearly the winner, while *must* was a form that itself was on the retreat in such contexts.

Fourth, if *may* replaced the subjunctive distributionally, the speakers would have had to both recover the semantics for the modal from the semantics of the whole construction, as in an algebraic equation one solves for the x (using the metaphor by [Eckardt, 2006]). The creation of a new semantic variant may then be explained: the non-quantificational meaning of *may* didn't have to be obtained through direct transformation of its quantificational meaning, which then allowed the modal to enter the new context. Indeed, if the acquisition of the non-quantificational meaning were the driving force behind *may* entering hope reports, we would not expect the modal to enter only into that type of contexts. There are plenty of places in the language into which you can insert an almost truth-conditionally empty item. On the other hand, if the primary element of the change was a change in surface distributions with *may* replacing the subjunctive specifically under verbs of hoping, we do not necessarily expect the new meaning to expand beyond that. Newly created lexical items may often expand their distribution, of course, but in order for them to do that, there must be some factor favoring them over the older forms of expression. In the case of a nearly empty item entering a particularly restricted type of contexts, it is apparently not so easy to have factors favoring its expansion. Summing up, the

good-health hypothesis laid out in 145 explains why the highly irregular variant of *may* we observe under *hope* could have arisen.

It should be stressed that our proposal explains well the following synchronic fact of Present-Day English. When [Portner, 1997] discussed non-quantificational *may*, he argues that non-quantificational *may* in matrix wishes and under attitude verbs such as *pray* and *hope* have different semantics. If such special variants are created when the speakers solve semantic equations for the context-specific meaning of *may*, such differences are expected. But if not, we need a separate account of why the regular *may* could give rise to different non-productive non-quantificational variants in different linguistic contexts.

Finally, the modern elevated flavor of the *may-under-hope* construction, under our hypothesis, is directly inherited from the subjunctive that the non-quantificational variant of *may* replaced.

The strong points of our “good-health hypothesis” are thus as follows: it explains several changes in the complements of hoping attitudes as related to each other rather than coincidental; the replacement of the subjunctive by *may* is a plausible development, as the same replacement occurred in other contexts as well, and as the two forms would likely be in synchronic variation in some contexts at the time of change within hope reports; under the hypothesis, it is explained how a special semantic variant of *may* was created, and why the construction has solemn, elevated flavor in the present-day use.

But there is one big weak point to the hypothesis as well: we do not have immediate evidence that the special variant of *may* directly replaced the subjunctive in hopes about good health. There is no evidence against such a development either, but a direct confirmation would be desired in order to declare the hypothesis proven rigorously.

The best possible type of evidence would be to find specific individuals who earlier in their lives used the subjunctive, but then switched to using *may* in hopes about good health. The next best thing would be finding a family or another tightly-knit circle of authors which show the same progression from the subjunctive

to *may* across generations, with younger authors switching to the innovative form. (Cf. [Raumolin-Brunberg, 2005] for an example of how one may find such kind of evidence.)

Unfortunately, the data in [PCEEC, 2006] do not seem to include either of those. In the early part of the corpus that formed our 1425-1520 sample, I did not find any instances of *may* used in a good-health hope. Of course, the change may have happened later, but an examination of *may* under verbs of hoping in the slightly later letters from the 16th century in the corpus did not provide me with such examples either: a subcorpus of letter collections from the second quarter of the 16th century (210K words) only featured one instance of *may*. The next temporal slice of PCEEC covering the 2nd half of the 16th century (387K words) had 11 instances of *may*, but none of them was in a hope report regarding good health. If anything, the propositional content of those hope reports featured situations beneficial for the authors and their circles in a greater or equal measure than for the recipient, so the kind of *may* used in them might be closer to *may* under verbs of asking rather than to the subjunctive of the hopes about good health, so it is not obvious that those data disprove the hypothesis.

The fact that the data from PCEEC are not helpful may have extra-linguistic reasons: the 1425-1520 material and the later 16-century material may be not directly comparable. The earlier letter collections mostly belong to families and family circles of reasonably, but not spectacularly well-off individuals, such as local gentry or prominent merchants. But a considerable portion of texts in which we find *may* under verbs of hoping in the late 16th-century part of the corpus belong to a very different social environment: 5 out of 11 are from the correspondence of queens, kings, and their close kin. Perhaps examining a larger array of texts, and thus increasing the number of hope reports considered, may give us a more accurate picture of the early stages of the rise of *may* in this context. Unfortunately, there are not very many letter collections survived from the relevant time period, so it might be hard to enlarge the size of the sample without considering other text types. And using texts of different types might lead to new problems, as the text type and genre may affect

the language used.

Yet another uncertainty concerns the dialectal status of the group of good-health hopes: while they appear in the letters of several different authors (rather than of a single person), the bulk of the 15th-century examples come from just two letter collections, each associated with a single family and its circle. Using just PCEEC, we cannot tell how representative the usage of those two collections was.

Once we consider those and other uncertainties which our data do not resolve, it is easy to see that there are very many possible sequences of events that could have happened. In some of those possible scenarios, the good-health hypothesis is verified, in others, falsified. For instance, suppose that the subjunctive was largely restricted to hopes about good health only in certain dialectal areas, and furthermore, that in those areas *may* indeed replaced the subjunctive. The question then is whether the literary language inherited the *may-underhope* construction from those dialects, or rather it was lost, and the present-day construction has another source. A rough list of issues for future research may be compiled:

- What was the geographical/social range of the good-health hope construction with the inflectional subjunctive?
- Was the good-health subjunctive directly replaced by *may* in any variety of Early Modern English?
- Were the first instances of non-quantificational *may* under verbs of hoping from the good-health-hope group or not, in any variety of Early Modern English?

Those questions are much more specific than any questions about the development of *may* under verbs of hoping that we could have formulated *a priori*, without examining the actual data.

3.7 Conclusion

The present chapter aimed to achieve three different goals. On the purely descriptive level, it describes the modal system in the complements of verbs of hoping in two sub-

corpora of [PCEEC, 2006], one covering roughly 1425-1520, and another, 1630-1681. This description may then be compared to similar descriptions of the modal system in other syntactic or semantic contexts. As the results from [Castle et al., 2012] show, different attitude contexts may feature very different distributional profiles of modals, and the eventual goal would be to explain where exactly those differences stem from. In particular, one will need to determine which of the differences across contexts may be explained on the basis of the synchronic semantics and syntax alone, and which require appealing to some usage-based, frequency-sensitive explanations.

Second, I have shown through a comparison between the 15th-century data and present-day data on modals under verbs of hoping that the empirical distribution of a group of items sometimes cannot be explained on the basis of semantic facts alone. The example I use to show this is the near-absence of *may* from hope reports in the 15th-century. There are no semantic constraints against such usage: the semantics of *may* at the time was very close to the present-day semantics of *can*, and yet in Present-Day English, *can* is common under hoping attitudes, while in the 15th century, *may* was almost absent from that context. Furthermore, as *may* was not completely banned from that context, there is no reason to think there existed any syntactic rule against the combination.

Finally, I put forward a new hypothesis about how *may* under verbs of hoping could have grown prominent and developed the special lexical variant featured in modern examples such as 87 and 88. The proposed good-health hypothesis ties the rise of *may* to the loss of the inflectional subjunctive in the context, and explains the creation of the non-productive non-quantificational variant of *may* restricted to hope reports as the result of a semantic analysis that speakers performed on the whole construction with *may* that preserved the interpretational import of the earlier construction with the subjunctive.

Chapter 4

Variable-force modals in Old and Middle English

The ancestor of the Present-Day English (PDE) necessity modal *must*, Old English (OE) modal **motan*, was not a necessity modal.¹ Historical linguists commonly describe OE **motan* and Middle English (ME) **moten* as ambiguous between a possibility and a necessity reading: when they try to identify which modal force OE **motan*/ME **moten* has in individual examples in the historical texts, they conclude that the possibility reading fits, but the necessity one doesn't, or vice versa. Possibility is believed to have been predominant in Early Old English, and necessity, to have become predominant at some point during the Middle English period. It is only by the late 15th–early 16th century that ME **moten*/Early Modern English *must* becomes a pure necessity modal that it is today.²

¹The star in **motan* and **moten* indicates that the form cited is reconstructed rather than directly observed: there are no instances of the infinitive of the modal in either OE or ME.

The orthography of OE and ME shows significant variation, and I use the following convention throughout the paper. When referring to OE and ME lexemes, I use the primary dictionary form from [Bosworth and Toller, 1898] and [MED, 2002], respectively. However, when citing a particular form from a specific example, I use the same orthography as in the example. Thus in the main text I write *weorþ* for the lexeme, but *wyrðne* when referring to the instance of that same word in 153.

²The project reported in this chapter has benefitted from discussions with Cleo Condoravdi, Antonette diPaolo Healey, Daniel Donoghue, Regine Eckardt, Kai von Fintel, Olga Fischer, Mar-

I propose a different account of the semantic evolution of **motan*/**moten*/*must*. On the basis of a primary analysis of Early OE **motan* in the Alfredian prose, I argue that around the late 9th century it was an unambiguous modal with a meaning different from either that of pure possibility or that of pure necessity. Instead, it was an instance of what may be descriptively called *variable-force modality*. Due to the lack of a perfect correlate in modern English, both possibility and necessity modals may be used to render **motan* in modern translations, creating the impression of ambiguity where there is none in the source language. A similar phenomenon exists in several languages of the North-American Pacific Northwest, where recent fieldwork uncovered variable-force modals with analogous behavior in St'át'imcets ([Rullmann et al., 2008]), Gitksan ([Peterson, 2010]) and Nez Perce ([Deal, 2011]). The meaning I propose for Early OE **motan*, however, is different from any of those proposed for the Pacific Northwest modals: I argue that in the Alfredian prose, a statement of the form *motan(p)* 1) asserted that situation *p* is an open possibility, and 2) presupposed that if *p* is an open possibility, then that possibility will get actualized.

Primary analysis of ME **moten* in the so-called 'AB language' shows that in the Early Middle English period, the situation changes: in *Ancrene Wisse* (2nd quarter of the 13th century), **moten* is often used as a pure-necessity modal, though non-necessity uses also occur. Unlike the unambiguous Early OE **motan*, Early ME **moten* cannot be assigned a single meaning. Its main pure-necessity readings are

tin Hackl, Irene Heim, Sabine Iatridou, Ian MacDougall, Lisa Matthewson, Paul Portner, Katrina Przyjemski, Donca Steriade, Sali Tagliamonte, and Elizabeth Traugott. Earlier stages of this work were presented at University of Ottawa, Georgetown University, Rutgers University, NYU, at the workshop on Systematic Semantic Change at UT Austin, and at SALT at UC Santa Cruz. Needless to say, the work enormously benefitted from the comments made there.

Without the York-Toronto-Helsinki Parsed Corpus of Old English prose (YCOE) and the Penn Parsed Corpus of Early Middle English (PPCEME), it would have become close to impossible to create the samples used in this chapter. The extensive commentary to *Boethius* in [Godden and Irvine, 2009] was of great help in identifying the correspondences between the Latin original and the OE translation for that book.

those of circumstantial necessity and of moral necessity. Non-pure-necessity uses occur in wishes and in permission/open-possibility statements. Those types of uses differ too much to be covered by a single uniform meaning, so the ME **moten* can only be analyzed as genuinely ambiguous between \diamond (possibility) and \square (necessity). As the different readings are distinguished from each other by a number of features other than the modal force, it remains possible for the addressee to recover the intended meaning.

While both Early OE **motan* and Early ME **moten* may be rendered by possibility and necessity modals of Present-Day English, in the former case it is due to inadequate resources of the target language, and in the latter, to genuine ambiguity in Middle English. The findings about Early OE **motan* and Early ME **moten* thus add two diachronically connected datapoints to the typology of variable-force modals. Early OE features a true, unambiguous variable-force modal. Early ME features a modal synchronically ambiguous between pure-necessity and non-necessity readings. Moreover, a system of the first kind may develop into a system of the second kind over time.

The plan of the chapter is as follows. Section 4.1 briefly reviews the literature on the semantics of OE **motan* and ME **moten*. Section 4.2 describes the distribution of Early OE **motan* in the Alfredian prose, and argues that the modal in the language of those texts asserted the openness of a possibility, and presupposed that if that possibility were given a chance to actualize, it would. That presupposition is then shown to create the variable-force effect observed for Alfredian **motan*. Section 4.3 compares Alfredian variable-force **motan* with the variable-force modals of the Pacific Northwest, and concludes that empirically, the Alfredian OE modal was a different creature. Section 4.4 shows that in Early Middle English, **moten*, the direct descendant of OE **motan*, was ambiguous between necessity and non-necessity meanings. Section 4.5 concludes.

4.1 Earlier accounts of the semantics of Old English **motan* and Middle English **moten*

The *Oxford English Dictionary* [OED, 2002] lists OE **motan* under *mote*^{v.1} with “possibility or permission” as the first meaning, and “necessity or obligation” as the second one. For both meanings, the earliest OED examples are from *Beowulf*, one of the earliest Old English texts of substantial length:³

(147) *Listed under OED sense 1, “expressing possibility or permission”:*

Gif he us geunnan wile, þæt we hine swa godne gretan moton.
if he us grant will that we him so good greet mot.PRS.PL

‘If he will grant to us that we **moton** greet him, the good one.’ (Beo:347)

(148) *Listed under OED sense 2, “expressing necessity or obligation”:*

Londrihtes mot þære mægburge monna æghwylc idel
of.landright mot.PRS.IND.3SG of.that kin of.men each idle
hweorfan.
wander

‘Every man of that kin **mot** wander without the rights of the rightful residents.’

(Beo:2886)

It is easy to see what logic is behind the characterization of 147 as an example where **motan* conveys possibility, and of 148 as one where it conveys necessity. If we substitute *moton* in 147 with modern \diamond -modal *may* or *can*, the example makes sense, but if we use *have to* or *must*, the result does not sound very natural to the modern ears:

³I aim to minimize by-morpheme glosses, and to use wordforms of modern English whenever possible. For modals other than **motan* I provide the modern descendant of the modal in the gloss, even though in many cases the modern modal is no longer capable of expressing the meaning conveyed by the OE ancestor. In translations, I aim to keep the structure of the sentence close to that of the original example, at the expense of naturalness from the point of view of Present-Day English. I leave **motan* untranslated, in order not to smuggle my analysis into the translations.

- (149) a. *OK* ‘If he will grant to us that we **may/can** greet him’
 b. * ‘If he will grant to us that we **must/have to** greet him’

But if we apply the same substitutions to *mot* in 148, the pattern is the opposite, 150: the passage from which this sentence is taken describes a disastrous situation after the death of Beowulf, with many terrible things for “that kin” which just became inevitable. In that context, simply being able to wander without rights is clearly not what the speaker is talking about.

- (150) a. * ‘Every man of that kin **may/can** wander without the rights of the rightful residents.’
 b. *OK* ‘Every man of that kin **must/has to** wander without the rights of the rightful residents.’

Thus viewed from the perspective of the modern English modal system, the meanings of **motan* in 147 and 148 appear irreconcilably different, and the modal, ambiguous between \diamond and \square . This position is shared by the historical dictionaries of English other than the OED. For example, the standard Old English dictionary [Bosworth and Toller, 1898]⁴ lists “to be allowed, may, mote” as sense I for OE **motan*, and “to be obliged, must” as sense II. (A smaller number of examples is listed under sense II than under sense I both in the original dictionary and in its supplement [Toller, 1921].) The *Middle English Dictionary* [MED, 2002] lists a wide range of both possibility and necessity senses for ME **moten*, but the number of necessity examples recorded in [MED, 2002] for this later period is greater than that of possibility examples. Moreover, there are very few possibility examples from the 15th century recorded in [MED, 2002].

The near-consensus view on the semantics of OE **motan* and ME **moten* is thus as follows: 1) in OE, **motan* was predominantly a possibility modal; 2) at some point it started to have necessity uses as well (most researchers argue that it already

⁴The modern *Dictionary of Old English* [DOE, 2007], which is to replace [Bosworth and Toller, 1898] as the new standard dictionary, is currently in progress, and the entry on **motan* was not in the works yet at the time of preparation of this chapter.

happens in the earliest OE texts, cf. the position of [OED, 2002] on 148); 3) since around the 10th century, the percentage of necessity uses grew slowly but steadily, so that by the end of the Middle English period in the 15th century, possibility uses became very marginal, and disappeared completely in the 16th century.

The above description in terms of the relative frequency of possibility vs. necessity readings presupposes that each instance of the modal belongs to one of the two categories. For instance, [Ono, 1958] studies the ratio of possibility to necessity uses of **motan* starting from *Beowulf* through *Ancrene Wisse* to Chaucer and Malory. In *Beowulf*, Ono finds 31 instance of possibility **motan*, 1 instance of necessity **motan*, namely 148, and one “doubtful” use for which Ono could not decide which interpretation makes better sense. 13th-century *Ancrene Wisse* is the earliest text considered by Ono where, according to him, necessity uses become more numerous than possibility uses. In late 14th-century Chaucer, Ono finds the necessity meaning in 84% of all instances of ME **moten*, and in late 15th-century *The Tale of King Arthur* by Malory, he finds no possibility uses at all.

[Tellier, 1962] paints a very similar picture. Having examined the poetry of *Beowulf*, *Andreas*, *Judith* and *Elene*, and the prose of roughly the first half of king Alfred’s *Cura Pastoralis*, Tellier argues that in Early OE the sense of necessity for **motan* is “rarissime et exceptionnel par rapport au sens de *pouvoir*”. Tellier describes the primary meaning of **motan* in this period as that of possibility created by “circumstances, fate, or divine grace”. Tracking the further development of **motan*, Tellier argues that in the 10th century, the modal “develops an ambiguity”, with the necessity sense becoming “well attested”. For the (late entries of the) Peterborough Chronicle (the 12th cent.), Tellier argues that the majority of uses are still possibility ones, but in *Ancrene Wisse* (the 13th cent.), the possibility sense “se fixe dans des propositions où cette signification ne risque pas d’être ambiguë.” The two types of contexts in *Ancrene Wisse* where there is no such risk, according to Tellier, are complements of verbs of asking, and prayers to God. Regarding the language of Chaucer’s *Canterbury Tales*, Tellier argues that the possibility sense of **moten* is similarly restricted to several particular environments, namely to matrix wishes, complements

of verbs of asking, and the collocation *mot as wel*. Finally, in Malory's 15-century works, Tellier does not find any examples of **moten* conveying possibility, just as the extensive study of Malory's language by [Visser, 1946] did not.

Most other studies either address the semantics of **motan* during a shorter period (e.g., [Solo, 1977] or [Goossens, 1987]), or contain more general descriptions of the semantic evolution of **motan*/**moten* (e.g., [Visser, 1973, §1689, 1693], [Warner, 1993, Ch. 7], [Traugott and Dasher, 2002, Ch. 3]). All of them generally support the picture sketched above. That is not to say that there are no disagreements, be they about the interpretation of individual examples or about the precise timing of particular developments. For instance, [Solo, 1977] argues, against the more popular position, that before year 1000, the sense of necessity/obligation for **motan* is hardly attested. But on the whole, there is a wide consensus about the general lines of the development.

What is important for the argument I am going to make, however, is that there are numerous statements in the literature that suggest a more nuanced semantics for the modal than that of pure necessity or pure possibility. A more complex view is explicitly and extensively advocated for by [Standop, 1957], who proposes that in addition to the meaning of possibility, and perhaps that of necessity,⁵ OE **motan* also had a third meaning, which he paraphrases as “mir ist vergönnt, mir wird zuteil” (p. 69), “mir est bestimmt” (p. 75), “mir ist zugemessen” (p. 169) (“it is granted to me, it is bestowed upon me”, “it is determined for me”, “it is measured out for me”). Standop argues that the meanings of possibility and necessity in the case of **motan* both developed from that initial general meaning which combined possibility and necessity into an “Einheit”, where “Rechte und Pflichten” (“rights and duties”) coincide. Other informal characterizations of Standop's third meaning for **motan* include: “expression of human dependence (Ausdruck menschlicher Abhängigkeit)” (Standop's p. 68), “it is destined (beschieden)” (pp. 70, 78), “what is measured out

⁵It is hard to interpret Standop's position on the presence of the necessity sense in OE. On the one hand, he says on pp. 169–170 that OE **motan* lacked the meaning of pure, abstract necessity. On the other, on pp. 75–76 he calls the meaning of abstract necessity “rare” rather than completely absent, and provides an example where *motan* “ist fast normales müssen”.

(*gescrifan*) by fate (*wyrd*)” (p. 77). Standop argues that even though “no dictionary gives [it]”, his third meaning “falls into one’s eyes” as soon as one notices how the distribution of **motan* differs from that of any other modal (p. 68). Standop writes that “die Belege sind so zahlreich — vor allem weil viele nach unserer Deutung in neuem Licht erscheinen —, daß man nur recht wahllos einige Beispiele herausgreifen kann”⁶, [Standop, 1957, p. 70].

Some of the later scholars also acknowledge the complexity of the meaning that OE **motan* conveyed. [Visser, 1973, p. 1794], citing Standop, mentions paraphrases for **motan* such as “Fate has allotted to me to do this” (Standop’s third meaning) and “Fate has granted me the freedom to do this” (the possibility/permission meaning), and writes that “all these shades of meaning may have been present in Old English *mote*”. [Warner, 1993, p. 160] briefly suggests that Standop’s meaning could still have been present in the Alfredian-prose Gregory’s *Dialogues*, translated into OE by Wærferth in the late 9th/early 10th cent., and in Wulfstan’s Homilies from the early 11th century.⁷ [Solo, 1977], not mentioning Standop’s work, writes in the conclusion of his paper: “In none of these instances, except, perhaps, in very late Old English prose, does the verb [i.e. **motan* — *IY*] signify necessity or obligation in and of itself, although the contexts in which it appears at times imply necessity or duty as well as permission [emphasis the present author’s]”.

In my analysis of **motan* in the Alfredian prose, I will capture those intuitions formally by assigning to the modal a “variable-force” meaning that asserts openness of a possibility, and at the same time presupposes that if that possibility gets a chance to be actualized, it will. My proposal will differ from the proposals from the historical literature cited above in two respects: first, I restrict its scope to a particular, relatively narrow time period, and to a particular genre of texts; second, for that time period and for the corpus of texts considered, I argue that rather than having a range of different available readings, **motan* was an unambiguous modal.

⁶“Examples are so numerous — mainly because our interpretation sheds new light on many — that one can quite indiscriminately pick out some.”

⁷However, for the particular example from Wulfstan that is provided by Warner, Standop’s meaning is hardly appropriate.

4.2 Alfredian **motan* as a variable-force modal

My conclusion that Early OE⁸ **motan* was an unambiguous variable-force modal with a particular semantics is based on the examination of all 72 instances of **motan* in three Early OE books: the prose OE translations of Gregory’s *Cura Pastoralis* (*CP*), Boethius’s *Consolatio Philosophiæ* (*Bo*), and Augustine’s *Soliloquies* (*Sol*), with supplemental material drawn from early Anglo-Saxon laws. All three books in the main sample are translations from Latin, but made with such freedom that they may be considered independent texts. Those texts form a part of the corpus of “Alfredian prose”, after king Alfred the Great who in the late 9th century initiated an impressive program of translation from Latin into vernacular. The three books are as good a shot at a dialectally and temporally consistent dataset as possible: *Bo* and *Sol* were most likely translated into Old English by the same person; moreover, the translators of Alfredian books, presumably, would come from relatively close circles. There are some differences in the usage of *Bo* and *Sol* on the one hand, and *CP* on the other, but I did not detect any difference regarding the use of **motan*. Appendix A features the Old English examples from the sample, their philological translations, and the original Latin passages for *CP* and *Bo*.

4.2.1 Motivating examples

Examples in 151-157 illustrate the pattern common for all instances of **motan* in the selected Alfredian books *Bo*, *Sol* and *CP*: the context surrounding the examples is always such that if it is *possible* for the argument situation of the modal to actualize, it is assumed in the context that it will *inevitably* do so.

Specifically, in 151, if it becomes possible for the person involved to live on, they will, of course, continue to live.

⁸Throughout the chapter, I use the term “Early OE” to refer to the early OE prose. This differs from common usage wherein Early OE refers only to the early poetry, and the Alfredian prose is considered to belong to late, or at least middle OE rather than to early OE.

- (151) Ac se se ðe unwærlice ðone wuda hiewð, & sua his freond
 but that that which unwarily that wood hews, and so his friend
 ofsliehð, him bið nidðearf ðæt he fleo to ðara ðreora
 slays, to.him is necessary that he flee.SUBJ to those.GEN three.GEN
 burga anre, ðæt on sumere ðara weorðe genered, ðæt he
 city.GEN one.DAT that in some of.those become.SUBJ saved, that he
mote libban;
 motan.PRS.SUBJ live
 ‘But he who unwarily hews wood and by that slays his friend, it is necessary
 for him that he flee to one of those three cities, so that he be saved in one of
 them, so that he **mote** live.’ (CP:21.167.15)

In 152, it is assumed that given the possibility, people would indeed do what they want, and then be judged according to what they chose to do.

- (152) He sealde swiðe fæste gife and swiðe fæste æ mid þære gife ælcum
 he gave very firm gift and very firm law with that gift every.DAT
 menn [oð] his ende. þæt is se frydom þæt ðe mon **mot**
 man.DAT until his end. that is the freedom that the man motan.PRS.IND
 don þæt he wile, and þæt is sio æ þæt [he] gilt ælcum be his
 do what he wants.to and that is the law that he pays to.each by his
 gewyrhtum, ægþer ge on þisse worulde ge on þære towearðan, swa god
 works, both and in this world and in that future.one, or good
 swa yfel swaðer he doð.
 or evil whichever he does
 ‘He [=God] gave to every man until his end a very firm gift and a very firm
 law with that gift. The gift is the freedom that the man **mot** do what he
 wants to, and that law is the law that God pays to each man according to his
 works, both in this world and in the future world, be it good or evil that he
 does.’ (Bo:41.142.11)

In 153, if God makes it possible for the speaker to see them, then obviously the speaker would use that chance.

