

# Imperatives and Modals\*

## Abstract

Imperatives may be interpreted with many sub-varieties of directive force, for example as orders, invitations, or pieces of advice. I argue that the range of meanings that imperatives may convey should be identified with the variety of interpretations that are possible for root modals, including deontic, bouletic, and teleological readings. This paper presents an analysis of the relationship between imperatives and root modals in discourse which asserts that, just as declaratives contribute to the common ground and thus provide information relevant to the interpretation of epistemic modals in subsequent discourse, imperatives contribute to another component of the discourse context, the addressee's To-do List, which affects the interpretation of subsequent root modals. More specifically, the present account of imperatives can be integrated with Kratzer's theory of modality by requiring that the To-do List be a subset of the ordering source used in the interpretation of root modals and by providing a mechanism by which particular types of ordering source may be selected. This analysis predicts that the interpretation of imperatives and modals in discourse is constrained in surprising ways; these predictions are borne out.

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## 1 Overview

### 1.1 Clause Types and Modals

Complete the analogy *Imperatives are to root modals as declaratives are to what?* The answer, of course, is *epistemic modals*. In this paper, I will argue that this analogy is a very strict one. That is, I claim that we should analyze the relationship between imperatives and root modals in a way parallel to how we currently think about the relationship between declaratives and epistemic modals. I don't believe there's much controversy concerning the relationship between declaratives and epistemic modals (though people may prefer to express it in terms of different terminologies or frameworks of dynamic semantics). If a declarative is used to make an assertion, as it canonically is, and this assertion is accepted in the conversation, the proposition it expresses becomes part of the common ground. What's in the common ground must be used – counted as factual – in the interpretation of a subsequent epistemic modal:

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- (1) • A: The floor is all wet.  
 • B: It must be raining outside then.

In this example, A’s utterance causes the proposition that the floor is wet to become part of the common ground. After this, this proposition is among the facts which determine the truth conditions of B’s sentence. (There are of course debates in the literature about precisely which propositions are relevant to the interpretation of an epistemic modal, but I think all experts on this topic would agree that propositions in the common ground are among them.)

If the analogy is correct, our uncontroversial analysis of (1) implies that there is something parallel to the common ground to mediate the relationship between imperatives and root modals. The concept of a To-do List will do the job. A To-do List represents what an agent is currently committed to doing. More precisely, according to Portner (2004) the To-do List of an agent  $\alpha$  is a set of properties, and the participants in the conversation mutually assume that  $\alpha$  will try to bring it about that he or she has each of these properties.<sup>1</sup> Typically the properties correspond to actions (e.g.  $[\lambda w \lambda x. x \text{ goes to the store in } w]$ ), and so we can say that the To-do List represents the actions that  $\alpha$  is committed to taking.<sup>2</sup> The argument, then, is that the relationship between imperatives and root modals should be explained as follows: imperatives contribute to a To-do List, in particular the To-do List of the addressee. To-do Lists are one of the contextual resources which contribute to the interpretation of a root modal. An example parallel to (1) is the following:

- (2) • A: Present this proposal to our bankers.  
 • B: I should take the 7 a.m. flight to New York then.

If this way of looking at imperatives is correct, we may be able to better understanding them by making some imperatives interact in discourse with modals and then thinking about these modals in terms of a sophisticated theory of modality. As we will see in detail in Section 3.1, in terms of the theory of modality of Kratzer (1981) we can say that To-do Lists help determine the ordering source for the interpretation of root modals. For now, we may think of this relationship as follows: at any point in a conversation, there is a contextually salient deontic conversational background  $O$  such that, for each property  $P$  on the addressee  $\alpha$ ’s To-do List,  $P(\alpha)$  is in  $O$ . Moreover,  $O$  is very likely to be used in the interpretation of any deontic modal in the local stretch of discourse.