- (153) and gedo me þæs wyrðne þæt ic þe **mote** geseon.
 and make me that.GEN worthy that I you motan.PRS.SUBJ see
 ‘and make me worthy of it that I **mote** see you.’ (Sol:1.55.23)

In 154, the soul in question, having been removed from the earthly things, really does not have much choice but to make use of the heavenly things:

- (154) Heo forseohð þonne ealle ðas eorðlican þing and fagenað þæs þæt
 she despises then all these earthly things and rejoices that.GEN that
 heo **mot** brucan þæs heofonlican [siððan] heo bið abrogden
 she motan.PRS.IND make.use that heavenly since she is removed
 from þam eorðlican.
 from that earthly
 ‘At that time she [=a soul] despises all these earthly things and rejoices that
 she **mot** make use of the heavenly things after she is removed from the earthly
 ones.’ (Bo:18.45.28)

In 155, if the addressee grants the speaker permission, then the speaker clearly would follow up by actually investigating the addressee’s degree of resolve.

- (155) **Mot** ic nu cunnian hwon þin fæstrædnesse þæt ic þanon
 motan.PRS.IND I now test a.little your resolution that I thence
 ongiton mæge hwonan ic þin tilian scyle and hu?
 learn can whence I you tend.to shall and how
 ‘**Mot** I now test your resolution a little so that I could learn from what side
 I should be curing you and how?’ (Bo:5.12.12)

In a different rhetorical construction in 156, the speaker expects that if the addressee is granted an opportunity to determine what is more worthy of punishment, they would actually do that, so the speaker uses an irrealis conditional to indirectly ask for the addressee’s opinion.

- (156) Gif þu nu deman **mostest**, hwæþerne woldest þu deman
 if you now judge motan.PST which.of.two would you judge
 wites wyrþran, þe [þone þe þone unscyldgan] witnode,
 of.punishment worthier the that.ACC which the innocent tormented
 þe ðone þe þæt wite þolode.
 the that.ACC which that torment suffered
 ‘If you **mostest** pass a judgement, which would you find worthier of punishment: the one who tormented the innocent, or the one who suffered the torment?’ (Bo:38.122.28)

In 157, we first learn that a particular group of people is always weeping, and then we are told how this happens: they weep, and after that they make it possible for them to weep again. As we now know from the beginning of the passage that they

are always weeping, it follows that each subsequent weeping is not just possible, but in fact actually happening.

- (157) Hwæt, se ðonne ne recð hwæðer he clæne sie, [ðe ne sie], se
 why! that then not care whether he clean is.SUBJ or not is.SUBJ the
 ðe æfter ðære hreowsunga hine ryhtlice & clænlice nyle
 that after their repentance him rightly & cleanly not.wants.to
 gehealdan: ealne weg hi hi ðweað, & ne beoð hie næfre clæne,
 keep all way they them wash & not are they never clean
 ðeah hi ealneg wepen; ealneg hi wepað, & æfter ðæm wope hi
 though they always weep; always they weep & after the weeping they
 gewyrceað ðæt hi **moton** eft wepan.
 obtain that they motan.PRES again weep

‘Why, he who does not care whether he is clean or not, he who does not want to hold himself in proper ways and clean: always they are washing, and they are never clean, even though they are always weeping; always they are weeping, and after the weeping they make it so that they **moton** weep again.’

(CP:54.421.14)

The examples above represent a wide range of syntactic environments in which **motan* occurs in Early OE: a purpose clause in 151 and 157; a complement clause of noun *freodom* ‘freedom’ in 152, of adjective *weorb* ‘worthy’ in 153, and of verb *fægñian* ‘to rejoice’ in 154; a matrix question in 155; the antecedent of a conditional in 156. Despite the syntactic differences, for all of them it is in the common ground that the argument situation of the modal will be actualized if such a possibility opens. On one extreme, in 157 this conditional statement is true in the context because the preceding sentence directly asserts its consequent (*they are always weeping*). On the other extreme, in 155 the assumption is accepted in the common ground because of the general rules of conversation, which are not explicitly discussed anywhere in the text (the speaker only asks whether a given speech act by her is possible if she intends to perform it). But in most cases, it is the world knowledge together with the linguistic context of the modal that support the assumption of inevitable actualization.

The remarkable fact is that not just 151-157, but all instances of **motan* in the Alfredian sample occur in contexts that support the assumption. It is not quite how

a modal ambiguous between possibility and necessity should behave, contrary to the standard analysis of **motan* in the literature. If we restrict ourselves to mere paraphrasing of Old English examples using modern English modals, we could find that not all substitutions sound natural, and be tempted to conclude that we are dealing with an ambiguous modal (cf. our discussion of the examples from *Beowulf* in 147 and 148.) E.g., *must* or *have to* are not natural substitutes for *mot* in 152, while *can* is contextually inappropriate in 157. But if we view the OE examples in their own right, trying to explicate their semantics in detail instead of trying out different substitutes, we can see each example conveys both the message of an open possibility and that of inevitability. In fact, modern philologist translators may disagree as to how to render a particular example with **motan*: for example, in 158 Henry Sweet renders **motan* using necessity modal *have to*, while H.W. Norman chooses possibility *might*. Both translations of 158, however, convey a very similar message. So in a sense, it does not matter much which modal translates **motan* in this example.

(158) a. (CP:9.57.19) Hu mæg he ðonne beon butan gitsunge, ðonne he
how can he then be without avarice when he
seal ymb monigra monna are ðencan, gif he nolde ða ða
had.to about many men's property think if he would.not when
he **moste** ymb his anes?
he **motan.SG.PAST.SUBJ** about his only

b. *Translation by [Sweet, 1871]:*

“How can he be without covetousness when he has to consult the interests of many, if formerly he would not avoid it when he **had** to consult his own interests alone?”

c. *Translation by H. W. Norman, printed in [Giles et al., 1858]:*

“How can he be without covetousness when he must think about many men's sustenance, if he would not when he **might** think about his own alone?”

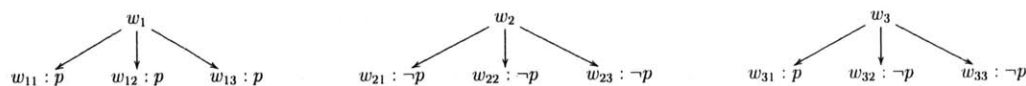
4.2.2 Variable-force analysis of **motan*: informal and formal versions

I argue that Alfredian **motan* was not ambiguous between possibility and necessity, but had a “third-type”, variable-force meaning which can be imprecisely rendered by either. I will first lay out the proposal, and then discuss how it compares to other plausible accounts of the data. Informally, the meaning for **motan* that I propose is as follows:

- (159) **Variable-force analysis of **motan* (informal, preliminary):** $motan(p)$ asserts that p is an open possibility and presupposes that if p is given a chance to be actualized, it will.

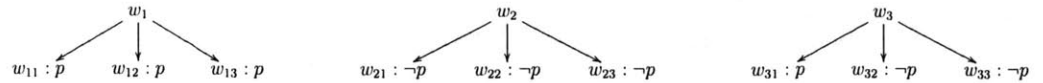
The crucial part of the meaning in 159 is not the assertion, but the presupposition. Because of the presupposition, **motan* may only be used in a very limited set of contexts where the actual future is taken to be predetermined one way or the other, though before the assertion is made, the context may provide no information which way it will turn out. One example of a context set that supports the presupposition is given in 160: it contains worlds that will develop into p -worlds, and those that will develop into $\neg p$ -worlds. What is notably absent from the context set are worlds where it is not predetermined whether p or $\neg p$ will actualize. In such a context, asserting that it is possible for the current world to develop into a p -world symmetrically entails a necessity assertion saying that it is necessary for it to develop so. If the presupposition is met, possibility and necessity collapse together, and no scalar relation emerges between the two.

- (160) **Context set supporting the presupposition of $motan(p)$:**



"1,1". "4,9" *

Context set after the assertion of $motan(p)$ is accepted:



"1,1"."4,5" *

Given such semantics, we expect that neither possibility or necessity modals of modern English would be perfect translation correlates of **motan*. In particular, **motan* does not belong to a scale of modal strength as modern English modals do. If we say *can(p)*, that triggers the implicature that $\neg must(p)$. But under my analysis of **motan*, no such implicatures were to arise in Alfredian Old English: when the presupposition creating the variable-force effect was met, there was no longer a distinction between possibility and necessity claims.

Thus analyzed, **motan* is a part of the class of variable-force modals together with several others recently described by semantic-fieldwork studies on several languages of the North-American Pacific Northwest. All modals in the class share the same feature: they are not ambiguous between possibility and necessity within the language, but are translated by the speakers into modern English sometimes as possibility, other times as necessity modals. This surface similarity does not imply underlying semantic identity, and the label *variable-force modality* is purely descriptive. In fact, the variable-force modals of St'at'imcets ([Rullmann et al., 2008]), Gitksan ([Peterson, 2010], [Matthewson, 2013]) and Nez Perce ([Deal, 2011]) all have different distributions, and have received several different analyses in the literature. The distribution of Alfredian **motan* is different yet, and therefore the analysis for it that is formulated to fit the Old English data is very different from the previous variable-force analyses in the literature. I will compare both the distributions of and the analyses for other variable-force modals and **motan* in the next section, having first discussed the Old English data in their own right.

Let me now turn to a formal rendering of 159. I will deal with the presupposition first, and with the assertion second. The presupposition of inevitability of the (yet unknown) outcome is captured using the metaphysical accessibility relation R_{met} . For

a world w_1 , R_{met} returns a set of the *metaphysical alternatives* of w_1 . Those metaphysical alternatives are defined as the worlds which share with w_1 all of its history up to the time of evaluation (in this and many other details of the semantics, I use the formalization proposed by [Condoravdi, 2002]). A proposition p is *metaphysically necessary* relative to w_1 if all ways in which w_1 may develop in the future would make p true. Similarly, p is *metaphysically possible* at w_1 iff some of w_1 's continuations are p -worlds. (Note that metaphysical possibilities and necessities are sensitive to the world of evaluation.) In the informal definition in 159, by “ p gets a chance to actualize”, I intend to say that p is a metaphysical possibility, and by “ p will actualize”, I mean that p is a metaphysical necessity. Thus the collapse of \diamond and \square which the presupposition is meant to derive is specifically the collapse of metaphysical possibility and necessity (as opposed to, for example, a collapse of permission and obligation.) In symbols, the informal version of the presupposition is $\diamond p \rightarrow \square p$.⁹

Circumstantial and metaphysical modality are generally hard to distinguish (cf. [Abusch, 2012] for an argument that what [Condoravdi, 2002] treats as metaphysical modality should be given a circumstantial analysis). In a variant analysis, one can also use the realistic circumstantial accessibility relation instead of the metaphysical one. Given a world w_1 , a realistic circumstantial accessibility relation returns such worlds w' where a subset of the facts that take place in w_1 also take place; thus w itself is one of the returned worlds w' , and the relation is reflexive. Note that a realistic modal is realistic with regard to the local evaluation world, not to the global world of the context of utterance.

The formal version of the presupposition needs to be more complex than just $\diamond p \rightarrow \square p$, though. Most propositions p would be true at one time in the future from the evaluation moment, and false at another time. If we make the presuppositional semantics insensitive to time, then each world could be both a p and a $\neg p$ world. This is not how the intuition represented in the diagram in 160 works: the intuition is that if a world is a p -world, it cannot then be a $\neg p$ -world, and vice versa. Now, if we consider again the examples in 151-158 above, we can note the following pattern.

⁹I was able to settle on this particular variant of the analysis, featuring the metaphysical accessibility relation within the presupposition of **motan*, thanks to a discussion with Katrina Przyjemski.

If p is an eventive proposition, as in 153 or 155, then each world will either feature a p -event at some point or not, so p would divide all worlds into two classes without us specifying the exact time period when it would happen; one can make a case that only a certain bounded period after the evaluation time is relevant for the statement made, but there is not much reason to encode that boundedness into the semantics. But with stative p -s, things are different: if we look at stative 151 or 158, we can see that the time frame relevant for the argument situation of the modal (the situation of going on living in 151, and of looking after one's own profit in 158) is the moment of evaluation plus the immediately following time period. Now, a person x living at the time of evaluation and for some time after will eventually die, so if p is $live(x)$, both p and $\neg p$ will be true at different time periods in the same world. But if we only consider the moment of evaluation plus a time interval following it, each world will be classified as either a p -world or a $\neg p$ -world. So if we define the semantics so that the truth of a stative p is checked at a time interval starting at the time of evaluation, we derive that all metaphysical alternatives of a given world will be divided into two classes. Then the presupposition of $motan(p)$ would say that for each w' , its metaphysical alternatives belong to only one of those two classes, either all being p or all being $\neg p$. Formally, I use the framework of [Condoravdi, 2002] to express the presupposition:

(161) $[[motan]]^{w,t}(p)$ presupposes that

$$(\exists w': R_{met}(w, w', t) \wedge AT(p, w', [t, \infty))) \rightarrow (\forall w': R_{met}(w, w', t) \rightarrow AT(p, w', [t, \infty))),$$

where p is a property of events;

$R_{met}(w, w', t)$ holds iff w and w' are identical up until time t ;

and the interpretation of $AT(p, w', [t, \infty))$ depends on whether p is stative or eventive: for a stative p , $AT(p, w', [t, \infty))$ holds iff there is a p -event the running time of which intersects with $[t, \infty)$, and moreover, includes t ¹⁰; and

¹⁰This is where my semantics differs from the one given by [Condoravdi, 2002, p. 70, (19)]. In Condoravdi's semantics, there is no requirement that t is included into a stative event's running time. So for an epistemic sentence like *Mary might be in London*, Condoravdi derives a meaning that is true if it's compatible with the relevant knowledge that Mary will be in London at some

for an eventive p , $AT(p, w', [t, \infty))$ iff there is a p -event whose running time is included into $[t, \infty)$.

Let us now turn to the assertion of $motan(p)$. If the presupposition of $*motan$ is about metaphysical possibility collapsed with metaphysical necessity (or, if one prefers that, realistic-circumstantial \diamond collapsed with realistic-circumstantial \square), for the assertion it is harder to establish the exact modal flavor it has. The two candidates are circumstantial/metaphysical, and deontic modal flavors. Some examples, from the modern point of view at least, seem to favor a deontic interpretation: e.g., 155 may be interpreted as featuring a request for permission, and a deontic analysis would not be inappropriate in other examples such as 151 or 156. Other examples, however, would hardly be compatible with a deontic interpretation (for instance, 157), while favoring circumstantial/metaphysical readings. But in the Alfredian sample considered I did not find examples which would be only compatible with one of the two analyses.¹¹ The data do not allow to determine whether Alfredian $*motan$ made deontic, metaphysical, circumstantial assertive contributions, or a combination thereof.

point in the future. With my definition of AT , *Mary might be in London* can only be true if it's not ruled out by evidence that Mary is in London *now*. I conjecture that it is a better semantics across the board, if one allows for silent temporal arguments supplied by the context which may sometimes shift t to some relevant moment. For example, if we had been talking about a workshop to be held in London next June, *Mary might be in London* could effectively mean *Mary might be in London at the time of the workshop*.

Regardless of how that is resolved for modern English, there is no evidence of such forward-shifting for stative arguments of $*motan$ in Alfredian OE. At the same time the assumption of t -inclusion is crucial for deriving that metaphysical necessity that p entails metaphysical impossibility that $\neg p$.

¹¹The case of 155, one of the examples that favor the deontic interpretation the most, illustrates the difficulty well. From the modern-English point of view, it may feel natural to find the deontic flavor in that question. But Alfredian mot in 155 is a rendering of Latin *pateris*, with the primary sense “to be open”. The Latin word may also convey “to be accessible, attainable, allowable”, but the deontic flavor is secondary to the metaphysical/circumstantial one. Of course, it does not rule out that the Old English translator had in mind specifically a deontic interpretation for the modal. But the correspondence with Latin makes that less likely.

For concreteness, I assume as the baseline analysis that the assertion of $motan(p)$ was a metaphysical possibility, 162. Combined with the metaphysical assertion as in 162, the variable-force presupposition in 161 entails that p will happen, and moreover that p was inevitable — a reading matching the informal analysis in 159.

$$(162) \quad [[motan]]^{w,t}(p) \text{ asserts that } \exists w': R_{met}(w, w', t) \wedge AT(p, w', [t, \infty)), \\ R_{met}(w, w', t) \text{ holds iff } w \text{ and } w' \text{ are identical up until time } t.$$

But what if $*motan$'s assertion was circumstantial or deontic? The interplay between the assertion and the presupposition does not crash as long as we adopt some natural additional assumptions. The circumstantial case only requires us to assume that $*motan$ would only use realistic accessibility relations, namely, those which are based on a subset of facts about the evaluation world. Such realistic circumstantial R_{circS} , viewed as sets of ordered pairs, would always be supersets of the metaphysical R_{met} , and therefore $\diamond_{circ}p$ would always entail $\diamond_{met}p$. So if $*motan$'s presupposition that $\diamond_{met}p \rightarrow \square_{met}p$ is met, and $\diamond_{circ}p$ is asserted, it follows that $\square_{met}p$, or, in words, that p is inevitable. For the deontic case, we need a different assumption to connect the assertion to the presupposition, namely, that the permission asserted by $*motan$ may only be a permission for doing something that is metaphysically possible. If that much is granted, we again derive the inevitability inference from a deontic assertion. Note that while the assumptions for the circumstantial and deontic case may seem ad hoc, they are introduced in order to capture the observed empirical pattern: in the post-context after the assertion is accepted, $motan(p)$ does convey that p is inevitable. So adding such assumptions is essentially a fine-tuning of possible theoretical analyses so that they fit the data.

One important feature of the presuppositional analysis proposed is that it predicts that $*motan$ occurring with clausemate negation will always convey impossibility, regardless of the relative scope of the modal and the negation marker. This is intended: the about twenty of such examples in my sample all have that meaning, demonstrated in 163, and there are reasons to think that it was the general pattern in OE.¹² More-

¹²[Goossens, 1987] finds two examples in his sample, out of 25 negative ones, which according to him exhibit the “not necessary” rather than “impossible” reading. However, the single example that

over, this pattern of interaction with negation seems to hold across **motan*'s cognates in other early Germanic: [Breitbaerth, 2011], studying the relative scope of modals and negation in Old Saxon (=Old Low German), finds that all 16 examples in her corpus convey impossibility, just as our Alfredian OE examples.

- (163) Eala hu yfele me doð mænege woruldmenn mid þæm þæt ic ne
 alas how evil me do many world-men so that I NEG
mot wealdan minra agenra [þeawa].
 motan.prs.3sg follow my own customs
 ‘Alas, how evilly I am treated by many worldly people, so that I **mot** not (=it
 is impossible for me to) follow my own customs.’ (Bo:7.17.23)

The reason our semantics makes the prediction that **motan* with negation must convey impossibility is simple: if the variable-force presupposition is met, having Goossens cites in the paper should be interpreted as conveying impossibility. It is a passage from Ælfric’s Catholic Homilies provided in (i), and in isolation one may take it to convey that “it is not necessary now to follow the old law”. But what Ælfric means is rather that following the old law is not what actually happens, or should happen. The passage continues as in (ii), talking about lamb sacrifice, which was not supposed to be offered by Christians at Ælfric’s time.

- (i) ‘Cristian men now **moton** not hold in flesh (*lichamlice*) the old law, but it behooves them to know what it signifies spiritually (*gastlice*).’ (ÆCHom-II,15:151.38.3347-8)
- (ii) ‘That innocent lamb which the old Israel slew (in sacrifice), spiritually signified the meaning of the passions of Christ, the one who, being innocent, for our redemption poured out his holy blood.’ (ÆCHom-II,15:151.38.3349)

In general, a large part of Ælfric’s writings involves explaining to the audience that many Old Testament commandments should not be followed up literally, but instead should be taken as metaphors related to the life of Christ. His message is thus often not just that some Old Testament pronouncements may be relaxed, but rather that it is wrong to follow them literally. For example, Ælfric writes on the importance of celibacy for priests, and explains that even though under Moses’s law, bishops begot children and had to do that because bishops had to come from the same line of descent, at the current moment there is no reason for priests to not hold celibacy, etc. etc. So a closer look at both the local and the global context suggest the impossibility interpretation, contrary to [Goossens, 1987]. Given that, the existence of another example with the “not necessary” interpretation in his sample is also doubtful.

one possible future where p does not happen ($\diamond > \neg$) is the same as having p not happening in all possible futures ($\neg > \diamond$). Recall that the assertion part of **motan*'s meaning either consists of metaphysical \diamond , or is circumstantial and deontic and entails metaphysical \diamond (as we just discussed above). If that \diamond takes narrow scope, we get the impossibility, or $\neg > \diamond$, reading right away. If \diamond takes wide scope, we get the $\diamond > \neg$ reading entailing the stronger $\neg > \diamond$ reading in the context, thanks to the variable-force presupposition.

Two obvious connections of the proposed modal semantics to the semantics of other modal expressions suggest themselves.¹³ First, the presupposition of possibility-necessity collapse in 161 is similar to *actuality entailments* observed in many languages for ability modals bearing past or perfect morphology. In both cases, a possibility assertion is accompanied by a necessity statement conveyed in one way or another. Moreover, in both cases, one can argue that the necessity is entailed in the post-context of a modal statement because of the presence of a conditional presupposition in the pre-context: for **motan*, I have argued above for the presupposition $\diamond_{met}p \rightarrow \Box_{met}p$, while for the actuality entailments, one may say that they arise because it is presupposed that x could do p , then x necessarily would. I leave it to future research to determine how far the analogy may be taken: that requires a detailed analysis of actuality entailments which falls outside of the scope of the present paper.

The second connection is to the fine-grained semantics of ability claims. “*Mary can hit the bull’s eye*” may be paraphrased roughly like “Whenever Mary tries to hit the bull’s eye, she will succeed”. This has the form of a necessity statement rather than a pure possibility statement, and different analyses of ability modals capture that intuition by combining possibility and necessity within the definition for the modal. As [Portner, 2009] puts it, all such approaches “are alike in combining some sort of existential quantification, corresponding to the idea that the agent chooses an action, and some sort of universal quantification, corresponding to the idea that the action guarantees a certain outcome”. I refer the reader to Portner’s discussion of ability modals for a brief overview and references. Again, there is a non-trivial

¹³I owe the clarification of those two connections to discussions with Paul Portner and Irene Heim.

connection between the inevitability conveyed by **motan* and the inevitability to achieve a certain goal that arises in ability cases — and again, I leave exploring the connection to future research.

4.2.3 Variable-force analysis versus its competitors

I will now turn to a comparison between the presuppositional variable-force theory of **motan* and its natural alternatives. I will discuss four of them: a theory that analyzes Alfredian **motan* as an unambiguous necessity modal; one that analyzes it as an unambiguous possibility modal; one that takes **motan* to be ambiguous between \diamond and \square ; and the theory of “periphrastic subjunctive”, sometimes invoked for a number of Old and Middle English modals. There are arguments in the literature regarding the choice between those four analyses, with the ambiguity analysis being the one that fits the data most. Here, I will describe my reasons for thinking the present presuppositional analysis is better for Alfredian **motan* than any of those four. At the same time I will try to demonstrate that those other analyses have at least some degree of plausibility, and thus deserve one’s attention even if they are to be rejected in the end.

The uniform necessity analysis, saying that *motan*(*p*) always asserted that *p* is necessary, is the weakest of those four alternative analyses, and I am not aware of any researcher actually adopting it. In 164, the negation in the upper clause provides a very clear test case falsifying this theory. Had **motan* been a pure necessity modal in 164, the second part of the sentence would have only asserted that God allows it that the meditated sins are not carried out. Yet the first half of 164 strongly suggests that God in fact makes it so that the sins are not committed at all. The uniform necessity analysis thus fails to explain the example.¹⁴

¹⁴Note that treating *geþafian* as a Neg-raising predicate would not save the necessity theory: in the non-Neg-raised form of a Neg-raised sentence (whatever its relation to it — e.g., be it an inference or a syntactically related sentence), negation takes wide scope in the lower clause, cf. “I don’t think you have to do that”. We thus predict that if 164 were a case of Neg-raising, the necessity analysis of **motan* would yield “God permits that it is not that they have to carry out their sins”, which is

- (164) Forðæm oft se mildheortaa Dryhten swiðe hrædlice ða geðohtan
 Because often the mild-hearted Lord very quickly the premeditated
 synna awegaðwihð, ðonne he him ne geðafað ðæt hi hi
 sins away-cleanses, so.that he to.them not permit that they them
 ðurhtion **moten**.
 carry.out motan.PRS
OK ‘Because the merciful Lord often washes premeditated sins away quickly,
 so that as a result he does not allow them that they **moten** (\approx may) carry
 those sins out.’ (CP:53.419.1)
 * ‘...God does not allow them that they **have to** carry those sins out.’

A uniform possibility analysis is harder to discard, which led [Solo, 1977] to actually endorse it for Early OE, including the Alfredian prose (cf. also the choices made by [Godden and Irvine, 2009] in their translation of *Bo*: they only use possibility translations throughout the whole text). The traditional arguments against the possibility analysis involve pointing out that certain examples, such as 148 and 157, partially repeated here, do not seem to convey pure possibility.

- (148) ‘Every man of that kin **mot** wander without the rights of the rightful residents.’ (Beo:2886)
 (157) ‘< ... > always they are weeping, and after the weeping they make it so that they **moton** weep again.’ (CP:54.421.14)

We can add several more arguments to that, based specifically on the data from our Alfredian sample (as opposed to the corpus of Early Old English as a whole). None of the arguments to follow has absolute force on its own. They merely show that our presuppositional variable-force analysis is more coherent and more likely to be true than the analysis that says Alfredian **motan* always conveyed pure possibility, and since they all point in the same direction, those arguments reinforce each other.

First, **motan* is a fairly rare modal in Alfredian OE. There are about 70 instances of it in *CP*, *Bo* and *Sol*. This should be compared with the about 1000 instances of *magan* (> modern *may*), the modal of choice for ability and circumstantial possibility

not an appropriate meaning for the example.

at the time, and with the about 700 instances of **sculan*, which could express deontic necessity, circumstantial necessity, and arguably some kind of a futurate meaning. If **motan* were a modal carrying a very specific presupposition that would rarely be met, this difference in frequency is expected. If, however, it was a plain possibility modal, the numbers are harder to explain.