This link between the To-do List and interpretation of deontic modals is analogous to the relationship between the common ground and the interpretation of epistemic modals, but there is an interesting difference. The common ground helps determine the modal base – not the ordering source – for epistemic modals. (Actually, the common ground helps determine the modal base for root modals too, as we’ll see in Section 3.3.) This leads to the picture in Table 1. Such a view of the relationship between discourse semantics and modal semantics is attractive in that it gives grammar a foothold in the conception of the ordering source. That is, whereas Kratzer thinks of the ordering source (like the modal base) as something which brings information from outside of

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<sup>1</sup>The notion of To-do List is similar to those of ‘sphere of permissibility’, Lewis (1979) and ‘plan set’, Han (1998). However, these have not been worked out in terms of the type of ordering semantics proposed for To-do Lists (see Section 2 below).

<sup>2</sup>A To-do List may also have properties like  $[\lambda w \lambda x. x \text{ is happy in } w]$  or even  $[\lambda w \lambda x. \text{ there is world peace in } w]$ . Which actions one needs to undertake to make these properties true of oneself is less clear than in the case of  $[\lambda w \lambda x. x \text{ goes to the store in } w]$ , but nevertheless one can be publicly committed to trying.

Note that I’m not taking a stand on whether actions are properties; they may only correspond to properties. As far as I can tell, properties do the work we need in making sense of the notion of a To-do List, and so for purposes of this paper I don’t need to worry about a formal reconstruction of actions separate from properties.

Table 1: Data Sources for Modal Interpretation

	Modal Base	Ordering Source
Root Modal	Common Ground + other contextual information	To-do Lists + other contextual information
Epistemic Modal	Common Ground + other contextual information	Contextual information (+ other?)

grammar into semantics, we can think of it as at least partially created by grammatical means, at least when we’re dealing with a root modal. Speakers have an explicit way to affect the ordering source for a root modal: they just have to utter an imperative.<sup>3</sup>

If the relationships suggested in Table 1 are correct, we have a canonical mechanism for building up the modal base (declaratives) and a canonical mechanism for building up the ordering source for root modals (imperatives); it would provide a nice symmetry if we could find a grammatical mechanism for helping to determine the ordering source for epistemic modals as well. Though this is not the topic of the present paper, I speculate that evidentials serve this function. To see why, consider Kratzer (1981)’s discussion of the following example:

- (3) Das muß die Bürgermeister-Weiß-Straß sein. (Kratzer (1981), (41))  
 this must the Bürgermeister-Weiß-Straß be  
 ‘This must be the Bürgermeister-Weiß-Straß.’

The use of ‘must’ here signals that the ordering source is not empty (since otherwise the sentence would be stronger than the corresponding one without the modal). The ordering source in question contains information which is held as less reliable by the speaker, for example “the route description of a friend, a tourist guide, or my own vague memories from years ago” (Kratzer (1981): 57). From this description, it seems that it’s the source of information, i.e. the evidential category, which renders these as less than fully reliable, and so as appropriate for the ordering source rather than the modal base. At a more abstract level, just as we use root modals to combine information about what is the case (modal base) with information about what is preferable (ordering source), we use epistemic modals to combine information we’re committed to (modal base) with information that we consider more or less likely (ordering source), and evidentials seem to encode information which helps us judge in which category a particular proposition fits.

## 1.2 Varieties of Imperative Meaning

Our primary data for exploring the relationship between imperatives and root modals consists in the varieties of meaning displayed by imperatives, for example orders, invitations, and suggestions:

- (4) Sit down right now! (order)  
 (5) Have a piece of fruit! (invitation)  
 (6) Talk to your advisor more often! (suggestion)

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<sup>3</sup>I thank Chris Barker (p.c.) for bringing this point into focus for me.

I don't want to spend time trying to define terms like *order*, *invitation*, and *suggestion*;<sup>4</sup> nor do I think that there's any good way to say what their common "directive" meaning is other than the theory presented below in section 2. Rather, I want to talk about the meaning of specific examples with the goal of answering two questions:

1. What gives rise to the variation in meaning among imperatives?
2. What is the correct way to make precise their meanings?

One might think that we should simply assign imperatives a general directive interpretation, and allow the sub-varieties to emerge from pragmatic reasoning of the communicative-intentional sort. That is, the speaker counts on the addressee to be able to determine his/her intention in uttering an imperative, and this will involve figuring out what sub-variety of directive force must be intended. While this type of Gricean reasoning certainly plays a role, I argue that it cannot be the whole story. A key piece of evidence for this point concerns the "psycho boss". You're being sent out of town to a meeting, and your boss says:

(7) Be there at least two hours early.

By itself, (7) can be taken as an order, and if your boss is that kind, you might well understand it that way. Next the boss says:

(8) Then, have a bite to eat.

If (7) was taken as an order, (8) is bizarre. You have to take it as an order too, and your boss must be crazy to order you around at that level of detail. Of course it makes sense to interpret (8) as a suggestion, but then you have to interpret (7) as a suggestion too. Why can't (7) be understood as an order and (8) as a suggestion? You might think it's just socially impossible to switch from being the ordering-boss to being the suggesting-boss so abruptly, but a parallel sequence with overt operators wouldn't be odd in the same way as (7)–(8):

- (9) a. You must be there at least two hours early.  
b. Then, I suggest you have a bite to eat.

I am going to propose an extension of the model of discourse semantics for imperatives given in Portner (2004) which accounts for these facts. The analysis emphasizes the connections between the semantics of imperatives and the semantics of root modals. It will also allow some observations concerning two other topics as well:

### 1. Modal particles in Badiotto imperatives<sup>5</sup>

Non-negative imperative sentences in Badiotto must contain one of four particles. I will discuss

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<sup>4</sup>“While it is often convenient to use labels, like these, it is perhaps worth pointing out that we should not expect to find complete agreement as to how they should be applied, what precisely is to be called a plea, what an exhortation, and so on. The brief survey which follows is sufficient to show that among linguists and philosophers the same terms have been used in very different ways.” (Davies (1986): 34)

<sup>5</sup>Badiotto is a Romance variety spoken in the val Badia, Italy. Study of this variety was undertaken together with Raffaella Zanuttini and Cecilia Poletto. The descriptions of the pragmatic contexts in which *ma* and *mo* can be used are based on interviews with speakers from several towns within the valley, and represent our analysis of what all uses of these particles (within this particular dialect) share. There are several other particles which may be used in imperatives, but their interpretations appear to vary more than those of *ma* and *mo* among the various parts of the valley, and are not discussed here.

the pragmatic contribution of two of them:

- (10) Imperatives with *Ma* express advice, invitation, or permission:  
You need to eat well, so you can grow up to be big and strong.

Mànge-l ma!  
eat-it ma

- (11) Imperatives *Mo* express an order:  
We can't let the food go to waste. You have to finish it, even if you don't want to.

Mànge-l mo!  
eat-it mo

## 2. Embedded Imperatives in Korean

Korean allows embedded imperatives, and the theory outlined here will help us better understand their relationship to the verbs that embed them. An example (Miok Pak, p.c.):

- (12) Inho-ka Sooni-ekey cip-ey ka-la-ko malha-ess-ta (Korean)  
Inho-NOM Sooni-to home-to go-IMP-COMP say-PAST-DEC  
'Inho said to Sooni to go home.'

Also possible are many other matrix verbs, including *ceyanhata* ('propose'), *ceysihata* ('suggest'), *myenglyenghata* ('order'), *yokwuhata* ('request'), and *cwungkohata* ('advise').

## 2 Background on Imperative Semantics

The Common Ground is a set of propositions representing the information that is mutually presupposed by participants in a conversation (Stalnaker (1974), Stalnaker (1978)). The canonical function of declaratives is to add the proposition they denote to the Common Ground. Parallel to this, Ginzburg (1995a), Ginzburg (1995b), Roberts (1996) have proposed that interrogatives be interpreted as contributing to another discourse component, what Ginzburg calls the 'Question under Discussion stack'. Along the lines of Lewis (1979), Han (1998), Potts (2003), and Roberts (2004), Portner (2004) proposes that imperatives are interpreted as contributing to a third discourse component, what I labeled the 'To-do List'.