Of course, it is possible to argue that **motan* was so rare because it was only capable of expressing a very limited range of modal flavors. But as I discussed above, it is actually quite hard to show beyond any doubt that **motan* was restricted to only a subpart of the fairly large field of modal meanings encompassing metaphysical, circumstantial and deontic modality. As a more plausible objection, it is conceivable that a given modal's rarity is just an accident of usage, caused by the structure of variation within the relevant sociolinguistic variable within the community. For example, in modern English vernaculars deontic *must* is dying out, and is only retained in a small share of examples (cf. [Tagliamonte and D'Arcy, 2007], a.o.), but that does not necessarily mean that *must* is not a regular deontic semantically. So there do exist ways to explain the rarity of **motan* under the assumption it always conveyed possibility in Alfredian OE. But a specific argument to that end would have to be put forward, whereas in our presuppositional theory of **motan*, an explanation of its rarity is already present.

The second argument favoring the presuppositional analysis over the possibility one involves the absence of scalar relations between **motan* and other modals. In modern English, possibility and necessity modals form dual pairs. E.g., in “*You may take this exam. In fact, you have to*”, necessity modal *have to* in the second clause strengthens the assertion made with possibility modal *may* in the first. This and other scalar patterns are made possible by the fact that the necessity modal involved is strictly stronger than the possibility modal.

In Alfredian OE, we easily find cases where possibility *magan* enters into such relationships with necessity **sculan*. For example, 165 is an instance of the scalar pattern “*Not only can(p), but also have.to(p)*”:

(165) hi beoð swa geþwæra þætte no þæt an þæt hi **magon** geferan beon, ac þy

furðor þæt heora furðum nan buton oðrum beon **ne mæg**, ac a **sceal** þæt wiðerwearde gemetgian.

‘they (=fire and water, and sea and land) are so harmonious that not only **can** they be companions, but moreover that **none** of them **can** be without each other, but they always **have to** on the contrary restrain each other.’

No such examples where **sculan* would strengthen **motan* are present in our Alfredian sample. Now, this is not exactly a killer argument: as I noted above, *magan* is one order of magnitude more frequent than **motan*, so it could in principle be that the absence of scalar patterns with **motan* is a sheer accident. But other things being equal, a theory for which that fact is not an accident is to be preferred, and our variable-force theory of **motan* is one such: if **motan* indeed had the variable-force meaning described in 161 and 162, it would not be on the same scale with any other modals, so it would not give rise to any scalar patterns (see the scheme in 166). This is exactly what we see in the data.

(166) **Alfredian Old English:**

	ability	circ.+met.	future	deontic		
◇	<i>magan</i>	<i>magan</i>	—	non-modal		circ.+met./deontic
□	—	<i>sculan</i>	∅/ <i>sculan</i>	<i>sculan</i>	◇ + collapse presup.	<i>motan</i>

Yet another argument comes from historical and typological observations. Suppose for a moment that **motan* was indeed a regular possibility modal. We know plenty of regular possibility modals in a wide range of languages with long recorded histories. Yet the only documented case of a possibility modal turning into a necessity modal several centuries later is the case of **motan* and its cognates in other Germanic. All those modal words, stemming from the same Proto-Germanic lexeme, followed very similar semantic change trajectories, from distributions resembling that of Old English **motan* in the earlier recorded sources to pure necessity modals such as German *müssen* or Dutch *moeten*. This suggests that there was something very special in the Proto-Germanic word that gave rise to all those modern Germanic cognates. If Alfredian **motan* was an unambiguous variable-force modal, we can immediately see

what that special thing could be: it is expected that variable-force modals would follow different paths of semantic change than regular possibility modals. But if **motan* itself was a regular possibility modal, then it is not clear at all why it took a path of change not registered for other \diamond s.

Taken together, those arguments, I believe, provide sufficient support for the pre-suppositional variable-force theory of **motan* over the theory that says it was an unambiguous possibility modal. Most of those arguments carry over to a comparison between our variable-force theory and the theory that analyzes **motan* as ambiguous between possibility and necessity — the most common theory in the current historical literature.

The ambiguity theory is a response to the existence of examples like 148 and 157 which are hard to explain assuming that **motan* was a \diamond in Early OE. In an important sense, the ambiguity theory is a theory of last resort: the claim that **motan* was ambiguous between \diamond and \square was never accompanied in the literature by an argument regarding how exactly such ambiguity may have functioned in the language for several centuries, and how the speakers could disambiguate between the \diamond and \square readings.

The ambiguity theory by itself cannot answer the arguments we just put forward against the possibility theory. It does not explain why **motan* was a rare modal. It does not explain why **motan* did not enter into scalar relations with other modals. It does not explain the peculiar semantic-change path that the modal took. In other words, most non-trivial facts about the distribution of the modal seem pure accidents on the ambiguity view. But perhaps the most important argument against the ambiguity theory for Alfredian **motan* comes from a comparison between Alfredian OE and Early Middle English. I will argue below in Section 4.4 that in Early Middle English, **moten* < **motan* was a modal genuinely ambiguous between \diamond and \square . We will see, to a reasonable extent, how that ambiguity functioned, and what helped the speakers to disambiguate a particular instance of the modal. But importantly, the features of a genuinely ambiguous modal that characterize the Early Middle English distribution of **moten* cannot be found for Alfredian OE **motan*. Comparing Alfre-

dian modal with its truly ambiguous descendant, we will be able to see the difference.

Let us finally consider a different kind of theory for **motan*. Under the “periphrastic subjunctive” theory, sometimes invoked for the class of OE modals as a whole, those modals, at least in some instances, do not bear any semantic content, but instead take on the role that the inflectional subjunctive played earlier.¹⁵ (The motivation for formulating such theories in the first place is the fact that in many contexts, modal constructions did indeed replace the earlier inflectional subjunctive as it was lost. The history of one such replacement was discussed above in Chapter 3.)

(167) **Periphrastic-subjunctive **motan***: *motan(p)* means simply *p*, but signals that the clause appears in an irrealis context.

[Ogawa, 1989] extensively argues against this sort of analysis for OE modals in general, demonstrating that they had clearly defined distributions which at least in some cases call for semantic explanations. In line with Ogawa’s arguments, we can see in our Alfredian sample that **motan* appears with inflectional subjunctive markings in environments favoring them (e.g., in 151 and 153, **motan* has unambiguous¹⁶ subjunctive morphology), so whatever function the modal had, it could not have been *exactly* the same as the function of the inflectional subjunctive.

But the biggest problem with the periphrastic subjunctive theory is that by itself, it is even less predictive than the \diamond - \square ambiguity theory. If we say that **motan* is

¹⁵For modern English, an example of a “periphrastic subjunctive” is *should* in sentences such as *It is essential that we should hire her*, on one of its readings.

¹⁶One might argue that the form *moten* (as in 164) is an unambiguous subjunctive present plural form, while *moton* (as in 157) is the corresponding indicative form. However, without a detailed investigation of the patterns of vowel reduction in the particular manuscript where the forms come from, one should exercise caution in taking the spelling of those endings at its face value: the levelling of the *on-en* endings seems to have been more rapid during the OE period in preterite-presents than in other verbs, see [Kitson, 1992, p. 66]; cf. also [Mitchell, 1985, §22] on the “confusion” between *en/on* in general. In contrast to that, the difference between *mot* and *mote* is a reliable indicator of a morphological difference, as the distinction between the zero and *e* endings survived into the Middle English period.

meaningless, we cannot explain its restricted distribution. To do so, we need to say a lot more about where exactly it can appear, and the more we will be saying, the less the resulting theory would look like a plain story of the form “**motan* replaced the inflectional subjunctive”.

Summing up, none of the arguments for the presuppositional variable-force theory of **motan* is decisive on its own. But they all point in the same direction, and thus taken together, make it very probable that my variable-force theory, or something fairly close to it, is true for Alfredian Old English.¹⁷

¹⁷One more theory that deserves some attention would be along the following lines: **motan* in Alfredian OE was not a genuine modal, but rather a sentential modifier that marked its argument situation as good or desirable. I know of two reasons for why this theory should be taken seriously, though neither of them applies directly to the Alfredian sample that I use as my primary source in this work. First, as [Ogawa, 1989, Ch. 4.5] shows, **motan* was used under verbs of asking and requesting to mark situations where the requester and the beneficiary of the request (usually the embedded subject) were the same person. If **motan* could convey the meaning of desirability, that feature of its distribution would follow. Second, in the laws of Alfred and Ine, representing earlier and more formulaic OE prose than the Alfredian translations I discuss in the main text, **motan*, **sculan* and the inflectional subjunctive are used almost interchangeably, but at the same time the argument situations of **motan* always involve something beneficial for the subject (e.g., “to swear (one’s innocence)”), and never involve bad things like “to pay a fine” or “to forfeit one’s property”. Again, if **motan* conveyed the desirability of its argument situation for the subject, that is exactly what we can expect.

However, for Alfredian OE translations, it is clear that such an analysis fails. Many examples of **motan* in *CP*, *Bo* and *Sol* indeed involve something good, such as continuing to live in 151 or seeing God in 153. But there are also examples where the argument situation is clearly undesirable for the subject, such as weeping as in 157. The example 148 can also hardly be taken to feature a desirable argument situation.

It could be that the desirability of *p* was something that *motan(p)* conveyed at some point or in some dialect. In Chapter 3, we have seen how the inflectional subjunctive under verbs of hoping was used to convey a particular kind of well wishes, and in Chapter 5, we will see that the mid-19th-century futurate *have to* construction always involved argument situations that were undesirable or required strenuous effort. It is hard to distinguish between the cases when such a pattern was created by the lexical semantics and when it was a feature of the construction’s actual usage, but on the level of descriptive generalizations such phenomena of associating (un)desirability with the argument

4.3 Variable-force modality in Old English vs. in St’át’imcets, Gitksan, and Nez Perce

It is well-known that some constructions in natural languages may be underdetermined between possibility and necessity, like the “*have something to say*” construction ([Fischer, 1994, Sec. 3.2]) or German modal infinitives ([van der Auwera and Plungian, 1998, Sec. 3.3]). However, recent semantic fieldwork on St’át’imcets, Gitksan, and Nez Perce has uncovered a group of modals which seems to feature a different kind of “indeterminacy” between possibility and necessity: while those modals may be rendered into languages like Modern English with both possibility and necessity modals, depending on the context, there seems to be no lexical ambiguity or vagueness involved. In this section, I will review the data and analyses formulated for various variable-force modals of St’át’imcets, Gitksan, and Nez Perce, and discuss how they compare to the Alfredian OE data, and to my presuppositional variable-force analysis.

4.3.1 Variable force in Alfredian OE and the Pacific Northwest: the empirical picture

Schematically, the shape of the modal system in the three Pacific Northwest languages where variable-force modals have been described can be represented as follows, alongside the same for Alfredian OE:

(168) **Alfredian Old English:**

	ability	circ. + met.	future	deontic
◇	<i>magan</i>	<i>magan</i>	—	non-modal
□	—	<i>sculan</i>	∅ or <i>sculan</i>	<i>sculan</i>

	circ. + met./deontic
◇ + collapse presup.	<i>motan</i>

(169) **St’át’imcets** ([Rullmann et al., 2008])

situation seem to be quite common. But for Alfredian-prose **motan* specifically, desirability of the argument situation would have been at most a tendency, and perhaps not even that.

	deontic	future	various epistemic
◇	<i>ka</i>	<i>kelh</i>	<i>k'a; ku7; -an'</i>
□			

Consultants select □ paraphrases for variable-force modals more often

(170) **Gitksan** ([Peterson, 2010], [Matthewson, 2013])

	circ.	deontic	
◇	<i>da'akhlxw</i>	<i>anook</i>	
□	<i>sgi</i>		

	epist.
	<i>ima('a); gat</i>

Consultants select ◇ paraphrases for variable-force modals more often

(171) **Nez Perce** ([Deal, 2011])

	circ. and deontic
◇	<i>o'qa</i>
□	—

Even though the diagrams above provide, by necessity, very limited information, that is already enough to see that the shapes of modal systems with variable-force modals may vary significantly between languages. In St'át'imcets, all modal expressions are apparently variable-force.¹⁸ In Gitksan, variable-force modals only occur in the epistemic domain. In Nez Perce, the variable-force modal occupies the circumstantial/deontic meaning domain alone. But unlike in any of those, in Alfredian OE variable-force modal **motan* is in the same general domain of deontic-circumstantial-metaphysical modality as non-variable force **sculan* and *magan*.

If we look closer yet, the Alfredian variable-force pattern of behavior turns out to be very different from those in St'át'imcets and Gitksan. First, there is no inevitability conveyed by the variable-force modals in the latter two. In St'át'imcets 172, we see the variable-force future marker *kelh*, which often corresponds to English simple future *will*, but does not have to. In examples like 172, the argument situation of *kelh* is not construed as inevitable, only as potentially possible in the future.

(172) [Rullmann et al., 2008, (19)]:

¹⁸[Rullmann et al., 2008] are a bit more cautious about the epistemic markers *ku7* and *-an'*, but the rest are unequivocally variable-force.

ka-kwís-a kelh ti k'ét'h-a
 CIRC-fall-CIRC FUT DET rock-DET

‘That stone might drop.’

Similarly for Gitksan *ima*, no inevitability is conveyed by the modal in the general case:

(173) [Matthewson, 2013, (22)]:

Context: You hear pattering, and you’re not entirely sure what it is.

yugw=imaa/ima'=hl wis
 IMPF=EPIS=CN rain

‘It might be raining.’

Another difference between Alfredian OE on the one hand and St’át’incets and Gitksan on the other concerns the interaction between variable-force modals with negation. As we discussed in the previous section, Alfredian **motan* always conveys impossibility when combined with local or non-local negation, cf. 163 and 164. But in St’át’incets and Gitksan, variable-force modals do give rise to “not necessary” readings.

(174) (163) ‘Alas, how evilly I am treated by many worldly people, so that I **mot** not (= *it is impossible for me to*) follow my own customs.’ (Bo:7.17.23)

(164) ‘Because the merciful Lord often washes premeditated sins away quickly, so that as a result he does not allow them that they **moten** (*≈may*) carry those sins out.’ (CP:53.419.1)

In St’át’incets, at least the evidential epistemic *k’a* shows both “necessarily not” and “possibly not” readings in different examples, [Rullmann et al., 2008, Sec. 3.6], and variable-force modals *kelh* and *ka* show at least “possibly not” readings not available for Alfredian **motan*). As for Gitksan, the variable-force reportative evidential *kat* scopes uniformly above its clausemate negation, [Peterson, 2010, pp. 66-8, 149-50], producing readings like “I heard $\neg p$ ”, and never “I didn’t hear that *p*”. At the

same time, only “possibly not” readings are provided by Peterson and Matthewson for inferential epistemic *ima*, [Peterson, 2010, pp. 45], [Matthewson, 2013, Sec. 3.1]. So again the pattern of interaction with negation is different from that of Alfredian **motan*, for which we find only “not possible” readings.

The differences between Alfredian OE and St’át’imcets and Gitksan thus concern not only the kind of accessibility relations used by variable-force modals in each language, but also in whether the modals always convey inevitability (Alfredian **motan* does, while St’át’imcets and Gitksan variable-force modals don’t), and how they interact with negation (Alfredian **motan* always gives rise to the impossibility reading, while in St’át’imcets and Gitksan “possibly not”/“not necessary” readings are also attested, and sometimes are the only attested ones for a given modal.)

The variable-force modal *o’qa* of Nez Perce, described by [Deal, 2011], is much closer to Alfredian **motan*, though not identical to it. First, *o’qa* may use accessibility relations from the same general domain of circumstantial-deontic(-metaphysical) as **motan*. Second, *o’qa* always gives rise to impossibility meanings when combined with clausemate negation. But there is a very important difference: inevitability is not conveyed by Nez Perce *o’qa*, as the sentence in 175 shows. No such examples were found in my Alfredian OE sample (N=72).

(175) [Deal, 2011, ex. (7)]:

pícpic ha-’ac-o’qa mét’u wéet’u ha-’ac-o’.
 cat 3SUBJ-enter-mod but not 3SUBJ-enter-PROSP

‘The cat could go in, but it won’t go in.’

Another distributional difference concerns the behavior of Alfredian OE and Nez Perce variable-force modals in the antecedents of conditionals. As we have seen in example 158, Alfredian **motan* shows neutralization between \diamond and \square in a conditional antecedent. In contrast to that, [Deal, 2011] provides several examples from Nez Perce with *o’qa* in the antecedent of a conditional for which her consultants accept a possibility paraphrase, but firmly reject a necessity paraphrase, cf. 176. That shows

that in Nez Perce, there is no collapse between possibility and necessity when *o'qa* is used, unlike in Old English 158.

(176) [Deal, 2011, ex. (59)]:

c'alawí 'aac-o'qa, kaa 'aac-o'.
 if enter-MOD then enter-PROSP
 OK 'If I can go in, I will go in.'
 * 'If I have to go in, I will go in.'

Summing up, Alfredian **motan* is empirically very different from the variable-force modals of St'át'imcets and Gitksan, and is somewhat similar to, but not identical with, the variable-force modal *o'qa* of Nez Perce. But in none of the three Pacific Northwest languages does a variable-force modal convey a sense of inevitability as Alfredian **motan* does.

4.3.2 Variable force in Alfredian OE and the Pacific Northwest: comparison of theories

My presuppositional analysis for **motan* does not carry over to the Pacific Northwest variable-force modals: it would derive the inevitability effect which is not observed for them. In the other direction, earlier analyses do not carry over to Old English either. The five analyses of the variable-force effect proposed in the literature, for different languages, are as in 177:

(177) a. \square with narrowing [Rullmann et al., 2008], for St'át'imcets
 b. \diamond with widening [Peterson, 2010], for Gitksan¹⁹

¹⁹Both [Rullmann et al., 2008] and [Peterson, 2010] attribute the rise of the variable-force effect to special mechanisms manipulating the quantificational domain of the modal. But there is a crucial theoretical difference between the two approaches. [Rullmann et al., 2008] use a special apparatus of choice functions applied to sets of worlds to implement the narrowing, while [Peterson, 2010] proposes to use the standard apparatus of conversational backgrounds by [Kratzer, 1981] for manipulations with domains. As the result, Peterson's treatment of Gitksan's modals ends up being very similar to Kratzer's treatment of German *können*, and his treatment of St'át'imcets modals, to Kratzer's

- c. upper-end degree modal (\approx “*somewhat probable*”)
 - [Kratzer, 2012, analysis I], for St’át’imcets
- d. modal with only 1 accessible world
 - [Kratzer, 2012, analysis II] (for no language in particular)
- e. regular \diamond without a dual \square
 - [Deal, 2011], for Nez Perce

None of the first three analyses in 177, formulated for St’át’imcets and Gitksan, is designed to derive anything close to the inevitability effect and the pattern of interaction with negation where the variable-force modal always giving rise to an impossibility reading. But the “analysis II” of [Kratzer, 2012] and the analysis based on the absence of a modal dual by [Deal, 2011] may account for an empirical pattern closer to the one we see in Alfredian OE, and thus require attention.

The second variable-force analysis discussed by [Kratzer, 2012] is the following suggestion, voiced without proposing that it is the right analysis for any language in particular. Suppose a modal quantifies over a singleton set of worlds. In such a case, there is no distinction between \diamond and \square any more: a collapse occurs. A modal specified as one that only quantifies over singleton sets of worlds would be, using the descriptive term, a variable-force modal. And in fact, [Stalnaker, 1981] proposes such a collapse analysis for *would* in English counterfactual conditionals, independently from any concerns about variable-force modals of the kind found in the languages of the Pacific Northwest.

Our analysis has a lot in common with Kratzer’s suggestion: under both of them, possibility and necessity collapse in the set of worlds quantified over. As for the differences, first, the way in which the collapse is imposed (namely the presupposition proposed for **motan*) is specific in my theory, and left unspecified in Kratzer’s brief suggestion. Second, there is no need to assume the quantified set is singleton under my analysis, so in a sense the guiding intuition behind the proposal is slightly different: the possibility-necessity collapse occurs not just because it is impossible to treatment of German *müssen*. But empirically German modals and the modals of Gitksan and St’át’imcets seem to be quite different. It is not clear how Peterson’s system that uses the same apparatus for both can accommodate that fact.

distinguish the two in a singleton set of accessible worlds, but as something that needs to be specifically imposed within the semantics. But modulo those differences, my theory for Alfredian **motan* may be viewed as a more elaborate version of Kratzer's suggestion.

Finally, the analysis of the variable-force effect proposed for Nez Perce by [Deal, 2011] may in principle be applied to Alfredian **motan*, but only if one grants several further assumptions with no empirical basis for them in the Old English data. So on the one hand, Deal's analysis applied to **motan* cannot be outright falsified because of the nature of historical data. On the other, the assumptions it requires one to make are not independently supported by any evidence, so overall the proposed presuppositional analysis of **motan* is to be preferred, unless facts specifically supporting Deal's analysis are uncovered.

Deal's analysis for Nez Perce variable-force modal *o'qa* makes crucial use of the fact that Nez Perce lacks a modal that could have been *o'qa*'s vanilla-necessity counterpart. *o'qa* has deontic and circumstantial readings (in the same general modal meaning domain as **motan*). In upward-entailing contexts, it behaves similarly to the Gitksan variable-force modals: it may be rendered by consultants into English using both possibility and necessity modals, but possibility translations are generally preferred. However, in downward-entailing contexts (namely under negation, in relative clauses modifying universally quantified noun phrases, and in antecedents of conditionals — the three types of such contexts examined by [Deal, 2011]), *o'qa* appears to unambiguously convey possibility: consultants strongly reject sentences with *o'qa* as translations for English sentences with necessity modals in such contexts.

Deal explains this pattern as follows: *o'qa*'s literal meaning is always that of possibility, so it has roughly the same basic semantics as modern-English *can* or *may*. The peculiar variable-force pattern observed in upward-entailing contexts, Deal argues, is due to the absence of a stronger necessity dual for that regular possibility modal. In English, the speaker would not use *can* when she can use a stronger *have to*. But if her language does not have a modal with the semantics of *have to*, there would be no reason for the speaker to not use *can* in upward-entailing contexts where

English speakers would have used a necessity modal. The variable-force effect in such contexts is thus just an epiphenomenon of the shape of the modal system of a given language, and does not result from any special semantics for the variable-force modal itself.

Unlike in Nez Perce, in Alfredian OE there is a modal that would have been a necessity dual for **motan*: the deontic/circumstantial modal **sculan* (>modern *shall*). **sculan* is the pure-necessity modal of choice both in deontic and circumstantial contexts: in 178 **sculan* conveys the meaning of moral obligation, in a religious context, while in 179 **sculan* is a circumstantial modal: the context suggests a much stronger force making the action inevitable than just the force of an obligation.

(178) Hu micle suiðor **sculon** we ðonne beon gehiersume ðæm ðe ure
 how much more shall we then be obedient to.him who we.GEN
 gæsta Fæder bið wið ðæm ðæt we moten libban on ecnesse!
 spirits.GEN father is so that we motan.PRS.PL live on eternity
 ‘Then how much more **must** we obey the father of our souls so that we moten
 live eternally!’ (CP:36.255.8)

(179) *Preceding context*: “Every person’s inner thought desires two things, which are the will and the power. If someone lacks one of those two, then he cannot fulfill anything with just the other.”

Forþam nan nyle onginnaþæt þæt he nele, buton
 because none not.wants.to start that which he not.wants.to unless
 [nede] **scyle**; and þeah he eall wille, he ne mæg gif he
 by.necessity shall and though he entirely wants.to, he not may if he
 þæs þinges anweald næfð.
 that.GEN thing.GEN power not.has

‘Because nobody would start what they do not want to (start), unless they **have to** by necessity; and when someone truly wants to (do that), they cannot if they do not have power over that thing.’ (Bo:36.106.13)

Now, I have noted above that it is hard to establish with certainty which modal flavors the assertion of **motan* may have had in Alfredian OE: it occurs in examples that could be argued to exhibit a meaning from the general range of circumstantial,

metaphysical and deontic, but it seems impossible to establish with absolute certainty whether **motan* definitely had each of those meanings. So if we really wanted to stretch Deal's analysis to cover Alfredian **motan*, we could stipulate that **motan* only had metaphysical readings, while **sculan* had only circumstantial and deontic readings, but never metaphysical ones. If so, then **motan* would indeed have no exact potential necessity dual, so we would have been able to apply Deal's account.

But there is no basis in the data for making such a claim: it would be just an *ad hoc* assumption adopted specifically to make one particular theory work. Moreover, the assumption that there was a complementary distribution between the modal flavors of **sculan* and **motan* is problematic on both historical and typological grounds. On the typological side, modals rarely have such clear-cut complementary distributions. On the historical side, even when a modal does lack a particular modal flavor, it can often acquire it in time in the case it already can express close modal meanings — and circumstantial modality is close to metaphysical modality, and is known to give rise to deontic readings in historical change. So the assumption we'd need to adopt to make Deal's theory work, even if true at some point, should have become false quite fast. That is not very probable given the fact that **motan*'s cognates in other Germanic were special in similar ways, suggesting that the variable-force situation was in place for a relatively long time. The same comparison with other Germanic, as we already discussed, suggests that **motan* had special semantics, not the regular \diamond semantics: otherwise, it would be strange that it is only that particular \diamond and all its relatives in other closely related languages underwent the change into a necessity modal.

Finally, we have already discussed in this section that empirically, there are two important differences between **motan* and Nez Perce *o'qa*: first, *o'qa* does not convey inevitability (cf. 175), and second, *o'qa* gives rise to regular possibility readings in conditional antecedents (cf. 176), while Alfredian **motan* shows the same \diamond - \square collapse effect in that context as in upward-entailing contexts (cf. 158). Given those two differences, it does not look as if there are any benefits in adopting the analysis for

Nez Perce to Alfredian OE.²⁰

To conclude the comparison of data from and theories of the variable-force modals of the Pacific Northwest and Alfredian **motan*, first, the distribution of the Alfredian modal is different than for any of the Pacific Northwest variable-force modals; second, our presuppositional theory of **motan* should not be applied to St'át'imcets, Gitksan or Nez Perce, as it would make wrong predictions; third, the earlier accounts of the variable-force effect proposed in the literature do not apply to Old English either.