- (13) **Pragmatic Function of Imperatives** (preliminary version)

- a. The To-do List function  $T$  assigns to each participant  $\alpha$  in the conversation a set of properties  $T(\alpha)$ .
- b. The canonical discourse function of an imperative clause  $\phi_{imp}$  is to add  $\llbracket \phi_{imp} \rrbracket$  to  $T(\textit{addressee})$ . Where  $C$  is a context of the form  $\langle CG, Q, T \rangle$ :
  - $C + \phi_{imp} = \langle CG, Q, T[\textit{addressee}/(T(\textit{addressee}) \cup \{\llbracket \phi_{imp} \rrbracket\})] \rangle$

Portner (2004) argues that the relation between  $\phi_{imp}$  and  $T(\textit{addressee})$  does not need to be written down anywhere in the grammar. It follows from two facts:

1.  $T(\alpha)$  is a set of properties, for any participant  $\alpha$ . Imperatives denote properties. Therefore the natural way to use  $\phi_{imp}$  to update  $C$  is to add it to some  $\alpha$ 's  $T(\alpha)$ .

2.  $\phi_{imp}$  expresses a property which can only be true of the addressee:

$$(14) \quad \llbracket \text{Sit down!} \rrbracket = [\lambda w \lambda x : x = \text{addressee}_C . x \text{ sits down in } w]$$

Therefore, it would not be sensible to add  $\llbracket \phi_{imp} \rrbracket$  to  $T(\alpha)$  for any  $\alpha$  other than the addressee.

The To-do List functions to impose an ordering on the worlds compatible with the Common Ground, and this ordering determines what actions an agent is committed to taking relative to that Common Ground (Portner (2004)):

(15) Partial Ordering of Worlds:

For any  $w_1, w_2 \in \cap CG$  and any participant  $i$ ,  $w_1 <_i w_2$  iff for some  $P \in T(i)$ ,  $P(w_2)(i) = 1$  and  $P(w_1)(i) = 0$ , and for all  $Q \in TDL(i)$ , if  $Q(w_1)(i) = 1$ , then  $Q(w_2)(i) = 1$ .

(16) Agent's Commitment:

For any participant  $i$ , the participants in the conversation mutually agree to deem  $i$ 's actions rational and cooperative to the extent that those actions in any world  $w_1 \in \cap CG$  tend to make it more likely that there is no  $w_2 \in \cap CG$  such that  $w_1 <_i w_2$ .

The Common Ground and To-do List are both formally and intuitively parallel to the modal base and ordering source, respectively, in Kratzer's semantics for modals. In, for example Kratzer (1981), the modal base delimits the set of possible worlds which are relevant to the interpretation of a modal, while the ordering source orders them according to some standard (e.g., laws, desires, etc.) This is just what the Common Ground and To-do lists do at the public, mutually presupposed discourse level. The set of worlds compatible with the Common Ground are those which will be treated as candidates for reality within the interaction, and the To-do List of each individual will rank those worlds according to how successful that individual is in bringing about what they're committed to bringing about. One way of seeing the point of this paper is as saying that this parallel between modal semantics and discourse semantics is a deep one, and not an accidental technical similarity.

### 3 The Relationship between Imperatives and Modals

The idea that imperatives should have something to do with the interpretation of deontic modals is extremely intuitive. Without any concern for compositional semantics or formal theories of discourse, one could accept the following description of language use: In some cases, the utterance of an imperative imposes an obligation on the addressee, and once one has accepted  $P$  as an obligation of  $\alpha$ , one will have to judge  $must(P(\alpha))$  true (provided that  $must$  has the relevant reading, of course, i.e. "in view of  $\alpha$ 's obligations"). That is, any contextual parameters which determine the truth conditions for sentences with  $must$  will have to be adjusted so as to guarantee  $must(P(\alpha))$ 's truth. One may then skeptically ask: we may want a theory of what it is to accept  $P$  as an obligation of  $\alpha$  and a theory of the semantics of  $must$ , but is there anything additional to say about the link between these two things? In this section, we'll see that the relationship between imperatives and root modals is deeper than this simple way of looking at things would lead one to believe. In particular:

1. Imperatives don't just impose obligations; they have many other varieties of meaning. Their range of meanings mirrors the familiar variation in the interpretation of root modals as deontic, bouletic, teleological, etc.

2. The link between imperatives and root modals holds whether their use is deontic, bouletic, teleological, or whatever.
3. The particular variety of meaning selected for an imperative or a root modal does not easily change within the local unit of discourse, and thus determines the variety of meaning adopted by subsequent imperatives and root modals.

These points, which are developed in sections 3.1–3.3, motivate the formal theory developed in section 3.4.

### 3.1 Imperative Subtypes

The variety of subtypes of imperative clauses parallels the range of interpretations of modal verbs, in particular, root modals. Because the meanings of modals and imperatives can be sub-classified indefinitely, as pointed out by Kratzer (1977), all that one can do to argue that this parallel is general is to show many motivational examples. Here are a few; more will appear throughout the rest of the paper:

- (17) a. Sit down right now! (order)  
b. Noah should sit down right now (given that he’s been ordered to do so).
- (18) a. Have a piece of fruit! (invitation)  
b. Noah should have a piece of fruit (given that he’s hungry).
- (19) a. Talk to your advisor more often! (suggestion)  
b. Noah should talk to his advisor more often (given that he wants to finish).

(Note that the (b) sentences have uses which don’t just report something Noah should do, but which in fact create an obligation/invitation/suggestion. That is, the (b) sentences can be used in ways which are rather similar to the (a) sentences. These “performative” uses of modals are discussed in section 3.2, but for the present they are not relevant. Our goal is to compare the semantics of modal sentences as analyzed within possible worlds semantics with the pragmatic function of imperatives. Possible worlds semantics just gives us truth conditions. Thus, for the time being, it is important to read the modal sentences only as assertions which could be judged true or false.)

In terms of the system of modal interpretation proposed by Kratzer (1981), (17b) has a deontic ordering source, (18b) has a bouletic ordering source, and (19b) has a teleological ordering source. All three have realistic (circumstantial) modal bases. The ordering source ranks the worlds compatible with the modal base, and the sentences with *should* are true iff the prejacent is true in all of the best-ranked worlds according to the ordering source. This explains the variety of flavors of modal interpretation for the (b) sentences.

I would like to suggest that To-do Lists also come in such flavors. In particular, (17a) has a To-do List which represents a set of orders, (18a) has a To-do List which represents the addressee’s desires,<sup>6</sup> and (19a) has a To-do List which represents the addressee’s goals. An utterance of (17a)

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<sup>6</sup>Wilson and Sperber (1988) suggest that permission imperatives are simply imperatives representing something the addressee desires. More recently, Schwager (2005b) has made more or less this same proposal in terms of a modal semantics for imperatives. This idea seems right to me. I will not discuss permission sentences in this paper, since they are such a difficult topic as to require forty pages on their own. I speculate, though, that the difference between invitations, discussed here, and permissions is whether it is presupposed that the speaker has the authority to prohibit the act in question.

is an attempt by the speaker to get the property of sitting down right now added to the addressee's 'deontic To-do List'; likewise for (18a) (bouletic) and (19a) (teleological).

There is some grammatical evidence in English for the reality of such categories of imperative interpretation. It has been noted (Potsdam (1996)) that English imperatives with an overt *you* subject signal the authority of the speaker over the addressee.<sup>7</sup>

- (20) a. Pass the salt!  
b. You pass the salt!
- (21) a. Don't move!  
b. Don't you move!