4.4 **moten* in Early Middle English: a modal ambiguous between necessity and possibility

Though Alfredian OE **motan* can be rendered with either possibility or necessity modern modals, there is no sign of ambiguity in the data, so the Old English modal is a variable-force one: a non-ambiguous lexeme which is neither a \diamond or a \square . But when we turn to Early Middle English **moten* from the so-called 'AB language', a dialect written in the West Midlands of England in the first half of the 13th century, we find a very different picture. Some instances of **moten* in 'AB language' are clear necessity uses, while others feature possibility, or at least non-necessity. The Early Middle English modal is thus truly ambiguous in the source language.

In this section, I will outline the general semantic distribution of **moten* in two texts from the 13th century: *Seinte Margerete*, a saint's life adapted from Latin, written relatively early in the geographical area from which the 'AB language' dialect comes from, and *Ancrene Wisse*, a manual for anchoresses touching upon both spiritual and practical matters, written in the same area and in the same dialect several decades later.²¹ There are clear differences in usage between the two texts, calling

²⁰As of May 2013, Amy Rose Deal (p.c.) was not convinced that her analysis of Nez Perce cannot be applied to Alfredian OE. I agree with her that it is not proven that it cannot, but I take the evidence against it, when gathered together, to be decisive, given the standards of reasonable proof accepted in historical linguistics.

²¹The editions used were [d'Ardenne, 1977] for *Seinte Margerete*, and [Millett, 2005] for *Ancrene Wisse*. I checked my interpretation of the Middle English examples with the translation of *Seinte*

for future research. (Fortunately, there is more material written in the same dialect, so more data are in principle available for analysis.) Here I only provide a general description of the data in the two texts: even this general description will be enough to show an important difference between **motan* and **moten* in Alfredian OE and AB-language Early ME.

In about half of the examples from *Ancrene Wisse*, **moten* conveys the meaning of circumstantial necessity. This type of use is illustrated in 180, for two instances of **moten*. For the first instance, owning a cow does not just create a possibility to think about the cow's fodder: it necessitates such thinking. Furthermore, the conditional antecedent in the second sentence in 180 talks about the case when the anchoress really has no other practical options but to have a cow — after all, if she had such options, then the preceding discussion about choosing not to have a cow would apply. Thus in both instances, we have a normal necessity reading: there is no collapse of possibility and necessity as in Alfredian OE, and no other kind of variable-force effect.

- (180) (AW 8:90-9) “You should have no animal but one cat only. An anchoress who has livestock seems more a housewife, as Martha was, she cannot easily be Mary, Martha's sister, with her tranquillity of heart.”

for þenne **mot** ha þenchen of þe kues foddre <...>
 for then **moten.3sg** she think of the cow's fodder

‘For then she (=the anchoress) **has to** think of the cow's fodder <...>’

Nu þenne, 3ef eani **mot** nedlungē habben hit, loki þet hit na
 Now then if any **moten.3sg** necessarily have it, see that it.NOM no
 mon ne eili ne ne hearmi
 man.ACC not ail not not harm

‘Now then if any (anchoress) absolutely **has to** have a cow, at least see to it that the cow does not hurt or ail anyone.’

But even though circumstantial-□ uses as in 180 are the most common for **moten* in *Ancrene Wisse*, the modal is also used in such ways which hardly allow a necessity

Margerete in [Savage and Watson, 1991] and the glosses for *Ancrene Wisse* in [Hasenfratz, 2000].

interpretation. A particularly clear such case involves the use of **moten* in prayers, as in 181:

- (181) I þe wurðgunge, Iesu Crist, of þine tweof apostles, þet Ich **mote** oueral folhin hare lare, þet Ich **mote** habben þurh hare bonen þe tweolf bohes þe bloweð of chearite, (AW 1:174-6)
- ‘In honor, Jesus Christ, of your twelve apostles, **may** I everywhere follow their teaching, **may** I have through their prayers the twelve branches that blossom with love’

There may be different opinions regarding what exact meaning the modal in such contexts has. But in Present-Day English, necessity modals cannot be used in such contexts, and possibility *may* is used instead. Moreover, as **moten* gradually turned into an exclusively necessity modal in Late Middle and Early Modern English, it was ousted from wishes (cf. §1692, §1680-1 of [Visser, 1973]). That fact shows that whatever particular meaning the modal had in such constructions, it was crucial for it to be able to have non-necessity semantics in order to appear in them.

So while in Alfredian OE, we had to do with an unambiguous variable-force modal, in Early Middle English we see the same modal **moten* expressing both necessity and non-necessity meanings. If we only look at the translations into modern English, we can see a superficially similar pattern: both possibility and necessity modern modals may be used to render Alfredian **motan* and AB-language **moten*. But in the source languages, the two modals behave very differently: the former is non-ambiguous, while the latter one can express genuinely different meanings. We can tell the difference if we note that Alfredian **motan* may allow for both \diamond and \square renderings in the same example without a substantial change in the intended message of the sentence, while Early Middle English **moten* in any particular example only allows for one or the other: the two instances of the modal in 180 are both circumstantial-necessity ones, while the two instances in 181 are both non-necessity.

How could such ambiguity exist in the language? Specifically, how could the speakers and hearers properly identify the relevant reading, and how could such a

situation of ambiguity arise historically?

For both questions, contexts are the key to the answer. For example, the “prayer-meaning” of **moten* seems to be tied to the linguistic context of a purpose clause. In our Alfredian sample, 16 examples out of 72 occurred in purpose or result clauses. (It is often impossible to distinguish between the two with certainty, as is often noted in the literature on Old English syntax.) So on the surface, the use of strings including a purpose-clause marker and modal **motan*/**moten* persisted since Alfredian OE to AB-language Early ME. What changed was the interpretation given to those strings: in *Ancrene Wisse*, **moten* in them is close to the special marker of a prayer. Yet in the slightly earlier *Seinte Margerete*, it is not yet such a marker: in 182 *mote* is best rendered by a genuine \diamond modern modal, not with the formulaic *may* used in prayers, despite the sentence being a part of an actual prayer. Thus persistent surface patterns of usage may go along with semantic reanalysis (cf. [Eckardt, 2006]).

- (182) & 3ef me hope of heale þt mi bone **mote** þurh-þurli þe heouene. (SM:64.16)
‘and give me the hope of salvation, so that my prayers **could** through-reach to the heaven’

This shows that speakers may index a particular meaning not just to a given word, but also to a word in a particular context. (In Chapters 3 and 5, we see other examples of that pattern.) And from that, we can see how they could deal with multiple ambiguity: if a given meaning is indexed to a word in a particular type of context, then there exist contextual cues helping out with the disambiguation. For example, encountering a purpose clause with **moten*, a contemporary reader of *Ancrene Wisse* would not necessarily want to recover the meaning of circumstantial necessity for the modal, despite it being dominant at the time: the non-necessity meaning indexed to that syntactic context would have been able to trump that. So compositional semantics and usage-based factors can work together, helping the speakers to use language both flexibly and efficiently.

Having learned that the Early Middle English descendant of Alfredian variable-force **motan* was an ambiguous modal with both necessity and non-necessity uses, we

report the first known case where the semantic change trajectory of a variable-force modal was observed. The semantic shift from the presuppositional variable-force **motan* to the dominant reading of circumstantial necessity for Early Middle English **moten* is of an expected type under our analysis of Alfredian **motan*. For the circumstantial necessity meaning to arise from the presuppositional variable-force meaning, it sufficed to reinterpret the presupposition of **motan* as a component of meaning belonging to the assertion (see [Schwenter and Waltereit, 2010] for a discussion of such processes), and slightly change the modal flavor in order to get a circumstantial-necessity meaning.

The trajectory of change is thus from a true variable-force modal into a modal ambiguous between \square and non- \square , and then into a regular \square . This trajectory should be cross-checked on wider Middle English material, as well as on **motan*/**moten*'s cognates in other Germanic, but on its own merits the proposed semantic change path is reasonable.

4.5 Conclusion

In this chapter, I have proposed a new analysis of the semantics of **motan* in Alfredian Old English, arguing that it was a non-ambiguous variable-force modal. I derived the variable-force effect from the presupposition 161 which forces possibility and necessity collapse in the set of worlds quantified over by the modal. This type of variable-force effect has not yet been observed, so Alfredian OE makes our typology of possible variable-force modals richer. Apparently there exist very many ways to be a variable-force modal: so far, the variable-force modals of St'át'imcets, Gitksan, Nez Perce and Alfredian Old English seem all to show important distributional differences.

Turning to Early Middle English, I argued above that **moten*, unlike its ancestor **motan*, was a modal ambiguous between several very different meanings, some of them necessity, some others, non-necessity ones. First, this shows that having modern-English correspondents with different modal force by itself does not make a modal genuinely variable-force: Early Middle English **moten* does correspond to both

necessity and possibility modals in modern English, but it is truly ambiguous in the source language. Second, since the ambiguous modal **moten* is a direct descendant of the variable-force Alfredian modal **motan*, we learn that genuine variable-force modals may in principle turn into ones that are ambiguous between necessity and possibility. This is the first instance known to the author of demonstrating the diachronic semantic trajectory for a variable-force modal.

Chapter 5

Beyond-polarity restrictions on the scope of deontics

The aim of this chapter is to show that the current syntactic accounts of the scope restrictions of deontic modals with respect to negation are not satisfactory, and to suggest that some scope restrictions should be accounted for within the semantics and pragmatics, via semantic-convention filters on scope configurations. The negative part of my case comes from examining a wide range of deontics in terms of their scope: I argue that the observed diversity makes a purely syntactic account highly implausible. The positive part of my case is to demonstrate, using two case studies, how a semantic-convention filter can arise during the diachronic development of a modal, thus lending plausibility to my suggestion that some scope restrictions should be accounted for semantically.¹

I start in Section 5.1 with a description of the recent attempt by [Iatridou and Zeijlstra, 2013] to reduce the scopal restrictions of deontic modals to polarity-item properties. I show that I&Z's theoretical machinery fails to rule out certain unattested scopal constru-

¹The research reported in this chapter has benefitted from presentations at Ottawa University, University of Connecticut, Stanford and UCLA. Discussions with Jonathan Bobaljik, Cleo Condoravdi, Nathalie Dion, Kai von Stechow, Olga Fischer, Sabine Iatridou, Magdalena Kaufmann, Stefan Kaufmann, Paul Kiparsky, Sven Lauer, Yael Sharvit, Sali Tagliamonte and Yakov Tselelets have helped the progress of the project enormously.

als even in the languages they consider. I assume that I&Z’s analysis of NPI and PPI modals is correct, but for non-polarity modals their system cannot make enough distinctions to account for the whole range of data.

In Section 5.2, I introduce data from Russian deontics that only underscore the problem: despite all of them having similar surface syntax, Russian deontics show a wide range of scopal behaviors. That further suggests that syntax may play no role in how at least some constraints on scope work.

What the old and the new data indicate together is that we need more mechanisms that can restrict the scope of modals. In Section 5.3, I argue that the kind of mechanism we need may take the form of a semantic convention filtering out particular scope configurations, without the mediation of syntax.

In the remainder of the chapter, I show how we can support positing of semantic-convention filters through diachronic arguments. In Sections 5.4 and 5.5, I consider Russian *stoit* ‘should’, taking wide scope, and English deontic *have to*, taking narrow scope with respect to clausemate negation, and show how those restrictions arose historically caused by a combination of semantic and pragmatic factors, with no need for assuming syntactic mediation.

Section 5.6 concludes, outlining the emerging general framework for analyzing fixed scope of modals: 1) the “narrow” grammar provides language users with ways to compute a large variety of scopal construals, and with mechanisms such as polarity licensing that rule out some of them; 2) semantics and pragmatics may feature conventionalized restrictions that rule out some of the syntactically well-formed construals.

5.1 Deontics and clausemate negation: the state of the art

Deontic modals often have restricted scope with respect to clausemate negation. Possibility deontics (that is, permission modals) seem to universally scope under negation,

see [van der Auwera, 2001, Sec. 5.6, 5.7], but necessity deontics (obligation modals) show a range of different behaviors. I have nothing to say about the scope restrictions of permission deontics, and set them aside for the purposes of this chapter. From this point on, only obligation deontics will be discussed. [Iatridou and Zeijlstra, 2013] distinguish three types of such modals, given in 183:

(183) I&Z's three polarity types of deontics:

1. **PPI modals:** as other PPIs, need to be licensed by being in a non-downward-entailing (DE) context
Examples: *must, should*, Dutch *moeten*, Greek *prepi*
2. **NPI modals:** as other NPIs, need to be licensed by being in a DE context
Examples: *need*, German *brauchen*, Dutch *hoeven*
3. **Neutral modals:** are OK in upward-entailing contexts, but in the presence of negation scope under it.
Examples: *have to*, German *müssen*

Iatridou and Zeijlstra employ two mechanisms to derive the empirically observed scope configurations from the surface structure. First, they argue that the modal appearing in the TP zone may reconstruct to a position within VP, and thus below negation: this is how I&Z derive the narrow scope for the NPI modal *need* in 184.

(184) Mary needn't leave.

= 'It is not that Mary needs to leave'	$OK \neg > \square$
\neq 'Mary needs to not leave'	$* \square > \neg$

Second, when a modal that occurs below negation in the surface syntax needs to scope above it, as in 185, I&Z posit covert, QR-like movement of the modal over the negation.

(185)	O Yanis	dhen	prepi	na figi.
	John	NEG	\square -DEONTIC	leave

\neq ‘It is not that John has to leave’ * $\neg > \Box$
 = ‘John has to not leave’ OK $\Box > \neg$

Thus reconstruction takes care of the cases when the modal needs to scope lower than it stays in the surface syntax, and covert QR-like movement applies when the modal needs to scope higher than its surface position. In the case of NPI or PPI modals, I&Z’s analysis straightforwardly derives the facts: 1) due to the polarity requirements, only one of the two possible scope configurations allows the polarity-item-modal to be licensed; 2) if the only licensed scope configuration can be read off the surface structure, so be it; and if not, then either reconstruction or covert QR-like movement derives it. But for the third type of modals, which I&Z call “neutral”, more must be said. Those modals are happy in upward-entailing environments, unlike NPIs. Yet when they occur in the same clause with negation, they obligatorily scope under it. So on the one hand, they are not polarity items, but on the other, they have fixed scope with respect to negation. English *have to* and German *müssen* are two examples:

(186) Mary doesn’t have to leave.

= ‘It is not that Mary has to leave’ OK $\neg > \Box$
 \neq ‘Mary has to not leave’ * $\Box > \neg$

(187) Hans muss nicht abfahren.
 Hans \Box -DEONTIC NEG leave

= ‘It is not that John has to leave’ OK $\neg > \Box$
 \neq ‘John has to not leave’ * $\Box > \neg$

In the surface structure, *have to* appears below negation, while *müssen* appears above it. [Iatridou and Zeijlstra, 2013] take modals like *have to* to pose no problems in their system: “we do not need to say anything further for those that surface at the right of negation, as they are simply interpreted where they are in the overt syntax, that is, their syntactic and semantic scopes are identical”. Now, that is not quite correct: as I&Z themselves discuss, modals have to have the option of undergoing covert QR-like movement for scope purposes; that option, other things being equal,

should be available to *have to* in 186. Yet it is not available, and I&Z do not explain why.

I&Z's account for non-NPI modals like German *müssen* or Spanish *tener que* which appear above negation in the surface structure is not unproblematic either. For such modals, I&Z have to explain why their scope cannot be just read off the surface structure. To do that, I&Z introduce a principle forcing such modals to have narrow scope:

(188) [Iatridou and Zeijlstra, 2013, (69b)]:

Head-movement reconstructs unless reconstruction would result in a grammatical violation.

I&Z argue that given the principle in 188, the scopal properties of 187 follow: 1) as *müssen* is a non-polarity modal according to I&Z, there is no reason that would prevent it from scoping under the negation; 2) from 188, we derive that *müssen* obligatorily reconstructs.

There are two problems with this explanation. First, the principle in 188 only rules out one class of derivations that may lead to the $\square > \neg$ construal. There are at least two other types of derivations that need to be independently blocked: A) after reconstructing due to 188, a modal like *müssen* may undergo QR-like movement upwards across the negation; B) the modal may undergo QR-like movement from its surface position, ending up in a position above the negation; for modals like *müssen*, that would block head-movement reconstruction, rendering the principle in 188 irrelevant.

I do not claim that one absolutely cannot introduce constraints that would rule out all the derivations that lead to illicit scope construals. But for *have to*-type and *müssen*-type modals, we would have to introduce very different constraints that result in the same interpretational restrictions. For *have to* we need to prohibit QR-like movement from the base position of the modal. For *müssen* we need to prohibit QR-like movement from a raised position at T. At the same time, we cannot prohibit QR-like movement for modals in general, as it is needed to derive the

is occupied by the auxiliary *avoir* that blocks head movement by *devoir*. I&Z hypothesize that the presence of the auxiliary that blocks head movement of the modal to T may be the reason why scope of *devoir* is restricted in 190, and call for future research on the issue. Further research is warranted, as such blocking actually cannot explain the unavailability of the $\square > \neg$ reading in 190: the presence of an auxiliary would not prevent covert QR-like movement by *devoir*, especially given the fact that in infinitivals, as I&Z themselves observe, *devoir* occupies a surface position below the negation, but is capable of covertly moving over it, 191.

- (191) Ne pas devoir fumer pendant 5 heures, c'est terrible.
 EXPL.NEG NEG \square -DEONTIC smoke during 5 hours that's terrible
 OK 'To be forced to not smoke for 5 hours is terrible'

And what is even worse, in irrealis perfectives as in 192, the scope of *devoir* is fixed not below, but above negation. In both 190 and 192, there is an auxiliary that blocks head movement over negation by *devoir*. Yet the scope is fixed differently in the two constructions. Such scope restrictions thus have nothing to do with the surface syntactic configuration.

- (192) Jean n'aurait pas du prendre l'autobus.
 Jean EXPL.NEG would.have NEG \square -DEONTIC take the bus
 \neq 'It is not that John should have taken the bus' * $\neg > \square$
 = 'John should not have taken the bus' OK $\square > \neg$

The problems with *devoir* add to the problems with *have to* and *müssen*: there are plenty of restrictions on the scope of non-polarity-item modals, but they do not appear to be caused by general syntactic principles. Rather it seems that individual lexical items, or even the pair of a lexical item and a particular tense-aspect-mood combination, may have associated scope constraints.

Summing up the discussion so far, we can conclude the following:

- (193) Positing that modals by default reconstruct to VP-internal positions cannot by itself derive the narrow scope of I&Z's "neutral" modals with respect to

negation.

(from German *müssen* and English *have to*)

- (194) Constraints on the scoping of modals and negation may be specific to particular tense-aspect-mood combinations.

(from French *devoir*)

In the next section, I will introduce data from Russian deontics that further illustrate the insufficiency of I&Z's system. While French *devoir* scopes freely in the present and the non-finite forms, its scope is at least sometimes fixed, but Russian features modals that are truly neutral in that they always permit both scope construals with respect to clausemate negation. In view of the existence of such true neutrality, it becomes even more obvious that the scope restrictions of modals such as German *müssen*, English *have to* and French *devoir* are the idiosyncratic properties of those particular words.

5.2 Russian deontics: true neutrality with respect to negation

Normally, if a scope-bearing expression is neither an NPI or a PPI, its scope with respect to negation is not fixed. For example, indefinites such as *two books* are polarity-neutral, and therefore may scope both above and below clausemate negation. In contrast to that, in the modal domain I&Z assign the label of polarity-neutral modals to *have to* and *müssen* which obligatorily scope below clausemate negation. This was a reasonable move given that I&Z did not find any necessity deontic that would be completely neutral with respect to negation. French *devoir* gets closest to that, but it still has restricted scope in some tense-aspect-mood forms. In this section, I provide data from Russian necessity deontics that are truly neutral: they scope freely with respect to their clausemate negation. From here on, I will reserve the term *neutral* to such truly polarity-neutral expressions. Thus I&Z's category of "neutral" modals in fact features modals subject to scope restrictions, even though

those may stem from something different than polarity sensitivity.

Another important feature of the Russian system is that in addition to free-scope deontics, Russian also has both $\Box > \neg$ and $\neg > \Box$ fixed-scope necessity deontics. Free-scoping and restricted deontics have similar syntax in Russian, all occurring below negation in the surface structure. This further illustrates that scope restrictions are often specific to particular modals, rather than stem from the general properties of the syntactic system (contra I&Z, who propose the language-specific principle of obligatory reconstruction of head movement in order to derive the fixed scope of German *müssen* and Spanish *tener que*).

In this section, I first introduce the data on free-scope deontics, Section 5.2.1. Then I discuss modal Neg-raising in Section 5.2.2, showing that free-scope Russian modals have genuine, not Neg-raised $\Box > \neg$ readings. While doing so, I point out problems with [Homer, 2013]’s Neg-raising analyses of English modals. In Section 5.2.3, I provide data on Russian fixed-scope deontics.

5.2.1 Russian free-scope deontics

Morphologically and syntactically, most deontics in Russian are predicative adjectives taking as arguments a Nominative or a Dative subject, and an infinitive clause. Predicative adjectives in Russian require the presence of copula *byť* ‘be’. In the present, the copula’s form is \emptyset , so it is not visible on the surface.

Russian modals *dolžná* (that can have the deontic, teleological and epistemic modal flavors) and *núžno* (need/deontic/teleological) have free scope with respect to clausemate negation:

- (195) Ona ne dolžna upominatj o svojom znakomstve s Anej.
 she NEG \Box -DEONTIC mention about her acquaintance with Anya
 $\Box > \neg$: ‘She mustn’t mention she’s acquainted with Anya.’
- (196) Maša objasnila, što Anja ne dolžna pisatj otčot.
 Masha explained that Anya NEG \Box -DEONTIC write report
 $\neg > \Box$: ‘Masha explained that Anya does not have to write a report.’

- (197) Ej ne nužno segodnja prinositj svoj obed:
 she.DAT NEG □-DEONTIC today bring her lunch
 ‘She {mustn’t / doesn’t have to} bring her lunch today.’
- a. ... xolodiljnik slomalsja, i dekan poprosila poka ne prinositj svoju
 fridge broke, and chair asked yet NEG bring one’s
 edu.
 food
 □ > ¬: ‘... the fridge broke down, and the chair asked (everyone) to not
 bring their food until further notice.’
- b. ... na fakuljtete budet furšet.
 on department will.be catered.food
 ¬ > □: ‘... there will be catered food in the department.’

The same freedom of scoping is retained in the past tense:

- (198) Ona ne dolžna byla upominatj o svojom znakomstve s
 she NEG □-DEONTIC was mention about her acquaintance with
 Anej.
 Anya
 □ > ¬: ‘She had to keep silent about her acquaintance with Anya.’
 ¬ > □: ‘She didn’t have to keep silent about her acquaintance with Anya.’
- (199) Ej ne nužno bylo upominatj o svojom znakomstve s
 she.DAT NEG □-DEONTIC was mention about her acquaintance with
 Anej.
 Anya
 □ > ¬: ‘She had to keep silent about her acquaintance with Anya.’
 ¬ > □: ‘She didn’t have to keep silent about her acquaintance with Anya.’

Both *dolžna* and *nužno* appear below sentential negation in the surface syntax: negation in Russian always occupies a high position, cliticizing on the left to the highest finite element in its clause.² Thus the scope configuration $\neg > \square$ may be read off the surface structure, but the $\square > \neg$ interpretation has to be derived by covert QR-like

²The role of that “highest finite element” in 198 and 199 is taken up by the predicative adjective: on the surface, it looks as if the adjective has head-moved across the copula, in a pattern similar to the well-known “long head movement” pattern in South and West Slavic. It is still an open question what exact underlying structure corresponds to the linear order *(Neg) Adj Aux* in different

movement of the modal (assuming the general system of [Iatridou and Zeijlstra, 2013]; in a different system, another covert scope-changing operation would apply.)

5.2.2 Free-scope deontics and (the absence of) Neg-raising

[Homer, 2013] extensively argues that modals may not only have genuine wide scope with respect to negation, but also create Neg-raised readings. Homer assumes the semantic analysis of Neg-raising along the lines of [Gajewski, 2007], wherein Neg-raisers carry the presupposition of possible-world uniformity. For example, the Neg-raised reading of *I don't think Barcelona is in Spain* is derived from the literal, weak meaning of the sentence *'It is compatible with my thoughts that Barcelona is not in*

 Slavic languages, the several analytical options being: (1) [Rivero, 1994] argues for a long head movement analysis, with the adjectival element (a participle or an actual adjective) appearing in C; (2) [Bošković, 1995] argues for incorporation analysis, in which the adjectival element merges into the copula head; (3) [Ackema and Čamdžić, 2003] arguing for base-generating the adjectival element in the higher position. This does not exhaust the analytical options, and some authors, esp. [Embick and Izvorski, 1997], caution against lumping together all instances of the order *Adj Aux*, within the same language or across different Slavic languages (cf. also [Borsley and Rivero, 1994] and [Broekhuis and Migdalski, 2003]).

Russian data, previously not described in connection to “long head movement”/“Adj movement across the copula” in other Slavic, should bear on that debate, though much future research is needed. For example, the fact that the Russian sentence in (i) is grammatical shows that either the incorporation analysis of Bošković does not work for Russian, or it does not work for BCS. Bošković argues that if there is a need for the incorporated adjectival element to move further up, it necessarily excorporates, stranding the copula below. So when Adj has an independent reason to move higher from the complex *Neg-Adj-Aux*, it strands *Neg-Aux* — as can be observed in BCS. But in the Russian (i), negation is not stranded, but taken along by the moving adjective. Thus either Russian orders *Adj Aux* do not feature Bošković-style incorporation, or Bošković is wrong about the excorporation requirement, which would destroy his account of the BCS data.

- (i) Ne nužno Maše bylo tuda ezditj.
 NEG □-DEONTIC Masha.DAT was there go
 □ > ¬: ‘Masha should not have gone there.’
 ¬ > □: ‘It is not that Masha should have gone there.’