There is a clear difference between the (a) and (b) sentences here. The semantic effect of *you* can be described in terms of the present theory by proposing that *you* is only possible with a particular sub-variety of To-do List, namely a deontic one representing the properties which are on the addressee's To-do List on the authority of the speaker. Better evidence, based on data from Badiotto, that sub-varieties of To-do List can be grammatically marked will be presented in Section 4.1 below.

While I want to emphasize the similarities between imperatives (e.g., (17a)) and modal sentences (e.g., (17b)), note that I am not saying that their semantics is the same. The parallel is in the fact that (17a) and (17b) both have to do with "the rules". The difference is that the modal (17b) says that sitting down follows from the rules, while (17a) says that sitting down should be one of the rules. But the two things are connected. If, as I will argue below, the deontic To-do List is a subset of the deontic ordering source used subsequently in the same unit of discourse, a successful utterance of (17a) will lead to the truth of (17b), provided that the imperative is consistent with everything else in the ordering source and modal base.<sup>8</sup>

This parallel with modal sentences helps us understand the data in (7) which showed that a sequence of imperatives in discourse must be interpreted with the sub-variety of directive force. Note that a sequence of modal sentences in discourse displays a similar restriction. Example (22) shows that that the conversational backgrounds (modal base and ordering source) for a particular modal do not shift easily:

- (22) a. You must be there at least two hours early.  
b. Then you must have a bite to eat.

Either both sentences here are interpreted as orders, or both are interpreted as suggestions. It's very difficult to have (22a) be an order and (22b) a suggestion. This stability in the ordering source is similar to the stability in the subtype of imperative interpretation seen in (7). It provides

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<sup>7</sup>Example (20b) is odd without the right kind of annoyed or angry intonation. It's important not to allow a pause between *you* and what follows, since this would give rise to a vocative interpretation of *you*.

<sup>8</sup>There is a long history of relating different subtypes of imperatives to notions like the speaker's desires, goals, and so forth; see Davies (1986) for an overview. More recently, Han (1999) and Schwager (2005b) connect this intuition to the ordering source. Han says that imperatives contribute to the ordering source, while Schwager claims that subtypes of imperatives are distinguished by the type of ordering source they employ (e.g. a bouletic one for requests). Both of their ideas are similar to those presented here. However, their approaches differ in that they claim that imperatives contain a modal operator, whereas I draw the link more abstractly, through the notion of To-do List and its connection to ordering sources of overt modals; I will argue against their approach in section 3.2 below.

evidence for the idea that the same mechanism is used for selecting the variety of To-do List used to interpret an imperative and for selecting the variety of ordering source used to interpret a root modal. Such a mechanism will be developed in a more precise way in section 3.4.

### 3.2 Why imperatives aren't modal sentences

Given the similarity between imperatives and modal sentences, why don't we just assume that imperatives contain covert modals (as in, for example, Han (1999) and Schwager (2005a))? That is, why don't we analyze (17a) as something very similar to (17b)? The first challenge such an approach needs to get past is certainly familiar: Modal sentences like (17b) can be called 'true' or 'false', while imperatives intuitively cannot. In terms of the proposal here, this is because a modal sentence is proposed for addition to the Common Ground, while an imperative is proposed for addition to the addressee's To-do List.<sup>9</sup> Thus, (17b) will be judged false if the rules fail to imply that he sits down. Of course, (17b) has a use which imposes a requirement on Noah, a point which is more clear in sentences with a second person subject.

(23) You should sit down right now.

We do need to analyze this 'performative' use of (23), since it's not immediately captured by existing semantic analyses of modals. With such an analysis in place, we might then say that imperatives contain a modal which can only have a performative use, whereas regular modals can have either a performative or a non-performative use. This seems to be the intuition behind Han's and Schwager's proposals.