Spain’, and the presupposition that the attitude bearer either believes p or believes $\neg p$. In this case, the presupposition states that I either believe that Barcelona is in Spain or that Barcelona is not in Spain. Given such presupposition, the weak reading entails the stronger Neg-raised reading “*I think that Barcelona is not in Spain*”. In the general case, Gajewski’s presupposition rules out situations where the attitude bearer has no opinion regarding p , and that causes the weaker meaning $\neg(Dox \subseteq p)$ to entail the stronger meaning $Dox \subseteq \neg p$, where Dox is the set of belief worlds.

Given the theoretical possibility of Neg-raising for intensional operators, we can ask whether the $\Box > \neg$ construals of the Russian examples above are due to the modal genuinely taking wide scope, or to Neg-raising. Assuming Gajewski’s theory of Neg-raising which Homer adopts, it is easy to check that directly. The presupposition of uniformity is crucial for the generation of a Neg-raised reading in Gajewski’s system. We can then construct a context where the presupposition is clearly not met, and check whether Russian free-scope deontics may still show the $\Box > \neg$ interpretation. If yes, then their scope is genuine. If not, then it was due to Neg-raising.

In the case of obligation deontics, the presupposition creating the Neg-raising effect is as follows:

(200) **Presupposition enabling Neg-raising for modals:**

Either it is necessary that p , or it is necessary that $\neg p$.

To make sure the presupposition does not hold, we need to use a context where it is established that it is clearly an option that neither p nor $\neg p$ is necessary. In other words, if the context does not rule out $(\Diamond p) \wedge (\Diamond \neg p)$, then the presupposition in 200 is not met. The context in 201 is of the proper kind: for each particular day, it says that either $\Box(\textit{office})$ or $\Diamond(\textit{office}) \wedge \Diamond\neg(\textit{office})$ is true. We can see that for both *dolžna* and *nužno* the $\Box > \neg$ reading still remains available in that context. That means those Russian free-scope modals can scope over clausemate negation without the help of Neg-raising.

(201) Po pravilam ej inogda polagaetsja provoditj vesj denj v
 According rules she.DAT sometimes supposed.to spend whole day in

svoem ofise, xotja často ona voljna rabotatj tam, gde ej
 her office though often she.NOM free to.work there where for.her
 udobnee.
 more.convenient

‘According to the rules, she sometimes has to spend the whole day in her office, but quite often she is free to work wherever it’s convenient for her to do that.’

- a. ... I vot zavtra ona ne dolžna pokidatj ofis.
 and so tomorrow she.NOM NEG □-DEONTIC leave office
 □ > ¬: ‘And as for tomorrow specifically, she must not leave her office.’
- b. ... I vot zavtra ej ne nužno pokidatj ofis.
 and so tomorrow she.DAT NEG □-DEONTIC leave office
 □ > ¬: ‘And as for tomorrow specifically, she must not leave her office.’

Having established that Russian free-scope deontics can have genuine wide scope, we can turn to correcting several misconceptions about modal Neg-raising introduced by [Homer, 2013]. First, Homer’s empirical test for modal Neg-raising in English is methodologically problematic. Second, Homer’s classification of English *should* as assessor-dependent and *must* as assessor-independent is based on incomplete data, and is incorrect: the contrasts Homer notices are due to differences in modal flavor (for which he did not control), not to the lexical properties of the modals. Third, Homer’s generalization stating that only assessor-dependent predicates may be Neg-raisers is based on a misunderstanding of what assessor-dependence is.

First, let’s consider the test for Neg-raising in English that Homer introduces. Both *must* and *should* which he tests are PPI modals, so it is not easy to detect whether they are capable of Neg-raising: they normally produce the □ > ¬ interpretation. But as other PPIs, they may scope under negation as long as there is an intervening operator such as a universal quantifier over individuals that shields them. In particular, the scope configuration ¬ > ∀ > □ is admissible for a PPI modal. This observation leads Homer to formulate the following test. 202, with the modal taking narrowest scope, has the literal meaning ¬ > ∀ > □, equivalent to ∃ > ¬ > □. Under Neg-raising, that meaning would entail the stronger meaning ∃ > □ > ¬. So if we

detect a sentence of the form in 202 to have the stronger meaning $\exists > \square > \neg$, that means the modal involved is a Neg-raiser.

(202) Not everyone MODAL p .

Literal meaning: $\neg > \forall > \square$, equivalent to $\exists > \neg > \square$

Neg-raised meaning: $\exists > \square > \neg$

According to Homer, *should* passes the test, while *must* does not. Applying the test, however, is problematic because the Neg-raised reading being tested for entails the non-Neg-raised reading. Even a non-Neg-raising predicate may get a Neg-raised reading if the context is right. Given that, one cannot tell if a particular single instance of the test features the stronger meaning because of the context, or because of the modal's properties. In order to reach definite conclusions, one has to consider multiple instances of the test, but that is not straightforward either.

For suppose for the sake of the argument that *should* is a Neg-raiser. Even in this case we do not expect to see every instance of the test with *should* to feature the stronger meaning: it is well known that the Neg-raising presupposition sometimes fails to be triggered by true Neg-raising predicates. So the existence of examples like 203 does not falsify Homer's claim that *should* is a Neg-raiser.

(203) Not everyone should file their taxes on April 15. (Some people have the right for an extension.)

OK $\exists > \neg > \square$, # $\exists > \square > \neg$

Second, as *must* is a non-Neg-raiser, we expect it to only give rise to the relevant reading due to the special contextual strengthening. Indeed, we find naturalistic examples where the strengthened reading is conveyed, as in 204.

(204) (These two studies suggest that the widely held assumption that presumes it is important for everyone to find meaning in loss is incorrect.)

These authors suggest that **not everyone must embark on a painful journey toward meaning** to experience peace and come to terms with significant loss.

(from *Caring for the Vulnerable*, ed. Mary de Chesnay, p. 108)

So if Homer's classification of *should* as a Neg-raiser and *must* as a non-Neg-raiser is correct, we expect to find both strengthened and non-strengthened meanings for either modal. But if that is what we see, then how do we know that one modal is a Neg-raiser and the other is not? Strictly speaking, it might still be possible to argue for that by showing that for *should*, the Neg-raised readings are systematically available, while for *must*, they only occur sporadically. But Homer does not even acknowledge the difficulty, and seems to have assumed that examples like 204 are impossible in English.

Turning to the alleged link between assessor-dependence, in the relativist sense, and Neg-raising, consider the following generalization:

(205) [Homer, 2013, (100)]:

Generalization: Only assessor dependent predicates are neg-raisers.

Homer argues that the behavior of *must* and *should* supports his generalization: he takes *must* to be a non-Neg-raiser and non-assessor-dependent, and *should* to be a Neg-raiser, and an assessor-dependent predicate. But if Homer's characterization of *should* as a Neg-raiser and *must* as a non-Neg-raiser is just hard to either falsify or verify, his claim that *should* is assessor-dependent and *must* is not assessor-dependent, is outright false.

Homer argues that the infelicity of 206 indicates that *should* is assessor-dependent, and that the felicity of the parallel example 207 with *must* shows that *must* is not.

(206) [Homer, 2013, (76a)]:

Hermann should_{deon} marry Zelda, but I don't have an opinion about this marriage.

(207) [Homer, 2013, (79a)]:

^{OK} Hermann must_{deon} marry Zelda, but I don't have an opinion about this marriage.

But the difference between 206 and 207 that Homer reports is spurious. Once we control for whether the deontic in that sentence frame is subjective or objective, we can easily build parallel good examples with *should*, as in 208, and parallel bad examples with *must*, 209. The infelicity of 206 and 209 is due to the fact that the sentence form $(\Box p) \wedge no.opinion(p)$ is bad when \Box has the subjective deontic reading. It does not depend on whether \Box is *should* or *must*.

- (208) ^{OK} Given the law regarding royal offspring, Hermann should_{deon} marry Zelda, but I don't have an opinion about this marriage.
- (209) # My child, you must_{deon} go to sleep now, but I don't have an opinion about your going to sleep.

Moreover, the fact that Homer happened to use a subjectively-leaning example with *should* and an objectively-leaning example with *must* is in itself an accident: [Ninan, 2005] argued that it is matrix *must* that requires a greater degree of speaker endorsement than *should*, finding a difference between the two which goes in the opposite direction from the one found assumed by [Homer, 2013].

Thus contrary to [Homer, 2013], there is no difference in assessor-dependence between deontic *should* and *must*, and the two modals lend no support to his generalization in 205.

Unfortunately, the problems with Homer's generalization 205 do not end with modals. To support his claim, Homer argues that the whole list of Neg-raising predicates given in [Horn, 1978] features only assessor-dependent predicates. But it is hard to see in what sense predicates like *imagine*, *feel like*, *plan* or *desirable* may be analyzed as assessor-dependent, unless one is willing to say that predicates like *table* are.

I refer the reader to [MacFarlane, 2012] for a brief introduction to the issues of assessor-dependency, and note that the crucial feature of assessor-dependent predicates is that a single utterance featuring them may be judged as true by one person and false by another with both of the assessors being correct. It is thus not just the facts of the matter, but also facts about the assessor's state of mind and context that

determine the truth of an assessor-dependent statement — a quite unusual situation in natural language. To give an example, in the case of the arguably assessor-dependent epistemic *might*, Mary’s utterance of *Bill might be in Boston* may be true with her as an assessor, but false with the assessor being Ann who knows that Bill is in Berkeley. To say that *imagine* is assessor-sensitive, as Homer does, is effectively to say that when Mary says 210, she may have said something true even if her assertion is false for a certain Ann as the assessor. But this is not the case: either Beth imagines she’s friends with a unicorn, or she doesn’t, and whether 210 is true does not depend on whether it is Mary herself or Ann who assesses Mary’s assertion.

(210) Beth imagines that she is friends with a unicorn.

If we allow the objective truth of 210 to depend not just on the state of the world, but also on the assessor (as relativists do for epistemic modals, taste predicates, etc., but, importantly, not for predicates like *imagine*), we will have to claim that 211 is also assessor-sensitive.

(211) Beth saw a table.

To sum up the discussion of [Homer, 2013], while he makes a valuable suggestion that certain apparent wide-scope construals of deontic modals may be due to Neg-raising rather than genuine wide scope, his diagnostics for Neg-raising in English are much less clear-cut than he takes them to be; Homer’s results on assessor-dependence of *must* and *should* are spurious as he fails to control for modal flavor; and finally, the alleged connection between the ability to Neg-raise and assessor-dependence is based on a misunderstanding of what assessor-dependence is.

5.2.3 Russian fixed-scope deontics

It is not that all Russian modals have free scope with respect to clausemate negation. In particular, *stoit* (an “advice” modal) always takes scope over clausemate negation, while *objazana* (deontic) always scopes below it:

- (212) Tebe ne stoit begatj po utram.
 you.DAT NEG \square -ADVICE run on mornings
 OK $\square > \neg$: “You should not run in the mornings.”
 * $\neg > \square$: “It is not that you should run in the mornings.”
- (213) Ona ne objazana byla pisatj otčot o poezdke.
 she NEG \square -DEONTIC was write report about trip
 * $\square > \neg$: “She was required to not write a report about the trip.”
 OK $\neg > \square$: “She did not have to write a report about the trip.”

Objazana belongs to the same morphosyntactic category as *dolžna*, so the comparison between the two shows that it really depends on the lexical item alone which scope construals are allowed. *Stoit* is an impersonal verb, not a predicative adjective, but its surface position is under negation, just as for predicative adjectives, so there is no reason to think the morphosyntactic differences between *stoit* and *nužno* or *dolžna* should have any consequence with respect to their interaction with clausemate negation.

New Russian data we reviewed above thus add further evidence that scope restrictions of modals are so diverse for modals with otherwise similar syntactic behavior that such restrictions are likely to be associated directly with individual modals, and not stem from major principles regulating the work of the syntactic component.

5.3 Semantic-convention filters on modal scope construals

Adding the Russian modals reviewed in the previous section to the overall dataset to be analyzed, we may conclude the following:

- (214) Modals may be PPIs (like *must*) or NPIs (like *need*), or they may be not polarity-sensitive at all (like English *have to*, French *devoir*, Russian *nužno*).
- (215) The syntactic component allows a non-polarity-sensitive modal to have either scope with respect to clausemate negation.

(After [Iatridou and Zeijlstra, 2013], we can take the mechanisms responsible for this to be reconstruction and scope-changing covert movement.)

(216) Not every modal uses all the possibilities made available by the syntax.

Namely, there may be further constraints in place that rule out a particular scope configuration for a given modal word (English *have to*, Russian *objazana*), or for a modal word within a particular environment (French *devoir* in indicative vs. irrealis perfectives).

Thus polarity-sensitivity is not the only mechanism that may constrain how a modal scopes with respect to clausemate negation. In particular, the case of *devoir* suggests that scope restrictions may be tied to particular “constructions” rather than attached to lexical items. It is hardly possible to derive such construction-specific constraints using general-purpose syntactic mechanisms. But do we have any way to account for scope constraints not using syntactic mechanisms?

I argue that we do, and that fixed-scope constraints may be imposed by the lexical and construction-specific semantics and pragmatics of the language. We know independently that certain meanings may be indexed to particular constructions rather than follow from the compositional semantics of the lexical items alone. For example, *Can you pass me the salt?* conventionally conveys a request, while *Are you capable of passing me the salt?* is not (cf. [Horn and Bayer, 1984]). Even the latter sentence may give rise to the implicature of a request, but only the first does so conventionally, without requiring much pragmatic reasoning. There is no *a priori* reason why restrictions on relative scope could not be conventionalized, too.

A semantic convention imposing fixed scope would be learned in the same way speakers learn the lexical meanings of words. After language learners hear a word used a large number of times in a similar way, they abstract from those occurrences a semantic representation for the word. The semantics of a word gets generalized from individual instances in such a way as to be capable of explaining each of those. Statistically significant absence of positive evidence works as negative evidence in the creation of such conventions: we know that *rabbit* cannot denote a frog because we

never heard people use *rabbit* that way. Finally, meanings may be associated not with individual words, but with larger chunks of structure, as the existence of idioms shows.

The acquisition of a semantic filter on scope construals would proceed similarly. For example, the learners would hear surface string such as \square *Neg*, and due to the existence of the constraint in the speech of competent speakers, that string would only be used in sentences conveying the *Neg* \square reading. With only a few examples of this sort encountered, the learners could have not noticed the pattern. But the more frequent the surface string \square *Neg* is, the more striking it becomes that it is only used to convey the *Neg* \square reading. As learners are sensitive to such statistical evidence, interpreting it as a sign that something should be ruled out by the grammar, they acquire a scope constraint. If the constraint can be tied to the workings of a general syntactic mechanism (e.g., to the licensing of polarity items), then learners may acquire a syntactic constraint. But if the constraint seems to be idiosyncratically tied to a particular modal, or even to its combination with a particular tense-aspect-mood form, a semantic filter may become established in the grammars being acquired.

Once a semantic convention is established, it will perpetuate itself, other things being equal. The usage of all members of the linguistic community will be constrained by the convention, and new speakers will learn to conform to the same convention as they acquire language, unless there is pressure for language change. So the explanatory burden associated with positing a particular semantic convention restricting modal scope is to demonstrate how it got conventionalized: once it is established, the speakers will use the restriction until they have a good reason not to; it is the rise of the restriction that is not a trivial matter. Below, I present two case studies that show how such conventionalization proceeds. One case study considers the wide scope of Russian *stoit* 'should', and another, the narrow scope of English *have to*.

5.4 Diachronic conventionalization of the wide scope of Russian *stoit*

5.4.1 *stoit* in Present-Day Russian

Russian modal verb *stoit* (infinitive *stoitj*) belongs to the general category of priority modality, “the most common types of priority modality” being “deontic, bouletic, and teleological” (cited from [Portner, 2009, Ch. 4.3]). The distinctive feature of *stoit* is that it is specialized for the semantic flavor of symbouletic (from *συμβουλευω* ‘advise’), or, in other words, advice/suggestion modality. In matrix clauses, *stoit* has a performative effect, urging the subject of the modal (which takes the Dative and does not trigger verbal agreement) to bring about the prejacent (that is, the complement clause of the modal). For example, *stoit* is good in suggestions, 217, but cannot neutrally describe obligations, 218.

(217) *OK* {Tebe/Maše} *stoit* *poexatj* *v* *otpusk*.
 you.DAT/Masha.DAT STOIT go to vacation
 ‘{You/Masha} should take a vacation.’

(218) * *Soglasno pravilam, tebe* *stoit* *sdatj* *otčot* *do* *zavtra*.
 according rules you.DAT STOIT submit report before tomorrow
 ‘According to the rules, you should submit the report before tomorrow.’

Furthermore, *stoit* may be used in teleological contexts, but in such a case it does not neutrally describe a means to reach the goal, but actively urges the subject to use that means. E.g., in teleological 219, a general-purpose priority modal *nužno* may be followed up by advice not to use the means described (presumably because the speaker does not find the goal justifying the means). But if we substitute *stoit* into the example, it becomes bad. With *stoit*, the speaker of 219 has to endorse the subject of the modal taking the described action, while the continuation urges the same person to not take that action, creating a contradiction.³ (In the first sentence

³The endorsement requirement arises in declarative matrix contexts (targeting the speaker), as well as under attitude verbs (targeting the attitude bearer). I leave a more complete discussion of the endorsement effect for another occasion.

of 219 in isolation, *stoit* is fine.)

- (219) Čtoby povysitj svoi šansy, Maše { *stoit/^{OK} nužno } kupitj
in.order.to improve her chances Masha.DAT STOIT/NUŽNO buy
vtoroj loterejnij bilet. No ja by ej ne sovetoval.
second lottery ticket. But I would to.her not advise
‘To improve her chances, Masha ought to buy a second lottery ticket. But I
wouldn’t advise that.’

As can be seen from 217 and 219, the “advice” provided by a *stoit*-clause need not target the addressee, so the distribution of the modal is not restricted to what one would pre-theoretically call advice. Moreover, *stoit* may be embedded under a wide range of elements, including questions, past tense (resulting in counterfactual suggestions about past situations), attitude complements, and antecedents of conditionals:

(220) **Question:**

Stoit li mne zapisatjsja na etot klass?
STOIT Q I.DAT register for that class

‘Should I register for that class?’

(221) **Attitude complement and past tense:**

Maša teperj dumajet, što Ane stoilo tuda pojti.
Masha now thinks that Anja STOIT.PAST there go

‘Masha now thinks that (according to Masha’s current information) it would
have been better (given the circumstances back then) if Anya went there.’⁴

⁴ It is common, since [Condoravdi, 2002], to distinguish two temporal characteristics of a modal. The *temporal perspective* determines at which time the accessibility relation is computed; e.g., in epistemic *Mary must arrive soon*, the temporal perspective is present as it is the present knowledge that forms the epistemic accessibility relation. The *temporal orientation* of the modal, on the other hand, concerns the relation between the time provided by the temporal perspective, and the time at which *p* in *modal(p)* gets evaluated. In the same example *Mary must arrive soon*, the temporal orientation is future: Mary’s arrival is in the future from the moment relative to which the epistemic accessibility relation is computed.

(222) **Conditional antecedent:**

Stavjte palcy vverx, esli mne stoit prodolžatj snimatj takie video.
put fingers up if I.DAT STOIT continue shoot such videos

‘Put your thumbs up if I should continue to make such videos.’

found using Google at twitter.com/MishaMalvin/status/277846247623245824

Turning to the interaction between *stoit* and negation in Present-Day Russian, we have observed in Section 5.2 that unlike most other priority modals in Russian, *stoit* always scopes over its clausemate negation. However, before proceeding to show how the fixed scope of *stoit* came about, we need to observe that semantically, there is nothing wrong with *stoit* figuring in a $\neg > \square$ interpretation: in 224 the upper-clause negation creates just such a semantics.

(223) *Context: The addressee has a choice of going to Boston, NYC or Philadelphia.*

Tebe ne stoit exatj v NYC.
you.DAT not STOIT go to NYC

= ‘You shouldn’t go to NYC’ *OK* $\square > \neg$

≠ ‘It’s not that going to NYC is your best option.’ * $\neg > \square$

(224) *OK* Eto ne značit, što tebe stoit exatj v NYC, vedj v Bostone tože
this not means that you.DAT STOIT go to NYC as in Boston also
interesno.
interesting

‘That does not mean you should go to NYC, because in Boston it’s also fun.’

224 has an extremely weak semantics: it may be informally paraphrased as “It is premature to commit to a particular course of action yet; I do not know whether *p*

In 221, we need not two, but three temporal parameters: first, it is Masha’s *present* opinion that matters; second, it is the *past* circumstances that matter; third, the event of Anya going there is in the *future* counting from the time at which the relevant circumstances hold. In other words, the temporal orientation of *stoit* is future, but there are two different temporal perspectives: one for the opinion, another for the circumstances of the situation for which the suggestion is relevant. The former is tied to the upper-clause tense, or to global evaluation parameters in matrix cases, and the latter to the local, clausemate tense.

or *q* or *r* is the option I should urge you to take”. Since such an interpretation is in principle available for speakers of Russian, there is no reason why 223 could not in principle mean something similar, paraphrasable as: “I am not recommending you to take a vacation (and not recommending you to not take it either)”.

As the semantics of the modal is compatible with interpreting it immediately under negation, and indeed we have seen above that *stoit* may occur with narrow scope in a wide range of embedding environments, there must be a separate grammatical constraint restricting the scope of *stoit* with respect to clausemate negation. Here I remain neutral on whether that constraint is syntactic or semantic in the present-day Russian, and show in the next section how this constraint could arise historically given the meaning change that *stoit* underwent.

5.4.2 The rise of advice/suggestion *stoit*

Once we consider the historical rise of modal *stoit*, we can see that the new modal meaning arose as a conventionalized implicature from the construction “*It is (not) worth it to p*”. The implicature triggered by sentences with full-verb *stoitj* describing metaphorical worth of a particular action gradually became conventionalized as the assertion of utterances with the new symboletic modal *stoit*.

The lexical source for Russian modal *stoit* is a homophonous lexical verb with the basic meaning ‘to cost’, still existing in Present-Day Russian. To distinguish between the modal and all of the lexical verbs related to it, I refer to the latter by the infinitive *stoitj*. Unlike modal *stoit* which takes non-agreeing Dative subjects, the lexical *stoitj* takes a Nominative subject that triggers agreement, and an object that is usually expressed by a DP. The object DP may denote literal, monetary price, 225, or metaphorical worth, 226.

(225) Eta kniga stoit dva rublja.
 that book.NOM STOITJ.PRES.3SG two roubles
 ‘That book costs two roubles.’

(226) Čelovečeskoe dostoinstvo ničego dlja nego ne stoit.
 human dignity.NOM nothing.ACC for him NEG STOITJ.PRES.3SG

‘For him, human dignity is worth nothing.’

In metaphorical-worth cases, the subject or the object of the lexical verb *stoitj* may be expressed by an infinitive construction. We find such examples in the early 19th century, and presumably they date back to earlier times:⁵

(227) **Subject infinitive with *stoit*:**

a1820 no čego nam stoilo vesti vas k
but what.GEN we.DAT STOITJ.PAST.SG.NEUT lead.INF you to
pobede?
victory

‘But what did it cost us to lead you to (that) victory?’

from Karamzin, *Istoriya*, vol. 9.

(228) **Object infinitive with *stoit*:**

1814 Ty ne stoiš bytj v moem kruge.
you.NOM not STOITJ.PRES.2SG be.INF in my circle

‘You are not worth being in my circle.’

from Narežnyj, *Rossijskij Žilblaz*.

Already in the early 19th century, there existed a construction where the only overt argument of the verb was an infinitive. In such cases, it is often impossible to tell whether the construction was derived from the subject infinitive, 227, or the object infinitive construction, 228.⁶ For example, in 229 it is possible to parse the infinitive as a subject, and assume that the omitted object is some general noun like “effort” or “work” (both of which are commonly used with *stoitj* overtly in the language of the time). However, it is also possible to parse the sentence with the infinitive as an

⁵All the dated examples from Russian have been found using the *Russian National Corpus*, which can be accessed freely at <http://ruscorpora.ru/>.

⁶Sometimes it is possible to disambiguate thanks to the agreement morphology on *stoitj*: infinitive subjects trigger 3-person singular neuter agreement, so any other agreement on the verb indicates that the infinitive is the object. But the 3SG.NEUT agreement on the verb may either be triggered by the infinitive or by the omitted subject such as the common situational anaphor *eto* ‘that’.

object, and recover a subject that roughly means “the present situation”. Whether the infinitive is the goal (in the subject construction) or the means (in the object construction), it still refers to an action that needs to be taken in order to reach the relevant (larger) goal. Thus the general message of the sentence is similar on both readings, and the speaker meaning gets conveyed, at least vaguely, regardless of the syntactic analysis:

- (229) **1813** ne stoilo i izveščatj o sebe
 not STOITJ.PAST.SG.NEUT PART let.know about oneself
 glavnokomandujuščego
 commander-in-chief

Subject infinitive paraphrase: ‘To let the commander-in-chief know about oneself was not worth the effort.’

Object infinitive paraphrase: ‘The present circumstances were not worth letting the commander-in-chief know about oneself.’

from Ščerbinin, *Voennyj žurnal 1813 goda*.

At least since the 1830s, we can commonly find examples where the construction “(Neg) *stoit* INF” is clearly used to imply that one should (not) bring the infinitive clause about. Such examples occur in didactic writing styles where the author instructs the audience, 230, in fictional dialogues, 231, and in deliberations, 232. Those contexts are inherently oriented towards speaker-hearer pragmatic interaction, and thus provide particularly fertile ground for generating and recovering implicatures.

- (230) **1833** Isključenija iz pravila tak redki, što ne stoit i
 exceptions from rule so rare that NEG STOITJ.PRES.3SG even
 upominatj o nix!
 mention. INF about them

‘The exceptions for this rule are so rare that it is not worth the effort to even mention them!’

from Bulgarin, *Peterburgskie zapiski*.

- (231) **1834** Ne stoit i otvečatj na klevetu, Maus! Vedite
 NEG STOITJ.PRES.3SG even answer.INF about slander Maus lead
 ix! — skazal Geyer.
 them said Geyer

‘It is not worth the effort to answer the slander, Maus! Lead them on! — said Geyer.’

from Masaljskij, *Regentstvo Birona*.