The basic problem with this way of looking at things is that once we have come to understand what the performative use accomplishes over and above the truth-conditional semantics of the modal, we see that this additional meaning is just what we need to analyze imperatives. The basic, truth-conditional semantics of the modal doesn't contribute at all, and might as well be left out of our analysis of imperatives. A revealing way of seeing this point comes from the recent work of Ninan (2005). He argues that puzzles concerning the interpretation of deontic *must* in root clauses show that it has a performative, imperative-like meaning in addition to its ordinary truth-conditional, modal meaning. This means that our ordinary semantics for modals is not going to provide us with an analysis of the function of imperatives. Rather, he suggests that it's the other way around: we need to study how imperatives work, and then this can help us understand the performative uses of modals.

Let us look at Ninan's claims in a bit more detail. He provides two arguments that sentences with *must* have an imperative-like meaning alongside their traditional modal meaning. The first argument is based on data like the following (Ninan (2005), (4)–(6)):

- (24) a. #Sam must go to confession, but he's not going to.  
b. #You must go to confession, but you're not going to.  
c. #I must go to confession, but I'm not going to.

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<sup>9</sup>The idea that imperatives denote properties is also relevant here, since properties could not be added to the Common Ground. But I don't want to insist on this difference in type between modal declaratives and imperatives in this section, in order to make clear the more important semantic arguments that imperatives are not modal sentences.

Ninan claims that the sentences in (24) may be true, but they are never assertable. They are not assertable because they actually impose the obligation that they report. One cannot felicitously utter a sentence with the intention to impose an obligation if one knows that obligation will not be met. Thus (24b) is parallel to Ninan's (11):

(25) #Go to confession! You're not going to go to confession.

Examples containing *must* in (24) contrast with those containing *should* in (26).

- (26) a. Sam should go to confession, but he's not going to.  
b. You should go to confession, but you're not going to.  
c. I should go to confession, but I'm not going to.

*Must* and *should* contrast because *must* imposes an obligation as part of its conventional meaning, while *should* does not (though if the context is right, it may do so via implicature). That is, in (24a) by saying *Sam must go to confession* the speaker attempts to impose on Sam the obligation to go to confession, and this conflicts with *he's not going to*. In contrast, while in isolation *Sam should go to confession* might be used to impose an obligation on Sam via implicature, this implicature cannot arise in (26a) because it would conflict with *but he's not going to*.

The second puzzle is based on the following data (Ninan (2005), (7)–(8)):

- (27) Sam should/ought to have gone to confession. (Deontic reading available.)  
(28) Sam must have gone to confession. (Epistemic reading mandatory, deontic reading unavailable.)<sup>10</sup>

This pattern is explained because one cannot impose an obligation concerning the past. If Sam went to confession, there's no point in imposing the obligation, and if he didn't, there's still no point.

Moreover, these points concerning *must* only relate to root occurrences. Embedded *must* contributes to the compositional semantics of the sentence it's a part of by means of traditional modal truth conditions.<sup>11</sup>

- (29) Since John must go to confession, he should find a church soon.

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<sup>10</sup>Read as *Sam must have gone to confession by the time I get back*, this example is ok, and its acceptability follows from Ninan's reasoning.

<sup>11</sup>The contrast between root and embedded deontic *must* is probably related to the puzzles concerning the interpretation of epistemic *must*. There are arguments that epistemic *must* is an evidential and doesn't contribute truth conditions (e.g., Halliday (1970), Drubig (2001), Bennett (2003)); see von Stechow (2003) for general discussion and especially the point that these arguments seem to fail in light of the fact that embedded occurrences of epistemic *must* clearly do contribute to truth conditions. I suspect that unembedded occurrences of deontic and epistemic *must* are special in precisely the same way, adjusting for the differences between deontic and epistemic modals. The crucial questions are then: (a) in what way they are special, and (b) why only root occurrences are special in this way. In light of my suggestion above that evidential categories can be used to determine the ordering source used for epistemic modality, we could answer (a) by saying that root *must* always adds the proposition it takes as argument to the current ordering source, and whether this is an epistemic or deontic ordering source follows from whether the occurrence of *must* itself is epistemic or deontic. There are plenty of questions to be addressed, of course, for example what plays the role in epistemic examples that the To-do List does in deontic ones.