- (232) 1835 o, da eto takoj kuš, pri ktorom ne stoit obraščatj
oh but this such prize with which NEG STOITJ.PRES.3SG pay.INF
vnimanija na vse pročie kuši.
attention at all other prizes

‘Oh, but this is such a prize that it is not worth it to think about any other prizes.’

from Veljtman, *Erotida*.

In the positive case, the pragmatic practical reasoning deriving the action-guiding implicature from the metaphorical-worth literal meaning of *stoit* can be reconstructed as in 233. Given the context in which the rationality of acting towards *p* is entertained, a metaphorical-worth statement about the present implicates a directive statement regarding future action.⁷

(233) **Action-guiding implicature, the positive case:**

Assuming a contextually supplied agent *x*...

1. **Assumption of control:** “*x* has control over bringing *p* about”

⁷Not all metaphorical-worth examples gave rise to the action-guiding implicature, and we can still find such examples with lexical, metaphorical-worth *stoit* in Present-Day Russian. For example, in 1, the assumption of decision problem is not present in the context, and given the absence of actual choice, the action implicature is not generated.

- (1) 2005 I ty znaeš... — pribavil on, čutj pomolčav, — za takoj moment
and you know added he a.bit having.been.silent for such moment
stoit potom god čistitj nužniki.
STOITJ.PRES.3SG afterwards year wash toilets

‘And you know what... — added he after being silent for a bit, — for such a moment it is worth it to be cleaning the toilets for a whole year.’

from Gluxovskij, *Metro 2033*.

2. **Assumption of decision problem:** “*x* needs to choose whether to work towards *p* or not”
3. **Assumption of rational effort investment:** “if something is worth the effort, it should be done”
4. **Literal meaning:** “bringing *p* about is worth the effort for *x*” (subject infinitive) or “The present situation is worth bringing *p* about for *x*” (object infinitive)
5. **Conclusion** from 1, 2, 3, 4: “*x* should bring *p* about”

For modern speakers of Russian, such examples as 230-232 may be analyzed as directly action-guiding rather than simply describing the worth of a particular action choice. However, in the first half of the 19th century, we do not find cases which cannot be analyzed as literally conveying a statement about metaphorical worth. Compared to that, by the beginning of the 20th century uses of *stoit* appear which are unambiguously action-guiding, and cannot be interpreted as literally conveying a statement about worth. For example, in 234 the speaker deliberates not about the relative worth of ringing the bell, but about whether to do it or not. Thus we cannot point with certainty the very first cases of *stoit* asserting a direct action-guiding statement, but from the unambiguous cases like 234 we may conclude that by the early 20th century, such uses already existed.

(234) 1915 Xorošo by pozvontj na kolokoljne!.. Kakož sedni denj. Sereda?..
 good SUBJ ring at belltower which today day Wednesday
 Koli sereda, to ne stoit... A vot eželi by
 if Wednesday then NEG STOITJ.PRES.3SG but then if SUBJ
 voskresenje, objazateljno nado by pozvontj!
 Sunday without.fail must SUBJ ring.some

‘It would be good to ring the bells in the belltower. Which day is it t’day? Wednesday?.. If it’s Wednesday, then one should not... But if it’s Sunday, one should ring the bells for some time without fail!’

from Bogdanov, *Nikita Prostota*.

A practical test for distinguishing examples amenable to the metaphorical-worth

literal meaning which can be used for the computation of the implicature as in 233. (Though whether the implicature is triggered depends on whether the context supports the required assumptions.) The category “can add *truda*”, in the fourth row, is the category of ambiguous examples that pass the test in 235, and on their own they cannot be readily classified into those that implicate and those that assert the action-guiding statement. Finally, the fifth row, “cannot add *truda*”, features unambiguously action-guiding examples that fail the test in 235.

Table 5.1: Evolving distribution of INF-taking *stojt*

	1841-1845			1914		
	POS	NEG	QUE	POS	NEG	QUE
<i>čego</i> ‘what.ACC’/ <i>ničego</i> ‘nothing.ACC’	3	4	0	0	4	0
other ACC noun	5	0	1	7	0	0
<i>truda</i> ‘effort.ACC’	11	1	1	1	0	0
can add <i>truda</i>	9	12	7	15	14	6
cannot add <i>truda</i>	0	0	0	1	1	6
Total:	28	17	9	24	19	12

POS corresponds to positive examples (including wh-questions), NEG to negative ones, and QUE to yes-no questions (both positive and negative, matrix and embedded ones) and, for the 1914 subcorpus, exclamations derived from questions.

The numbers are given for searches in subcorpora of the Russian National Corpus, with the “exact” setting for dates. 1841-5 subcorpus: 2,557K words; 1914 subcorpus: 2,119K words.

The query was for verb *stojtj* followed by an infinitive not farther than 3 words to the right. The results of the search thus do not reflect the overall distribution of INF-taking *stojtj*, but appear to be representative enough for our purposes in this chapter. Analysis of all cases was done by hand by the author, and only those sentences were considered where 1) there was no DP NOM subject, and 2) *dostatočno* substitution was not possible (cf. fn. 8).

Comparing the counts for the middle of the 19th century with those for the early 20th century, we can observe that the weight of the distribution has shifted downwards in the table. When the mid-19th-century speakers interpreted the ambiguous fourth-row examples without an overt object, they did so in the context of encountering metaphorical-worth *stojtj* statements with an overt DP object quite often.

from the counts in Table 5.1 all examples where *stojt* may be replaced by *dostatočno* ‘enough’ with preservation of the intended meaning.

Therefore, other things being equal, they were more biased towards interpreting the *stoitj*-statement conservatively, as a metaphorical-worth statement. But by the early 20th century, this support for the conservative meaning from instances of *stoitj* with an overt direct object has greatly diminished. At the same time there already appeared a small number of cases which could only be interpreted as action-guiding rather than as discussing metaphorical worth. Using these data, we can conclude that the mid-19th century and early-20th century speakers would have had opposite biases for analyzing the ambiguous cases. We should thus assume that the majority of the fourth-row examples from the mid-19th century were intended to literally convey metaphorical worth, while the majority of the early 20th-century ones directly asserted an action-guiding statement.

Thus while there may be uncertainty about the speaker's intentions in individual cases, conventionalization of what has been only an action-guiding implicature has occurred by the early 20th century, though the new modal construction with *stoit* continues to coexist with earlier non-modal constructions up to Present-Day Russian. We can sum up the trajectory of change that led to the conventionalization of advice/suggestion *stoit* as follows:

(236) **Semantic evolution of *stoit***

Stage 1. *stoit(p)* conveys a statement about metaphorical worth.

Stage 2. In contexts where it is at issue whether x should work towards bringing p about, the non-modal meaning of *stoit(p)* “ p is worth (the work)” or “the present situation is worth p ” implicates an action-guiding statement “ x should p ”.

Stage 3. The implicature conventionalizes as the literal meaning of a new modal lexeme *stoit*.

Having established the general trajectory, we can finally address the question of modal *stoit*'s scope with respect to negation. Other things being equal, we expect the new action-guiding meaning to be able to appear both with wide and narrow scope, 237. The question is why we only find the wide scope construal in Present-Day

Russian.

(237) Two scope construals for the modal NEG(*stoit*(p)):

$\Box > \neg$: x should not p

$\neg > \Box$: it is not (necessarily) the case that x should p

But once we consider the implicature from which the new action-guiding meaning arose in negative cases, the puzzle is immediately solved. In 238, we keep the assumptions of control, decision problem and rational effort investment from the positive case, and consider the negated literal contribution of the metaphorical-worth *stoitj*-claim. Put together, those three premises are enough to derive the stronger $\Box > \neg$ reading that entails the weaker $\neg > \Box$ reading. Thus when the new modal meaning of *stoit* was conventionalizing, there were no examples where only the weaker meaning $\neg > \Box$ would be implicated.

(238) **Action-guiding implicature, the negative case:**

Assuming a contextually supplied agent x , the premises are:

1. **Assumption of control:** “ x has control over bringing p about”
2. **Assumption of decision problem:** “ x needs to choose whether to work towards p or not”
3. **Assumption of rational effort investment:** “if something is worth the effort, it should be done”
4. **Literal meaning:** “bringing p about is not worth the effort for x ” (subject infinitive) or “The present situation is not worth bringing p about for x ” (object infinitive)
5. **Conclusion** from 1, 2, 3, 4: “ x should not p ” ($\Box > \neg$)

Entailed by the conclusion:

“it is not (necessarily) the case that x should p ” ($\neg > \Box$)

Without any actual cases where *stoit* with clausemate negation would be used to implicate the weaker $\neg > \Box$ reading, the speakers conventionalized the $\Box > \neg$

construal as the only available option for suggestion/advice *stoit*. As the modal develops further, the scope restriction could eventually be lifted, especially if there would be pragmatic pressure to express the presently absent meaning concisely.

Now, I have *not* shown that the Present-Day Russian restrictions on the scoping of *stoit* should not be encoded in the grammar as polarity-item restrictions. In fact, they may very well be. But what *has* just been shown is that the historical rise of this restriction was caused by the semantic and pragmatic, not by the syntactic factors. Furthermore, given the close ties of the wide-scope symbouletic *stoit* with its metaphorical-worth source word *stoitj* ‘to be worth (it)’, which scopes under negation, and the gradualness of the rise of the new item, semantic-filter analysis of the scope constraint was perhaps preferable to polarity-item analysis for language users, as it wouldn’t require positing a change in the syntactic properties between the source and the emerging new modal.

To sum up, we have seen that a plausible story about the rise of a semantic filter on scope constraints can be told for *stoit*. When we view that in the context of typological evidence from Sections 5.1 and 5.2, this case study bolsters the case for the introduction of semantic filters of scope construals: the typological evidence suggests that there should be non-syntactic, lexically idiosyncratic constraints on scope, and the study of the rise of *stoit* demonstrates that a semantic filter ruling out some scope construals may in principle arise diachronically in the course of semantic reanalysis.

In the next section, we will see a case where the semantics and pragmatics create a scope restriction that cannot be even accounted for synchronically as a polarity-item restriction. As we discussed in Section 5.1, the narrow scope of *have to*, analyzed as “neutral” by [Iatridou and Zeijlstra, 2013], cannot be attributed to polarity effects. We will now show how the semantic evolution of that modal over the 19th century has led to the conventionalization of the scope restriction.

5.5 Diachronic conventionalization of the narrow scope of English *have to*

5.5.1 The rise of deontic *have to* from futurate *have to* in the 19th century

It is not uncommon for a *HAVE* lexical verb to eventually develop into a necessity modal: Spanish *tener (que)*, Haitian Creole *gen (pou)*, Ukrainian *maty* are examples. However, such a development is far from necessary: English *have (to)* developed into a modal, while cognate Dutch *hebben* didn't. Not much is currently known about the typology of historical meaning change that leads to such development: it is not clear whether all *HAVE*-based modals develop along similar lines, and we do not know which exact constructions with *HAVE* may serve as the immediate source for the modal.

English modal *have to* is one of the better-studied cases in this respect, but even its history was not fully studied. Researchers such as [van der Gaaf, 1931], [Visser, 1973] attribute the emergence of the obligation reading of *have to* to the Old English period, but [Bock, 1931] and [Mitchell, 1985] show that it is hardly the case, with Mitchell specifically noting that modern speakers may be susceptible to seeing the modern readings of the construction in old texts where in fact there was nothing of the sort for the Anglo-Saxons themselves. [Brinton, 1991] agrees with van der Gaaf and Visser in positing some obligational component of meaning for *have* as early as in Old English, but attributes the full development of the true obligational *have to* to a much later stage, namely Early Modern English. Finally, [Fischer, 1994] shows that all earlier examples where Brinton finds the obligation meaning in fact cannot have featured it, once we view them in their linguistic context rather than in isolation. Fischer does not find evidence for the establishment of the modern-type deontic *have to* up to the end of the Early Modern English period (the 18th century). Specifically, she finds only one example in the last Early Modern English section of the Helsinki corpus that features what can be analyzed as an obligation *have to*, out of the 38 cases for the

period where the construction features an NP that may serve as the argument of the infinitive complement of *have*.

Examining the Late Modern English data, I do not find solid evidence for the establishment of true deontic *have to* until the middle of the 19th century.⁹ While many early 19th century examples may sound as obligational to the modern years, it is only in the second half of the century that the construction “*there has to P*” arises (for example, COHA lists the first such example in 1867). Such syntactic evidence points that the earlier *have to* was something different from today’s. Semantic analysis of early 19th-century occurrences of *have to* confirms that: they turn out to be futurates, not deontics. I illustrate this using Captain Frederick Marryat’s *Masterman Ready, or the Wreck of the Pacific*, published in 1841, as the source. Marryatt’s language is a perfect example of the state of the language immediately before futurate *have to* was semantically reanalyzed as a deontic.

Consider example 239. It only allows for a futurate, not for a deontic, interpretation of *have to*.

(239) 1841, from Marryat’s *Masterman Ready*

“You see, William, it is fortunate for us that we shall always have a fair wind when we come down loaded, and only **have to** pull our empty boat back again.”

To show that *have to* is unambiguously futurate in 239, let’s modify the example putting it into the present tense. If *have to* is obligational in 239, we should be able to replace it with *must* in the present tense version. But such a replacement does not make sense, 240, nor does a replacement with *be forced to*, 241: there is no deontic force that makes the ‘we’ to pull the boat back, though they *plan* to do so. The

⁹The data discussed in this section were obtained from the *Corpus of Late Modern English Texts (extended version)* (CLMETEV) and the Corpus of Historical American English (COHA), available at <http://corpus.byu.edu/coha/>. In addition to those, the *Corpus of Early English Dialogues 1560-1760* (CED), compiled under the supervision of Merja Kytö (Uppsala University) and Jonathan Culpeper (Lancaster University), and available through the Oxford Text Archive, <http://ota.ahds.ac.uk/>, was used for the author’s pilot research on the rise of deontic *have to*.

appropriate present paraphrase for 239 is thus 242, and *shall have to* in the original example is very close in its semantic import to plain *shall*.

- (240) It is fortunate for us that we always have a fair wind when we come down loaded, and only **must** pull our empty boat back.
- (241) It is fortunate for us that we always have a fair wind when we come down loaded, and are only **forced to** pull our empty boat back.
- (242) It is fortunate for us that we always have a fair wind when we come down loaded, and only pull our empty boat back.

The following passage from Marryat highlights the paradigmatic relationships into which the *have to* construction enters in his language:

- (243) 1841, from Marryat's *Masterman Ready*

"We **have a great deal of work to do**, more than we can get through before the rainy season; which is a pity, but it can't helped; by this time next year we shall be more comfortable."

"Why, **what have we to do** besides putting up the tents and shifting over here?"

"In the first place we **have to** build a house, and that will take a long while. Then we **ought to** make a little garden, and sow the seeds which your father brought from England with him."

From the perspective of the Present-Day English speaker, the third sentence of the passage in isolation may be analyzed as featuring modern deontic *have to* that expresses deontic necessity. But from within the mid-19th-century text, we see that this *have to* appears in a direct answer to the question with the non-modal *have (something) to do*. The syntactic structure of that answer is parallel to that of the question, suggesting that the proper interpretation should also be parallel. At the same time, here, unlike in 239, a paraphrase with *must* would make sense: "we have to build a house" may be interpreted both as futurate "we are predestined to build a house" and as deontic "we must build a house". This possibility to interpret the

example both ways is precisely what enabled semantic reanalysis. In this case, such reanalysis may be reinforced by the parallel use of deontic *ought* in the last sentence of the passage.

However, the mere possibility to analyze an older example substituting in the innovative meaning is by itself not a proof that the new meaning was already available for the speaker. It is only when we find a case where the *old* meaning will *not* fit that we can conclude that the semantic shift occurred (cf. extensive discussion in [Eckardt, 2006].) Marryatt's language features unambiguously non-modal examples like 239 together with example ambiguous for the modern eye such as 243, but it does not feature a single example with unambiguously deontic *have to*. That indicates that in Marryatt's language, the semantic shift most likely did not yet occur.

The semantic reanalysis of futurate *have to* as deontic *have to* could have happened at slightly different times for different speakers or in different dialects, but the examination of texts in CLMETEV, coupled with the evidence on the rise of impersonal "*there has to*" in the 2nd half of the 19th century, points to the middle of the 19th century as the rough point when the change occurred.¹⁰

¹⁰My impression from the British English data of CLMETEV is that *have to* hardly acquired true obligational uses until the second half of the century. However, the data from COHA suggest that in American English, particular speakers, though not all of them, may have started to use modal *have to* a bit earlier. The pair of examples in (i) and (ii) illustrates the basis for that conjecture. In (i), the time of the battle is chosen by the speaker's side, so it is not that there are any external circumstances that would justify the use of a modal *have to*. But in (ii), the speaker is clearly making a normative, deontic statement about how things should be.

(i) **Unambiguous futurate *have to*:**

1830 "When do you think, Ephraim," said he, "we shall **have to** fight the whigs? I guess when we muster our forces, Indians and all, they wont stand us long." "The time of marching will be fixed to-morrow," said Ephraim. "Who fixes it?" inquired Joseph. "The Indian chiefs are to hold a council for the purpose," replied Ephraim, "and our leaders are to assist at their deliberations."

from McHenry, *The Betrothed of Wyoming*

(ii) **Unambiguous modal *have to*:**

1835 But is there not some rule, asked the other, for making verses? I conclude all the lines

Having established the rough timing of the turning point and the change trajectory (from futurate to deontic), we can now turn to the question of fixed narrow scope.

5.5.2 Why deontic *have to* has narrow scope

While little is known about the trajectory of change from futurates to deontics (e.g., the extensive study of [Bybee et al., 1994] does not discuss such change at all), such development is not unprecedented. Even within English, [Visser, 1973, §1369] proposes that a similar development occurred to the Northern English modal *mun*, borrowed from Old Norse *munu*.¹¹

The prehistoric meaning was doubtless ‘to intend’. In the earliest Middle English examples its sense seems to have developed into a kind of synonym of *shall* with a futuristic connotation. This might be inferred from the substitution of *sal* in Gött. MS of the Cursor Mundi for *mon* in the Cott. MS in the passage: (20164) ‘Her *mon* to nocht lang be’. That later the meaning became *must* is not hard to understand, since the notion of

have to be of a particular length: For unless we know how long each one is to be, how can we get the others right?

from Thompson, *The Adventures of Timothy Peacock, Esquire*

¹¹In this description, Visser draws from [Adams, 1862, pp. 126-7], who in turn attributes the following passage to Dr. Guest in the Transactions of the Philological Society, 1852, p. 155 (which appears to be a miscitation: no authors named Guest ever published in the journal):

In old English *mun* often indicates mere futurity, like the Icelandic ‘mun;’ and the peculiar sense now given to it—that of obligation—appears to have been its latest derivative meaning. The phrase ‘we *mun* go’, may have taken successively the meanings ‘we think of going’, ‘we shall go’, ‘we must go’.

Examples from Early Middle English provided by Visser seem to support that hypothesis, cf. for example Orm 7927 ‘*offdredd, þatt all hiss gode dede Ne mune himm nohht beon god inoh To berrzhenn himm fra pine*’ (=“feared that all his good deeds mune not be good enough for him to save him from pain”).

coercion, compulsion, etc. was originally already clearly present in *sceal*.
[Cf. Icel. ‘ek mun’ = ‘I must’ (Skeat)]

However, the scope of *mun* with respect to negation didn’t have to be narrow: e.g., the Dictionary of the Scots language lists the example in 244, where *mun* (written as *man*, in this text) takes wide scope.

(244) (1607) *Glasgow B. Rec. I. 264*.

This man not mak me forziett nor omitt my deutie;

‘This **man** (≈‘must’) not make me forget nor omit my duty.’

Thus not all deontics with a futurate source have narrow scope as *have to* does.

Similarly, not all *HAVE*-based deontics have narrow scope with respect to negation. For example, Ukrainian *maty* ‘have’ in its deontic uses may have both wide and narrow scope (cf. 245 and 246, respectively).

(245) nedolugyj Juščenko ne zrobyv ničogo z togo, ščo mav
sick Yuschenko not did nothing from that which MATY.PAST.3SG
zrobyty, ale zrobyv čymalo togo, čogo **ne mav** robyty
to.do but did much that which not MATY.PAST.3SG to.do

‘The sick Yuschenko didn’t do anything from what he should have done, but did do a lot of what he **shouldn’t** have.’ (from <http://www.pravda.com.ua/articles/2009/11/20/4328133/>)

(246) Vodij i **ne mav** jixaty prjamo vidrazu, zakonom daetjsja 2
driver PART not MATY.PAST.3SG go right at.once by.law is.given 2
godyny pislja skladannja protokolu (jakyj ne sklaly)
hours after writing report which not wrote.PL

‘The driver **didn’t have to** go at once, the law gives them two hours after the report is written (which was not written in this case at all)’ (from <http://www.ogo.ua/vybir2010/articles/view/2012-07-04/34215.html?all>)

Evidence from Northern English *mun* and Ukrainian *maty* thus suggests that we should look for the reasons that *have to* has narrow scope in that particular modal’s situation, not in some general principles of how *HAVE*-based deontics function.

I argue that the crucial fact for the rise of the narrow scope restriction of deontic *have to* was the following. In the mid-19th century, the actual distribution of *have to* was such that the argument situation of futurate *have to* was always either undesirable for the subject, or requiring a substantial effort on their part, or both. This is a non-trivial fact: not all futures *have to* describe that kind of unpleasant situation, cf. *by this time next year we shall be more comfortable* from 243, or *we shall always have a fair wind* in 239. This feature of the distribution of futurate *have to* may have been encoded directly within the construction's fine-grained semantics, or could have been just an accident of usage, with high-frequency collocations like "have to do (something)", "have to deal with certain (unpleasant) people" making it easier to use *have to* with unpleasant or effort-requiring argument situations, and harder with desirable ones. But whatever the status of this pattern, its existence supported the reasoning schema in 247. The conclusion of the schema was then available for conventionalization, resulting in the innovative deontic-necessity or circumstantial-necessity literal meaning.

(247) **Deriving the deontic necessity implicature from futurate *have to*:**

1. **Literal meaning:** *have.to(p)(x)* conveys roughly "*x* has *p* in *x*'s future".
2. **Usage pattern:** in *have.to(p)(x)*, situation *p* is something one better avoid, other things being equal
3. **Assumption of rational avoidance:** If it is better for one to avoid *p*, one would avoid *p* unless forced otherwise.
4. **From 2 and 3:** if one does not avoid *p*, one was forced to do *p*.
5. **Conclusion** from 1 and 4:

there are forces that require *x* to do *p* in the future.

What we need to explain is why the innovative modal *have to* took the narrow scope relative to clausemate negation as in 248a, and not the wide scope as in 248b.

(248) a. $\neg\textit{have.to}(p)(x) \Rightarrow$ it is not that *x* is forced to bring about *p*

b. $\neg have.to(p)(x) \Rightarrow x$ is forced to bring about $\neg p$

Consider the case when futurate $have.to(p)(x)$ is negated. The literal meaning then would be roughly “ x does not have p in x ’s future”. Assuming that 2 and 3 of the reasoning schema 247 still hold, as they do in the positive case, this negative literal meaning does not implicate either 248a or 248b: if x does not have p in x ’s future, the conditional 4 in the schema 247 is irrelevant. So the positive-case schema does not apply to the negative case (unlike in the case of *stoit*, where the positive and negative cases were parallel to each other.)

If neither possible scope configuration could be implicated by the older meaning, how would speakers know which scope they may use when negating the innovative deontic *have to*? Given that p is something to avoid, the narrow-scope meaning in 248a is more natural than the wide-scope meaning in 248b. If one would do $\neg p$ on their own, there is not much sense in externally requiring x to do $\neg p$. So while neither scope construal in 248 is implicated through the schema that gave rise to the positive modal *have to*, the narrow scope meaning is something which it makes more sense to want to convey.

Turning to the empirical facts, negated futurate *have to* was a very rare creature in the mid-19th century. In the 5,724K-words corpus CLMETEV2, covering 1780-1850, there are only six instances of the string “not/n’t have to”, compared to the 34 instances of positive *have to* in just the 100K-words Captain Marryat’s *Masterman Ready* alone. Moreover, out of those six instances of the “negative” string in CLMETEV2, four feature negation attached to the higher future-tense marker (e.g., **1830** *You’ll not have to wait long*, from Borrow’s *Mary Burton*), another one has expletive negation, and only one case, from Marryat, features true negated *have to*, see 249. (Note that the argument situation of the negated *have to* in 249 is something to avoid, just as in the positive case.) There is thus at least a 35-times difference between the rates of positive and negative futurate *have to* on the threshold of semantic change.

(249) **1841**, from Marryat’s *Masterman Ready*

If we do that, we shall not have so large a space to watch over and defend;

and then we must contrive to have a large fire ready for lighting, that we may **not have to** fight altogether in the dark. It will give them some advantage in looking through the palisades, and seeing where we are, but they cannot well drive their spears through, so it is no great matter.

We are now ready to give an account of why the negated *have to* conventionalized into a modal with narrow scope. The three factors that determined that are as follows:

(250) **Factors leading to the conventionalization of narrow scope for *have to*:**

- a. The reasoning schema 247, which gave rise to the positive modal *have to*, did not apply at all in the negated case.
- b. There were very few instances of negated *have to* used by the speakers in the mid-19th century.
- c. Given that the argument situation *p* of *have to* was always a situation to avoid in the actual usage of the mid-19th century speakers, there were more reasons to want to express the narrow scope reading 248a than the wide scope reading 248b.

All three factors in 250 are specific to the *have to* construction at a particular period, so we should not assume that all emerging *HAVE*-based deontic modals would follow the same path. Without knowing the turning point of the change for Northern English *mun*, we cannot directly compare the conditions in 250 with the conditions for *mun*: we do not know what to compare. But whatever evidence we have suggests that the negative connotations regarding the argument situation of futurate *have to* is not something which *mun* shared. At least, modal *mun* could express obligations about pleasant things, as in 251:

(251) 1540 Lynd. Sat. Procl. 86.

I **mon** ga drink ane penny or twae;

‘I **mun** (\approx must) go drink a penny or two’

Thus it is plausible that the factors in 250 to be what predetermined that deontic *have to* would have fixed narrow scope. The rise of fixed scope then could have proceeded as follows. Given that the reasoning schema did not apply, 250a, the new modal *have to* didn't have an established preferred meaning in the negative case (unlike *stoit*, which we discussed in Section 5.4). Given that negated *have to* was rare, the pressure to consider negative cases at all during the conventionalization of positive *have to* should not have been very significant. Those two factors essentially created the situation of "other things being equal" regarding the meaning for the new negated modal *have to*. Finally, given that the narrow scope meaning of negated *have to* would be a more natural meaning to recover, and that other things were equal, it was the narrow scope meaning that conventionalized.

Summing up, we have formulated a plausible story for how a semantic-convention filter on scope for deontic *have to* could have been established. The deontic meaning as such doesn't require that the modal always take narrow scope. However, the contexts where deontic *have to* arose favored the narrow scope over the wide scope reading. That preference led to the narrow-scope use pattern, which later speakers internalized in their grammars as stemming from the existence of a semantic-filter constraint.

5.6 Conclusion

In this chapter, I have argued for two points. First, there exist scope restrictions of deontic modals that cannot be accounted for using only the apparatus of polarity-item licensing. More mechanisms ruling out particular scopal construals are needed, including such that may apply to a specific tense-aspect-mood form, and not on the level of a lexical item. Second, I argued that such mechanisms may be situated within semantics, taking the form of semantic conventions filtering particular scope construals of a modal.

The general framework for analyzing modal scope restrictions that emerges from the present work is as follows. The role of the syntactic component of a language is

to provide speakers with a wide range of possible scope construals. For some lexical items, certain construals may be ruled out within the syntax. But there always exists a second level of filtering: the semantics and pragmatics of the language may further rule out some of the scope construals that are in principle provided by the syntax.

Among other things, this new perspective on scope filtering provides a way to solve one of the puzzles regarding the scope of modals. [Iatridou and Zeijlstra, 2013] conclude their paper (cf. their Section 5) by noting that it is hard to see how to provide a principled account of the differences in the scopal properties of deontic and epistemic variants of the same modal: syntactically, no clear solution emerges. But as we need to admit the existence of semantic scopal restrictions specific to particular tense-aspect-mood forms anyway, it is not surprising that there may exist conventionalized restrictions sensitive to the conversational backgrounds a modal uses.

A scope restriction associated with a given modal may thus be encoded on the level of syntax, or on the level of semantics and pragmatics. This view is less restrictive than the view under which all scope restrictions belong to the syntactic component. But such decrease in restrictiveness seems inevitable once we consider the full range of data. We have seen that the purely syntactic system of [Iatridou and Zeijlstra, 2013] does not provide tools fine-grained enough to account for the rich empirical landscape of modal scope restrictions. Moreover, the existence of scope restrictions specific to particular tense-aspect-mood forms that are parallel syntactically, as in the case of French *devoir*, suggests that no purely-syntactic system would be capable of doing any better.

At the same time, the diachronic case studies we conducted point a different way to make our theories of fixed scope more restrictive. The case studies on the conventionalization of the wide scope of Russian *stoit* ‘should’ and the narrow scope of English *have to* suggest that when a scope restriction has semantic nature, we should be able to trace the diachronic reasons for the restriction’s rise. Therefore it will not do to posit completely arbitrary constraints, using the semantic level of filtering as a garbage dump: if a scope restriction belongs to that level, we should be able to show why it conventionalized in the first place. So while we lose in “local

restrictiveness” by acknowledging that not all scope constraints have syntactic nature, we do not lose in “global restrictiveness”, as introducing semantic-convention scope constraints makes diachronic predictions that can be checked empirically.

Appendix A

Alfredian OE examples with **motan* from *CP*, *Bo* and *Sol*, accompanied by philological translations, and Latin correspondences for *CP* and *Bo*

Examples have been found with the help of YCOE and CorpusSearch, with search queries of the following form:¹

```
node: $ROOT
```

```
query: (*MD* Dominates mo*) AND (*cosolilo*|*coprefsolilo* inID)
```

As YCOE does not always use the latest edition of the text, I provide the examples according not to their YCOE form, but to the form of the latest edition. The only

¹Restricting the search to modal constituents starting in *mo* is safe in the sense that it returns all the instances of **motan* tagged as modals in YCOE (presumably, there are no instances of **motan* which are not marked so in the corpus.) Actual searches have been more sophisticated in order to ensure that no examples are lost because of unexpected spellings.

exception is *Pastoral Care*, for which I consistently provide the text according to [Sweet, 1871], even though a partial newer edition exists, namely [Schreiber, 2003].

Translation variants are provided for all full translations of the relevant works known to the author (namely, all those listed in [Waite, 2000], plus the recent translation of *Boethius* in [Godden and Irvine, 2009]).

A.1 Old English *Cura Pastoralis*

IDs of the form *cocura, CP:9.57.5.356* are from YCOE. The first number of the ID points to the chapter; the second, to the page in [Sweet, 1871]; the third, to the line in [Sweet, 1871]; the fourth, to the number of the “syntactic fragment” in YCOE.

OE text is given according to the edition [Sweet, 1871], the version based on the Hatton 20 manuscript. Translations under (b) are from the same edition and are by Sweet. Latin text under (c) provides the corresponding passage from the original, where there is such. Translations under (d) are from the partial translation by H. W. Norman, printed in [Giles et al., 1858] (the translation ends at Chapter 10).

- (252) a. Ðonne he to fundað, he ondræt ðæt he ne **mote** to cuman, and sona swa he to ðære are cymð, swa ðyncð him ðæt se hie him neidscylde sceolde se se hie him sealde, & brycð ðære godcundan are worldcundlice, & forgitt swiðe hræðe ðæt he ær æfæstlices gedohte. (CP:9.57.5)
- b. While he is aspiring to it, he dreads not **attaining** it, and when he attains the honour he thinks he who granted him the honour was bound to grant it out of necessity, and enjoys the divine honour in a worldly spirit, and very soon forgets his former pious resolutions.
- c. Tendens enim, ne non **perveniat**, trepidat: sed repente perveniens jure sibi hoc debitum, ad quod pervenerit, putat.
- d. When he is seeking it he dreads that he **may** not come to it, and, soon as he comes to the honour, so seems to him that he who gave it him owed it him, as a necessary debt, and brooks the spiritual benefice in a worldly manner, and forgets very quickly what he before religiously thought.

- (253) a. Hu mæg he ðonne beon butan gitsunge, ðonne he sceal ymb monigra monna are ðencan, gif he nolde ða ða he **moste** ymb his anes?
(CP:9.57.19)
- b. How can he be without covetousness when he has to consult the interests of many, if formerly he would not avoid it when he **had** to consult his own interests alone?
- c. Nequaquam vincere avaritiam potest, quando ad multorum sustentationem tenditur, is, cui sufficere propria nec soli **potuerint**.
- d. How can he be without covetousness when he must think about many men's sustenance, if he would not when he **might** think about his own alone?
- (254) a. Ðat sindon ða ðe gehierað Godes word, & mid ðære geornfulnesse & mid ðære wilnunge ðisse worlde & hie welena bið asmorod ðæt sæd Godes worda, ðeah hie upaspryttæn, ðæt hie ne **moten** fulgrowan ne wæstmbære weorðan.
(CP:11.67.20)
- b. That is those who hear the word of God, and by the cares and desires of this world and its wealth the seed of God's words is smothered, although they spring up, so that they **cannot** flourish or bear fruit.
- c. *No direct parallel:*
Semen autem, quod in spinis cecidit, hi sunt, qui audierunt verbum, et a sollicitudinibus et divitiis et voluptatibus vitae euntes suffocantur, et *non referunt fructum*.
- (255) a. & ne gefeon hie na ðæt hie ofer oðre menn bion **moten** sua suiðe sua ðæs ðæt hie oðrum monnum mægen ny[t]toste beon.
(CP:17.109.2)
- b. nor rejoice so much in **having** authority over others as in being most useful to them.
- c. nec **praesse** se hominibus gaudeant, sed prodesse.
- (256) a. Ða ðe ofer oðre bioð giemen hie geornlice ðætte sua micle sua hira onwald bið mara gesewen ofer oðre menn ðæt hie sua micle ma sien innan

geðryccede mid eaðmodnesse, ðylæs ðæt geðoht hine ofersuiðc & on lustfulnesse his mod geteo hwelces unðeawes, ðæt he hit mæge ðonne to his willan gewealdan, forðæmðe he him ær to unðeawum his ag[en]ne willan underðeodde, & him geðafade ðæt hit mid anwalde him **moste** oferricsian, ðætte ðæt ofsetene mod mid ðære lustfulnesse his anwaldes ne sie getogen to upahafenesse. (CP:17.119.13)

- b. Let those who are above others be very careful that the greater their visible authority over others the more they be inwardly subdued by humility, lest his imagination overcome him and lead his mind to the desire of some vice so that he cannot subject it to his will, because he formerly had made his own will subservient to his vices, and allowed it **to rule** over him with authority, lest the troubled mind through the intoxication of authority be led to pride.

- c. *No direct parallel:*

Studeant igitur sine intermissione, qui praesunt, ut eorum potentia quanto magna exterius cernitur, tanto apud eos interius deprimatur, ne cogitationem vincat, ne in delectationem sui animum rapiat, ne jam sub se mens eam regere non possit, cui se libidine dominandi supponit.

- (257) a. forðæm ðæt wære his willa ðæt he **moste** ymb swincan, ond ðync[ð] him gesuinc ðæt he bið butan woroldgesuincium. (CP:18.127.24)

- b. since it was his desire to be **allowed** to toil therein, and it seems to him a hardship to be without worldly troubles.

- c. Voluptatem namque censent, si **actionibus deprimantur**, laborem deputant, si in terrenis negotiis non laborant.

- (258) a. Ac se se ðe unwærlice ðone wuda hiewð, & sua his freond ofsliehð, him bið niddearf ðæt he fleo to ðara ðreora burga anre, ðæt on sumere ðara weorðe genered, ðæt he **mote** libban; (CP:21.167.15)

- b. But he who carelessly hews the wood, and so slays his friend, must flee to one of the three cities, that he may save himself in one of them, that he

may live;

- c. Sed is, qui incaute ligna percutit et proximum extinguit, ad tros necesse est urbes fugiat, ut in una earum defensus **vivat**:
- (259) a. Be ðam saglum is suiðe gesceadlice gecueden ðæt hie sculon simle stician on ðam hringum, & næfre ne **moton** him beon ofatogene, forðæm is micel niedðearf ðætte ða ðe beoð gesette to ðære ðenunga ðæs lareowdomes ðæt hi næfre ne gewiten from ðære geornfulnessse ðære rædinge & leornunge haligra gewrita. (CP:22.171.17)
- b. It was very wisely directed that the poles were always to remain in the rings, and never **be pulled out**, because it is absolutely necessary that those who are appointed to the ministration of instruction never swerve from the desire of reading and learning the holy Scriptures.
- c. De quibus apte subditur: "Qui semper erunt in circulis, nec unquam **extrahentur** ab eis." Quia nimirum necesse est, ut qui ad officium praedicationis excubant, a sacrae lectionis studio non recedant.
- (260) a. Lætt ðonne an ðæt gefeoht sua openlice sume hwile, & ongienð hine diogollicce læren, & slitan his inngedonc, & bit ðære tide, hwonne he ðæs wierðe sic ðæt he hine besuican **mote**. (CP:33.227.10)
- b. So he ostensibly gives up the contest for a time, and begins to advise him secretly, and to wound his mind, waiting for the time when he is fit to be deceived.
- c. interim quiescens, et secreta suggestionem cogitationem lacessens **aptum deceptionis tempus** inquirat.
- (261) a. ðonne is æfter ðæm gecueden ðæt he sargige æt niehstan, ðonne his lichoma & his flæsc sie gebrosnod, forðæm oft sio hælo ðæs lichoman on unðeawas wierð gecierred, ac ðonne he ðære hælo benumen wierð mid monigfaldum sare ðæs modes & ðæs flæsces, se lichoma ðonne wierð gedrefed, forðæm sio saul, ðonne hio hire unðonces gebædd wierð ðæt yfel to forlætanne ðæt hio ær longe on woh hire agnes ðonces gedyde,

secð ðonne ða forlorenan hælo, & wilnað ðære, suelce he ðonne wel & nytwyrðlice libban wolde, gif he forð **moste**. (CP:36.251.8)

- b. It is further said, that he will then sorrow, when his body and flesh are consumed, because often the health of the body is directed to vices, but when he is deprived of his health with manifold pains of mind and body, the body is afflicted, because the soul, when unwillingly compelled to forsake her wickedness, which she formerly for a long time wickedly exercised of her own free will, seeks her lost health, and desires it, as if she were going to live well and profitably, if **spared**.

- c. *No direct parallel:*

Bene autem subditur: "Et gemas in novissimis, quando consumpseris carnes et corpus tuum." Plerumque enim accepta salus carnis per vitia expenditur; sed cum repente subtrahitur, cum molestiis caro atteritur, cum jam egredi anima urgetur, diu male habita quasi *ad bene vivendum* salus amissa requiritur.

- (262) a. Hu micle suiðor sculon we ðonne beon gehiersume ðæm ðe ure gæsta Fæder bið wið ðæm ðæt we **moten** libban on ecnesse! (CP:36.255.8)

- b. How much more, then, must we obey our spiritual Father, that we **may** live eternally!

- c. (Patres quidem carnis nostrae habuimus eruditores, et reuerbamur eos;) non multo magis obtemperabimus Patri spirituum, et **vivemus?**

- (263) a. Ðæt wæter, ðonne hit bið gepynd, hit miclað & uppað & fundað wið ðæs ðe hit ær from com, ðonne hit flowan ne **mot** ðider hit wolde.

(CP:38.277.6)

- b. When water is dammed up, it increases and rises and strives after its original place, when it **cannot** flow whither it would.

- c. *No direct parallel:*

Humana etenim mens aquae more circumclusa ad superiora colligitur, quia illud repetit, unde descendit, et relaxata deperit, quia se per infima

inutiliter spargit.

- (264) a. Eac is to wictanne ðætte hwæthwugu bið betweoh ðæm irsiendan & ðæm ungeðyldgan, ðæt is ðæt ða ungeðyldan ne magon aberan nanwuht ðæs laðes ðe him mon on legð oððe mid wordum oððe mid dædum ða iersigendan ðonne him to getioð ðæt ðætte hie eaðe butan bion meahton: ðeah hie nan mann mid laðe ne grete, hie wiellað griellan oðre menn to ðæm ðæt hie niede sculon, & seceað ða ðe hie fleoð, & styrigað geflitu & geciid, & fægnað ðæt hie **moten** suincan on ungeðwærnesse.

(CP:40.293.14)

- b. It is also to be known that there is a difference between the passionate and the impatient, which is, that the impatient cannot bear any annoyance to which they are subjected either by the words or deeds of others, while the passionate incur what they could easily avoid: although no one annoy them, they try to provoke others, and compel them to strife, and seek those who avoid them, and stir up strife and abuse, and rejoice in being **able** to busy themselves with discord.
- c. Sciendum quippe est, quia in hoc ab impatientibus iracundi differunt, quod illi ab aliis illata non tolerant, isti autem etiam, quae tolerentur, important. Nam iracundi saepe etiam se declinantes insequuntur, rixae occasionem commovent, **labore** contentionis gaudent;

- (265) a. Forðæm hie beoð to myndgianne ðara goda ðe hie ær dydon, ðæt hie sien ðe lusðbærran to gehieranne ðæt him mon ðonne beodan wielle. Swa [swa] wildu hors, ðonne we h[ie] æresð gefangnu habbað, we hie ðacciað & straciad mid bradre handa & lemiad, to ðon ðæt we eft on fierste hie **moten** mid gierdum fullice [ge]læran & ða temian. (CP:41.303.7)

- b. Therefore they are to be reminded of the good they formerly did, that they may the more cheerfully hear what is to be enjoined on them; like wild horses, which, when first caught, we soothe and stroke with the palm of our hands, and subdue, that afterwards in course of time we **may** make

them completely docile and tractable with whips.

c. Nam et equos indomitos blanda prius manu tangimus, ut eos nobis plenius postmodum etiam per flagella **subigamus**.

(266) a. Gehiren ða fæstendan hwæt he eft cuæð, he cuæð ðæt ge **moston** drincan gewealden wines for eowres magan mettrymnesse. (CP:43.319.5)

b. Let the abstinent also hear what he said again; he said that “ye **may** drink wine moderately for the weakness of your stomachs.”

c. *Vetus Latina 1 Tim. 5:23:*

X: modico vino utere propter stomachum et adsiduas imbecillitates

D: noli adhuc aquam bibere sed vino modico utere propter stomachum et frequentes tuas infirmitates

I: iam noli bibere aquam sed vino modico utere propter stomachum et crebras tuas infirmitates

V: noli adhuc aquam bibere sed vino modico utere propter stomachum tuum et frequentes tuas infirmitates

(267) a. Swa se ficbeam ofersceadað ðæt lond ðæt hit under him ne mæg gegrowan, forðæm hit sio sunne ne **mot** gescinan, ne he self nanne wæsðm ðærofer ne bireð, ac ðæt land bið eal unnyt swa he hit oferbræt, swa bið ðæm unnytwyrdan & ðæm unwisan menn, ðonne he mid ðære scande his slæwðe oferbræt ða scire ðe he ðonne hæfð, & ðonne nauðer ne ðone folgað self nytne gedon nyle, ne ðone tolætan ðe hine ðurh ða sunnan goodes weorces giendscinan wille, & nytwyrdne & wæsðmbærne gedon wille. (CP:45.337.10)

b. As the fig-tree overshadows the land, so that nothing grows under it, because the sun’s rays **cannot** reach it, and it does not bear any fruit above it itself, but the land is all useless, it spreads over it so; so it is with the useless and foolish man, when with his disgraceful sloth he covers the district he possesses, and will neither himself make his authority beneficial, nor admit him who is ready to shine over it with the sun of good works,

and make it useful and fruitful.

c. *No direct parallel*

- (268) a. Eall moncynn wæs to Gode gewend, ða ða hi ærest gesceapene wæron on neorxna wonge; & he ða hie manode andwearde, & him forgeaf ðæt hie **moston** stondan on frioum anwalde, & him getæhte hwæt hi on ðæm don sceolden, hwæt ne scolden. (CP:52.405.27)
- b. All mankind, when first created in Paradise, were inclined to God; and he admonished them in his presence, and granted them **freedom** of action, and directed them what they were to do with it, and what not to do.
- c. Humanum quippe genus Dominus in faciem monuit, quando in paradiso condito homini atque in libero arbitrio **stanti**, quid facere, quidve non facere deberet, indixit.
- (269) a. ðæm monnum is gecyðed hwelce stowe hi **moton** habban beforan urum fæder, swa swa we ær cwædon, ðæt hie sceolden habban ece eardungstowe on ðæs fæder huse furðor ðonne his ægnu bearn. (CP:52.409.2)
- b. To these men it is proclaimed what a place they **are** to have before our father, as we said above, they are to have eternal mansions in the Father's house in preference to his own children.
- c. Quo autem apud Patrem loco **habeantur**, ostenditur: quia in domo Patris uidelicet aeterna mansione etiam filiis praeferuntur.
- (270) a. Forðæm oft se mildheortaa Dryhten swiðe hrædlice ða geðohtan synna awegaðwihð, ðonne he him ne geðafað ðæt hi hi ðurhtion **moten**. (CP:53.419.1)
- b. For often the merciful Lord very quickly washes away the meditated sins, when he does not allow them **to carry** them out.
- c. Saepe enim misericors Deus eo citius peccata cordis abluit, quo haec **exire** ad opera non permittit,
- (271) a. Hwæt, se ðonne ne recð hwæðer he clæne sie, [ðe ne sie], se ðe æfter ðære hreowsunga hine ryhtlice & clænlice nyle gehealdan: ealne weg hi hi

ðweað, & ne beoð hie næfre clæne, ðeah hi ealneg wepen; calneg hi wepað,
& æfter ðæm woþe hi gewyrceað ðæt hi **moton** eft wepan.

(CP:54.421.17)

b. He does not care whether he is clean or not, who after repentance will not conduct himself virtuously and purely: they are always washing and are never clean, although they are always weeping; they are always weeping, and after their weeping they bring on themselves the **necessity** of weeping again.

c. Post lavacrum enim mundus esse negligit, quisquis post lacrymas vitae innocentiam non custodit. Et lavantur ergo, et nequaquam mundi sunt, qui commissa flere non desinunt, sed rursus **flenda** committunt.

(272) a. Forðæm him ætwat Petrus ða dæd ðe he walde, siððan hi ongeaten hiora wælhreownesse, ðæt hi wæren gedrefde & geeaðmedde, & ðæs ðe nytweorðlicor gehierden ða halgan lare, ðe hi ær wilmodon ðæt hi gehiran **mosten**.

(CP:58.443.10)

b. Peter reproached them with the deed, because he wished them, after perceiving their cruelty, to become contrite and humble, that they might hear the holy doctrine with more advantage, after previously desiring **to hear** it.

c. *No direct parallel*

(273) a. Forðæm sceal se gesceadwisa læce lætan ær weaxan ðone læssan, & tilian ðæs maran; oððæt sio tid cume ðæt he ðæs oðres tilian **mote**, buton he begra ætgæddre getilian mæge. (CP:62.457.12)

b. (Often it also happens that two vices assail the same man, one less, the other greater. Therefore the physician of the mind must first direct his attention to the one which he thinks likely to be the first to bring the man to perdition. Sometimes, however, when the attention is concentrated on the one, the other increases.)

Therefore the wise physician must first let the lesser one increase, and

direct his attention to the greater; until the time comes when he **can** see to the other, unless he can attend to them both together.

- c. Quod cum agit, non morbum exaggerat, sed vulnerati sui, cui medicamentum adhibet, vitam servat, ut **exquirendae** salutis congruum tempus inveniatur.

A.2 Old English Boethius

IDs of the form *coboeth,Bo:2.8.13.81* are from YCOE, which used the edition of the text in [Sedgefield, 1899]. The structure of the ID is similar to the one for *Cura Pastoralis*: in *coboeth,Bo:2.8.13.81*, 2 is the chapter number, 8 is the page number, 13 is the line number, and 81 is the number of the syntactic fragment within the text in YCOE, counting from the very beginning of the book.

I give the OE text by the modern edition [Godden and Irvine, 2009]. As Godden and Irvine mark Sedgefield's page numbers and thus allow one to identify the examples in the text easily, I do not add page references for Godden and Irvine's edition.

The (b) translations are from [Godden and Irvine, 2009]. The (c) translations are from [Sedgefield, 1900]. In several cases, I provide the translation of a larger portion of the text than the OE example itself, to make clearer the context. In such cases the part which is not given in Old English is taken into brackets. Under (d), corresponding places in the Latin original are provided.

- (274) a. He gehet Romanum his freondscipe swa þæt hi **mostan** heora ealdrihta wyrðe beon. (Bo:1.7.7)
- b. He promised the Romans his friendship, so that they **could** be entitled to their old rights.
- c. To the Romans he promised his friendship, and that they **should** keep their old rights.
- d. *Chapter not based on the Latin text*
- (275) a. Hu mæg se beon gesælig se þe on þam gesælþum þurhwunian ne **mot**?

(Bo:2.8.13)

- b. How can he be happy who is not **allowed** to continue in those felicities?
- c. How can he be happy that **cannot** abide in happiness?
- d. *No direct parallel*

Indirectly parallel text:

Quid me felicem totiens iactastis, amici?

Qui cecidit, stabili non erat ille gradu. (LatinBo:1m1.21-2)

- (276) a. Forþam went nu fulneah eall moncyn on tweonunga gif seo wyrd swa hweorfan **mot** on yfelra manna gewill and þu heore nelt stiran.

(Bo:4.10.23)

- b. And so nearly all mankind will fall into doubt, if fate is **allowed** to go according to the pleasure of the wicked, and you are not willing to control it.
- c. Wherefore well-nigh all men shall turn to doubt, if Fate **shall** change according to the will of wicked men, and Thou wilt not check her.
- d. *No direct parallel*

- (277) a. Swa hwa þonne swa þæs wyrðe bið þæt he on heora þeowdome beon **mot**, þonne bið he on ðam hehtan freodome. (Bo:5.11.23)

- b. Then whoever is worthy of being **allowed** to be in their service is in the highest freedom.
- c. Whosoever then is worthy **to be** in their service hath perfect freedom.
- d. *No direct parallel*

Indirect parallel: < ... > cuius [=the basileus's] agi frenis atque obtemperare iustitiae summa libertas est. (LatinBo:1p5.4)

- (278) a. **Mot** ic nu cunnian hwon þin fæstrædnesse þæt ic þanon ongiton mæge hwonan ic þin tilian scyle and hu? (Bo:5.12.12)

- b. **May** I now explore a little your resolution so that I can understand from that with what means I am to cure you and how?

- c. **May** I then put thy fixed belief to the proof, that I may thereby get to know by what means and in what manner I am to cure thee?
- d. Primum igitur **paterisne** me pauculis rogationibus statum tuae mentis attingere atque temptare, ut qui modus sit tuae curationis intellegam?
(LatinBo:1p6.1)
- (279) a. Eala hu yfele me doð mænege woruldmenn mid þæm þæt ic ne **mot** wealdan minra agenra [þeawa].
(Bo:7.17.21)
- b. Alas, how badly I am treated by many worldly people, so that I am not **allowed** to determine my own customs.
- c. Oh how evilly I am entreated of many worldly men, in that I **may** not rule mine own servants!
- d. An ego sola meum **ius exercere prohibebor?** (LatinBo:2p2.8)
- (280) a. Se heofen **mot** brengon leohte dagas and eft þæt leoht mid þeostrum behelian;
(Bo:7.17.23)
- b. The sky is **allowed** to bring bright days and then to hide the light with darkness;
- c. The sky **may** bring bright days, and anon hide the light in darkness;
- d. **licet** caelo proferre lucidos dies eosdemque tenebrosis noctibus condere,
(LatinBo:2p2.8)
- (281) a. þæt gear **mot** brengan blosman and þy ilcan geare geniman;
(Bo:7.17.23)
- b. the year is **allowed** to bring flowers and take them away in the same year;
- c. the year **may** bring flowers, and the same year take them away again;
- d. **licet** anno terrae vultum nunc floribus frugibusque redimire nunc nimbis frigoribusque confundere,
(LatinBo:2p2.8)
- (282) a. seo sæ **mot** brucan smyltra yþa,

(Bo:7.17.23)

- b. the sea is **allowed** to enjoy pleasant waves;
- c. the sea **may** enjoy her gentle heaving,
- d. **ius est** mari nunc strato aequare blandiri nunc procellis ac fluctibus inhorrescere: (LatinBo:2p2.8)

- (283)
- a. and ealle gesceafta **motan** heora gewunan and heora willan bewitigan butan me anum. (Bo:7.17.23)
 - b. and all created things are **allowed** to keep their customs and their desires, except me alone.
 - c. and all things created **may** follow their course and fulfil their desire.
 - d. *No direct parallel*

- (284)
- a. Ac hie hine habbað on me genumen and hie [hine] habbað [geseldene] heora wlencum and getohhod to heora leasum welum þæt ic ne **mot** mid minum [beowum] minra þenunga fulgangan swa eallæ opra gesceafta **moton**. (Bo:7.17.31)
 - b. But they have taken that from me and given it to their riches and assigned it to their false wealth so that I am not **allowed** to perform my duties with my servants as all other created things are **allowed**.
 - c. this they have wrested from me. Moreover, they have given me over to their evil practices, and made me minister to their false blessings, so that I **cannot** with my servants fulfil my service as all other creatures **do**.
 - d. *No direct parallel*

Indirect parallel:

nos ad constantiam nostris moribus alienam inexpleta hominum cupiditas alligabit? (LatinBo:2p2.8)

- (285)
- a. Nu þu eart scyldigra þonne we ægþer ge for þinum agnum unrihtlustum ge eac for|þam þe we ne **moton** for þe fullgan ures scippendes willan; (Bo:7.19.19)

- b. Now you are guiltier than we [the worldly felicities] are, because of your own wrongful desires and also because we are not **permitted** on account of you to perform our maker's will;
- c. Thou art indeed more guilty than I, both for thine own wicked lusts and because owing to thee I am not **able** to do the will of my Maker.
- d. *No direct parallel*
- (286) a. þæt gewyrð for þam dysige þe ge fægnað þæt ge **moton** sceppan [wone] naman, hatan þæt sælþa þæt nane ne beoð and þæt medumnes [þæt nan medumnes] ne beoð;
(Bo:16.39.4)
- b. That happens on account of your folly, that you men delight in being **able** to give the wrong names, calling those things felicity which are not such and that excellence which is no excellence;
- c. This comes, O men, from your foolish delight in **making** a name, and calling that happiness which is no happiness, and that excellent which hath no excellence;
- d. Gaudetis enim res sese aliter habentes falsis **compellare** nominibus, [quae facile ipsarum rerum redarguuntur effectui]; (LatinBo:2p6.19)
- (287) a. Heo forseohð þonne ealle ðas eorðlican þing and fagnað þæs þæt heo **mot** brucan þæs heofonlican [siððan] heo bið abroden from þæm eorðlican.
(Bo:18.45.28)
- b. It despises then all these earthly things and rejoices that it **may** share in the heavenly things after it is removed from the earthly things.
- c. and she despiseth all these things of earth, and delighteth in being **able** to enjoy the heavenly things after she is sundered from the earthly.
- d. < ... > nonne omne terrenum negotium spernat, quae se caelo **fruens** terrenis gaudet exemptam?² (LatinBo:2p7.23)

²[Godden and Irvine, 2009, vol. 2, p. 325] provide the following insular gloss: *totus homo qui corpore et anima constat. et omnes homines moriuntur. sunt autem toti quia anima non moritur.*

(288) a. Ac se anwealda hæfð ealle his gesceafta swa mid his bridle befangene and getogene and gemanode swa þæt hi nauþer ne gestillan ne **moton**, ne eac swiðor styrian þonne he him þæt gerum his wealdleðeres to forlæt.

(Bo:21.49.2)

b. But the sole ruler has so embraced and drawn and instructed all his creatures with his rein that they **may** neither cease nor also move further than he allows them the scope of his bridle.

c. but the Lord hath so caught and led, and managed all His creatures with His bridle, that they **can** neither cease from motion, nor yet move more swiftly than the length of His rein alloweth them.

d. *No direct parallel*

(289) a. Swa hæfð se ælmihtiga God geheaðorade ealle his gesceafta mid his anwealde þæt heora ælc winð wið oðer and þeah wræðeð oðer þæt hie ne **moton** toslupan, ac bioð gehwerfde eft to þam ilcan ryne þe hie ær urnon, and swa weorðað eft geedniwade.

(Bo:21.49.5)

b. The almighty God has so restrained all his creatures with his power that each of them contends with others and yet supports others so that they **may** not fall away, but are turned back to the same course that they ran before, and so are renewed again.

c. Almighty God hath so constrained all His creatures with His power, that each of them is in conflict with the other, and yet upholdeth the other, so that they **may** not break away but are brought round to the old course, and start afresh.

d. *No direct parallel*

etiamsi corpus moritur. This interpretation is relevant for the use of **motan* because in Boethius's original text, both options of existing after one's death and not existing are considered (with the second notion rejected by him, and yet entertained seriously). The more Christian medieval interpretation exhibited by the gloss and by the OE translator show a presupposition that the soul lives after a person's death.

- (290) a. Se ilca forwyrnð þæræ sæ þæt heo ne **mot** þone þeorscwald oferstæppan
þære eorþan mæru. (Bo:21.49.22)
- b. The same [=the power of God] restrains the sea so that it **cannot** cross
the threshold of the earth's boundary,
- c. He forbiddeth the sea to **overstep** the threshold of the earth,
- d. ut fluctus avidum mare
certo fine **coerceat**,
ne terris liceat vagis
latos tendere terminos,
hanc rerum seriem ligat
terras ac pelagus regens
et caelo imperitans amor. (LatinBo:2m8.9-15)
- (291) a. Ac he hæfð heora mearce swa gesette þæt [hio ne] **mot** heore mearce
gebrædan ofer þa stillan eorþan. (Bo:21.49.23)
- b. but he has so set their boundary that it **cannot** extend its bounds over
the motionless earth.
- c. having fixed their boundaries in such wise that the sea **may** not broaden
her border over the motionless earth.
- d. ut fluctus avidum mare
certo fine coerceat,
ne terris **liceat** vagis
latos tendere terminos,
hanc rerum seriem ligat
terras ac pelagus regens
et caelo imperitans amor. (LatinBo:2m8.9-15)
- (292) a. Hu licað þe nu se anweald and se wela, nu þu gehired hæfst þæt hine man
nawðer ne buton ege habban ne mæg ne forlætan ne **mot** þeah he wille?
(Bo:29.67.12)
- b. How do you like power and wealth now, now you have heard that one **can**

neither have it without fear nor relinquish it when one wishes?

- c. How do power or wealth please thee now that thou hast heard that no man **can** possess them and be free from dread, nor give them up if he so desire?
- d. Quae est igitur ista potentia, quam pertimescunt habentes, quam nec cum habere velis tutus sis et cum deponere cupias vitare **non possis**?
(LatinBo:3p5.12)
- (293) a. Forgif nu drihten urum | modum þæt hi **moton** to þe astigan þurh þas earfoðu þisse worulde, and of þissum bisegum to þe cuman, and openum eagum ures modes we **moten** geseon þone æþelan æwelme ealra goda, þæt eart ðu. (Bo:33.82.6)
- b. O lord, grant now our minds that they **may** ascend to you through these tribulations of this world, and from these cares come to you, and that with open eyes of our mind we **may** see the noble source of all goods, which is you.
- c. Grant unto our minds, O Lord, that they **may** rise up to Thee through the hardships of this world, and from these troubles come to Thee, and that with the eyes of our minds opened we **may** behold the noble fountain of all good things, even Thee.
- d. **Da**, pater, augustam menti conscendere sedem,
da fontem lustrare boni, (da luce reperta
in te conspicuos animi defigere visus.) (LatinBo:3m9.22-24)
- (294) a. Forgif us þonne hale eagan ures modes þæt we hi þonne **moton** afæstnian on þe, and todrif ðone mist þe nu hangað beforan ures modes eagum and onliht þa eagan mid ðinum leohte; (Bo:33.82.10)
- b. Grant us then healthy eyes of our mind that we **may** then fasten them on you, and drive the mist that now hangs before our mind's eyes and lighten the eyes with your light;
- c. Grant us health for our minds' eyes, that we **may** fasten them upon Thee,

and scatter the mist that now hangeth before out minds' sight, and let
Thy light lighten our eyes;

- d. (Da, pater, augustam menti conscendere sedem,
da fontem lustrare boni,) **da** luce reperta
in te conspicuos animi defigere visus.

Dissice terranae nebulas et pondera molis

atque tuo splendore mica; (LatinBo:3m9.22-26)

- (295) a. and ic wolde mid unarimedum feo gebycgan þæt ic hit **moste** gesion.
(Bo:34.89.29)

b. and I would pay countless treasure so that I **might** see it.

c. and I would pay a sum beyond counting that I **might** see it.

d. *Indirect parallel:*

Infinito, inquam, si quidem mihi pariter deum quoque, qui bonum est,
continget agnoscere. (LatinBo:3p11.3)

- (296) a. friðað and fyrðreð swiðe georne swa lange swa hiora gecynd bið þæt hi
growan **moton**. (Bo:34.91.24)

b. (For it is the nature of every kind of land that it fosters similar plants and
trees, and it does so); it protects and advances them very keenly for as
long as it is their nature that they **may** grow.

c. (for the nature of every country is to bring forth plants and trees like
itself, and it does so in this case.) It nurses them and helps them very
carefully so long as their nature **allows** them to grow.

d. *Indirect parallel:*

Sed dat cuique natura quod conuenit, et ne, dum manere **possunt**, in-
tercant elaborat. (LatinBo:3p11.20)

- (297) a. Hwæt wenst þu forhwi ælc sæd greowe innon þa eorðan and to cipum
[and] wyrtrumum weorþe on þære eorðan buton ðy þe hi tiohhiað þæt se
stemn and se [helm] **note** þy fæstor and þy leng standon?

(Bo:34.91.25)

- b. Why, do you think, does each seed grow within the earth and develop into shoots and roots in the earth if not because they intend that the stem and crown **may** be **allowed** to stand the firmer and longer?
- c. Why, thinkest thou, does every seed creep into the earth and grow into shoots and roots but because it wants the trunk and the tree-top **to stand** the firmer and the longer?
- d. *No direct parallel*
- (298) a. Ælcere wuhte is gecynde þæt hit willnige þæt hit a sie be þam dæle þe his gecynde healdan **mot** and mæg. (Bo:34.93.22)
- b. For each thing it is natural that it should desire always to exist to the extent that its nature **may** and can endure.
- c. For each being it is natural to desire to live for ever, in so far as its nature **may** admit.
- d. <...> dedit enim providentia creatis a se rebus hanc vel maximam manendi causam, ut, quoad **possunt**, naturaliter manere desiderent. (LatinBo:3p11.33)
- (299) a. Ac hit gebyrede, swa hit cynn was, þæt se godcunda anweald hi tostente ær hi hit fullwyrcean **moston**, and towearp þone torr, and hiora manigne ofslog, and hiora spræce todælde on twa and hundseofontig geþeoda. (Bo:35.99.13)
- b. But it came about, as was fitting, that the divine power scattered them before they were **allowed** to complete it, and cast down the tower, and killed many of them, and divided their speech into seventy-two languages.
- c. But it fell out, as was fitting, that the divine might dashed them down before they **could** bring it to a head, and cast down the tower and slew many a man among them, and split their speech into two and seventy tongues.
- d. *No direct parallel*
- (300) a. Ac þær ic nu **moste** þin mod gefiðerigan mid þam fiðerum þæt ðu mihtest

mid me fliogan, þonne miht þu ofersion ealle þas eorðlican þing.

(Bo:36.105.5)

- b. But if I now am **permitted** to feather your mind with those wings so that you can fly with me, then you can look down on all these earthly things.
- c. But if only I **might** fledge thy mind with wings, so that thou mightest fly with me, then mightest thou look down upon all these earthly things.
- d. *No direct parallel*

Indirect parallel:

Sunt etenim pennae volucres mihi

quae celsa consendant poli;

quas sibi cum velox mens induit

terras perosa despicit.

(LatinBo:4m1.1-4)

- (301) a. Ic wat þeah, gif þe æfre gewyrð þæt ðu wilt oððe **most** eft fandian þara þiostra þisse worulde, þonne gesihst þu þa unrihtwisan cyningas and ealle þa ofermodan rican bion swiðe unmihtige and swiðe earme wreccan, þa ilcan þe þis earme folc nu heardost ondræt.

(Bo:36.105.24)

- b. I know however that if it ever happens to you that you wish or are **allowed**³ to experience again the darkness of this world, then you will see the unjust kinds and all the arrogant men in power, the very ones whom this wretched people now most severely dread, to be very unpowerful and very wretched exiles.
- c. Nevertheless I know that if ever it shall happen to thee to desire or to be **allowed** to visit once more the darkness of this world, then wilt thou see that the unrighteous kings and all the overweening rich ones are very

³In the commentary to the text, Godden and Irvine write (vol. 2, p. 427): "Wisdom seems to think of Boethius wishing to return to the earthly darkness, or *being obliged to*" (emphasis mine). What is interpreted as a permission modal in their translation, is interpreted as an obligation modal in the commentary.

feeble and poor wretches, even those same men whom this poor folk now most sorely dreadeth.

- d. Quodsi terrarum **placeat** tibi
noctem relictam visere,
quos miseri torvos populi timent
cernes tyrannos exsules. (LatinBo:4m1.27-30)

- (302) a. and swa hwile swa ærest to þæm beage cymð, þonne **mot** se hine habban him.

(Bo:37.112.24)

- b. (as was customary among the Romans, and still is in many nations, that someone hangs a golden crown up at the end of some race-course; then a great crowd goes there and all run together, those who have confidence in their running), and whoever comes first to the crown, he is **allowed** to have it.

- c. (even as once it was the custom of the Romans, and still is among many peoples, for a golden crown to be hung up at the end of a race-course; many men come together and all start level, as many put their trust in their running.) And whosoever first reaches the crown **may** have it for himself.

- d. *No direct parallel*

- (303) a. Forðæm he **mot** cuman æfter þæm earfoðum to ecre are.

(Bo:38.120.17)

- b. And so it is **allowed** to come after those hardships to eternal favour.

- c. These, having deserved some measure of mercy, are **allowed**, after their troubles, to come to eternal glory.

- d. *No direct parallel*

- (304) a. Forþy wenað þa ablendan mod þæt þæt sie sio mæste gesælð þæt men seo alefed yfel to donne, and sio dæd him **mote** bion unwitnod.

(Bo:38.121.17)

- b. So the blinded minds think that the greatest felicity is that man is allowed to do evil, and that he **might** not be punished for the act.
- c. Therefore these purblind minds account it the greatest happiness that a man be **allowed** to work evil, and his deed to go unpunished;
- d. *No direct parallel*
- (305) a. Gif þu nu deman **mostest**, hwæþerne woldest þu deman wites wyrþran, þe [þone þe þone unscyldgan] witnode, þe | ðone þe þæt wite þolode.
(Bo:38.122.28)
- b. If now you were **allowed** to judge, which would you judge worthier of punishment, the one who tormented the innocent or the one who suffered the torment.
- c. If you **hadst** to decide, which wouldst thou deem the more worthy of punishment, him that punished the innocent, or him that suffered the penalty?
- d. Si igitur **cognitor**, ait, **resideres**, cui supplicium inferendum putares, eine qui fecisset an qui perulisset iniuriam?
- (306) a. Ac se godcunda foreþonc heaþerað ealle gesceafta þæt hi ne **moton** toslupan of heora [endebyrdnesse].
(Bo:39.128.20)
- b. But the divine providence restrains all creatures so that they **may** not slip from their ordering.
- c. The divine forethought holdeth up all creatures, so that they **may** not fall asunder from their due order.
- d. *No direct parallel*
- (307) a. Me wære liofre þæt ic onette wið | þæs þæt ic **moste** gelæstan þæt ic þe ær gehet, and þe **moste** getæcan swa sceortne weg swa ic scyrststne findan mihte to þinre cyððe.
(Bo:40.139.24)
- b. I would rather hasten towards the aim of **fulfilling** what I promised before, and **might** teach you the shortest way that I could find to your

homeland.

- c. I would rather hasten on **to make good** my earlier promise to thee, and **point out** to thee the very shortest way I can find to thy native land.
- d. <...> Festino, inquit, debitum promissionis **absolvere** viamque tibi, qua patriam reveharis, **aperire**. (LatinBo:5p1.4)
- (308) a. þæm he geaf micle gife freodomes, þæt hi **moston** don swa god swa yfel swa hi wolden. (Bo:41.142.8)
- b. To them [=angels and men] he gave the great gift of freedom, so that they **could** do either good or evil as they wished.
- c. to them He gave the great gift of freedom, that they **might** do good or evil, whichever they pleased.
- d. *No direct parallel*
- (309) a. He sealde swiðe fæste gife and swiðe fæste æ mid þære gife ælcum menn [oð] his ende. þæt is se frydom þæt ðe mon **mot** don þæt he wile, and þæt is sio æ þæt [he] gilt ælcum be his gewyrhtum, ægþer ge on þisse worulde ge on þære towearðan, swa god swa yfel swaðer he deð. (Bo:41.142.11)
- b. He gave a very fixed gift and a very fixed law with that gift to every man until his end. That is the freedom, that man **may** do what he wishes, and that is the law that he [=God] rewards each according to his deeds, both in this world and the next, whatever he does, whether good or evil.
- c. To every man until his end He hath given an abiding grace, and the grace an abiding law; that is, freedom **to do** what he will, and the law whereby He rewardeth each according to his deeds, both in this world and in the world to come, with good and evil, according as the man acts.
- d. *No direct parallel*
- (310) a. Nu þincð me þæt he do woh þonne he arað þa godan and eac þonne he witnað þa yfelan, gif þæt soð is þæt hit him swa gesceapen | wæs þæt hi

ne **moston** elles don.

(Bo:41.142.28)

- b. Now it seems to me that he does wrong when he favours the good and also when he punishes the wicked, if it is true that it was so shaped for them that they **might** not do otherwise.
- c. Now, I think He doeth amiss when He showeth favour unto the good, and also when He chastiseth the wicked, if it be true that they are so made as to be **unable** to act otherwise.

(311) *No direct parallel*

Indirect parallel:

Frustra enim bonis malisque praemia poenaeve proponuntur, quae nullus meruit liber ac voluntaris motus animorum, idque omnium videbitur iniquissimum quod nunc aequissimum iudicatur, vel puniri improbos vel remunerari probos, quos ad alterutrum non propria mittit voluntas, sed futuri cogit certa necessitas. (LatinBo:5p3.30-1)

A.3 Old English Augustine's *Soliloquies*

I add to the IDs from YCOE page and line numbers from [Carnicelli, 1969] and [Hargrove, 1902]: Carnicelli's is the most modern edition, and it does not provide corresponding page numbers of the earlier editions of [Hargrove, 1902] or [Endter, 1922]. As Carnicelli rearranges the order of the text of the Book III, following the suggestions of [Jost, 1920] (endorsed by Endter as well, but not reflected in the edition [Endter, 1922]), I chose to provide page and line numbers for all three mentioned editions. *Car* refers to [Carnicelli, 1969], *Har* to [Hargrove, 1902], and Endter's page and line numbers can be found in the YCOE IDs.

The (b) translations are from [Hargrove, 1904] (made from the text in [Hargrove, 1902]). The (c) translations are from the partial translation, containing the preface and two first books, from [Giles et al., 1858], and were made by E. Thomson.

- (312) a. ac ælcne man lyst, siððan he ænig cotlyf on his hlafordes læne myd his fultume getimbred hæfð, þæt he hine **mote** hwilum þar-on gerestan, and huntigan, and fuglian, and fiscian, and his on gehwilce wisan to þere lænan tilian, ægbær ge on se ge on lande, oð þone fyrst þe he bocland and æce yrfe þurh his hlafordes miltse geearnige.

(coprefsolilo,SolilPref:2.1.10; Car:48.5; Har:2.7)

- b. (It is no wonder that one should labor in timber-work, both in the garden-
ing and also in the building;) but every man desireth that, after he hath
built a cottage on his lord's lease and by his help, he **may** sometimes rest
himself therein, and go hunting, fowling, and fishing; and use it in every
manner according to the lease, both on sea and land, until such time as he
shall gain the fee simple of the eternal heritage through his lord's mercy.
- c. (It is no wonder, though men 'swink' in timber-working, and in the out-
leading and in the building;) but every man wishes, after he has built
a cottage on his lord's lease, by his help, that he **may** sometimes rest
him therein, and hunt, and fowl, and fish, and use it in every way to the
lease, both on sea and on land, until the time that he earn bookland and
everlasting heritage through his lord's mercy.

- (313) a. se god sealde fridom manna saulum, þæt hy **moston** don swa good swa
yfel, swæðer hy woldon;

(cosolilo,Solil_1:10.16.102; Car:54.3; Har:10.17)

- b. (And all the creatures, about whom we say that they seem to us inhar-
monious and unsteadfast, have yet somewhat of steadiness, because they
are bridled with the bridle of God's commandments.) God gave freedom
to men's souls, that they **might** do either good or evil, whichever they
would;
- c. (And all the creatures about which we are speaking that they seem to us
unharmonious and unsteady—they have however some deal of steadiness,
for they are bridled with the bridle—God's commandments.) God gave

freedom to men's souls, that they **might** do either good or evil, whether they would;

- (314) a. and *gedo* me þæs *wyrðne* þæt ic þe **mote** geseon.
(cosolilo,Solil_1:13.9.163; Car:55.23; Har:13.14)
- b. (If I love naught above Thee, I beseech Thee that I may find Thee; and if I desire any thing beyond measure and wrongly, deliver me from it.)
Make me worthy **to behold** Thee.
- c. (If I love naught over thee, I beseech thee that I may find thee; and if I immoderately and unlawfully desire anything, free me of that,) and make me worthy that I **may** see thee.
- (315) a. Nat ic ðe nanwiht to bebeodanne þæs þe þe mare ðearf sie to ðam cræfte þe ðu wilnast to wittanne þonne þæt þæt þu forseo swa ðu swiðost mage weorlde ara, and huru ungemetlice and unalifedlice, forðam ic *ondrede* þæt hy gebynden þin mod to hæom and þa gefon myd heora grine, swa swa man deor oððe fugelas feht, *þæt* þu *ne mote* began þæt þæt þu wilnast;
(cosolilo,Solil_1:47.6.600; Car:78.29; Har:46.6)
- b. I know not anything to command thee of which thou hast more need for the science which thou wishest to know, than that thou despise, so much as thou art able, worldly honors, and especially intemperate and unlawful ones, because I fear that they may bind thy mind to themselves and take it with their snare, just as one catcheth wild beasts or fowls, so that thou **canst** not accomplish what thou wishest;
- c. I wot naught to command thee, of which thou hast more need for the craft which thou wishest to know, than that thou despise as thou most strongly canst the world's honours, and especially the immoderate and unlawful: for I dread that they bind thy mind to them, and catch it with their snare, so that thou **may** not go about that which thou wishest.
- (316) a. Wost þu þonne genoh gif ic *gedo* þæt þu þæt *wost* þæt þu **most** simle lybban?

(cosolilo,Solil_2:57.1.741; Car:84.14; Har:56.9)

b. Wilt thou, then, know enough if I cause thee to know that thou **mayest** live always?

c. Shalt thou then know enough, if I make thee know that thou **mayest** always live?

(317) a. and efter domes dæge us *ys gehaten* þæt we **moten** god geseon openlice, ealne geseon swylce swylce he ys, and hyne a syððan cunnan swa georne swa he nu us can.

(cosolilo,Solil_3:67.25.939; Car:93.18; Har:67.6)

b. And after Doomsday it is promised that we **may** see God openly, yea, see Him just as He is; and know Him ever afterwards as perfectly as He now knoweth us.

(318) a. ... meahste oððe **mosten** on þas wurlde, oððe hweðer hy enige geminde hefde þara freonda þe hi be(æ)ftan heom lefdon on þisse weorulde.⁴

(cosolilo,Solil_3:67.32.946; Car:95.2; Har:67.17)

b. ...might or **could** in this world, or whether they had any remembrance of the friends whom they left behind in this world.

(319) a. Ða cwæð Abraham: “nese, min cyl(d)⁵, nese. Ac geþenc þæt þu hym forwyrndest ælcra getesa ða git begen⁶ on lichaman weron, and þu hefdest ælc good, and he hefde ælc yfel. *ne mot* he þe nu þy mare don to getæsan þe ðu þa hym woldest.”

(cosolilo,Solil_3:68.14.953; Car:95.15; Har:67.30)

b. Then said Abraham: ‘Nay, my son; but consider that thou didst withhold from him all comforts when ye were both in the body, thou having every good, and he every misfortune. He **cannot** now do more for thy comfort than thou wouldst do for him.’

⁴There is a gap in the manuscript text, so it is impossible to restore the context of this fragment.

⁵[Hargrove, 1902] substitutes *sunu* instead of *cyl*, hence the translation in (c).

⁶[Hargrove, 1902]: *becgen*

- (320) a. Ði me þincð swiðe dysig man and swiðe unlæde, þe nele hys andgyt æcan þa hwile þe he on þisse weorulde byð, and simle *wiscan* and *willnian* þæt he **mote** cuman to ðam æcan lyfe þær us nanwiht ne byð dygles.

(cosolilo,Solil_3:70.16.988; Car:97.14; Har:69.34)

- b. Therefore methinks that man very foolish and very wretched who will not increase his intelligence while he is in this world, and also wish and desire that he **may** come to the eternal life, where nothing is hid from us.

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