This shows that *must* has truth conditions, though they are obscured in root contexts.

Since it seems that *must* has an obligation-imposing function, in addition to a traditional truth-conditional semantics, as part of its conventional meaning, the next question is what the nature of this conventional, obligation-imposing reading is. Ninan proposes to model it in terms of the notion of To-do List as in Portner (2004). Thus, he explains (24a) as follows: uttering the sentence places the property of going to confession on Sam's To-do List. But one cannot place a requirement on someone's To-do List while at the same time presupposing that it will not be met, and therefore the sentence is anomalous. What's important here is that the ordinary, truth-conditional semantics for the modal does not play a role in explaining the patterns in (24)–(28). Rather, the independent imperative-like meaning does the job. We cannot get away without a way of representing what it means to impose an obligation, with the To-do List or some similar notion.<sup>12</sup>

The lesson of this section is that it is not helpful to analyze imperatives as modal sentences which only have a performative use. A modal which only had a performative use might as well not be called a modal at all. The performative aspect of its meaning, modeled as the addition of its prejacent to the To-do List, would explain everything that needs to be explained about its meaning. Since there are no overt modals whose sole function is to update a To-do List (even *must* has modal truth conditions as well, as demonstrated by its use in embedded contexts), we're better off simply saying that an imperative's role is only to add to the To-do List, and leaving modality out of the semantics altogether.

### 3.3 The relationship between To-do Lists and conversational backgrounds

Before we attempt to improve the formal model of imperative interpretation, there are a couple of questions that must be addressed:

1. How do the sub-types of To-do Lists relate to one another? Are they separate, or are they extracted out of a unified To-do List which combines requirements of various kinds?
2. What is the relationship between the sub-types of To-do Lists and the conversational backgrounds that can function as ordering sources?

As for question #1, I think it makes more sense to have a unified To-do List and select out relevant subsets of it when necessary. Generally speaking, at the heart of imperative semantics is our definition of when an agent is behaving rationally and cooperatively, relative to their commitments and the common ground. This is what I attempt to formalize in (16). More concretely, by doing things this way we can make clear why it's odd to give conflicting imperatives even when they are of different sub-types (unless you have changed your mind, of course). Example (30) is bizarre even

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<sup>12</sup>Ninan discusses a problem which arises for his proposal with the following, his (22):

- (1) The pope must change his position on contraception.

How can I utter (1) if I'm in no position to impose an obligation on the Pope? His intuition is that in uttering (1), I impose (perhaps rhetorically) an obligation on myself, or on myself and my addressee(s), to do something to get the Pope to change his position. It has the feeling of the beginning of a manifesto or a rallying-cry. I think that Ninan's idea concerning (1) becomes more plausible if we relate it to (18a) or (19a). It seems that *must* shifts to a bouletic or teleological ordering source here, just as an imperative or sentence with *should* can. To my mind, (1) is most plausibly understood with a teleological ordering source: *in view of the goal of protecting women's health in poorer countries . . .*, or some such conversational background.

if though the corresponding pair of modal sentences, (31), is perfectly fine (though (31) reports an unfortunate situation):

- (30) Stay inside all day! (order)  
#Since you enjoy the nice weather, go out and play a little bit. (suggestion)
- (31) In view of your obligations, you ought to stay inside all day.  
But in view of what you want, you ought to go out and play a little bit.<sup>13</sup>

I would explain (30) by saying that it results in an inconsistent To-do List. However, one might also look at it as showing (once again) that it's hard to shift from an ordering imperative to an advising imperative. That is, the argument here is only good to the extent that second sentence in (30) can have an suggestion reading in the context of the first sentence issuing an order. Though two imperatives uttered in sequence strongly prefer to get the same variety of meaning, a change is of course possible if enough time intervenes:

- (32) [Morning] Write up a report on your trip to New York! (order)  
[Time spent working; friendly chat over water cooler; etc.]  
[Lunch time] Have a cookie! (suggestion)

Even imagining a situation in which the first sentence of (30) is uttered in the morning and the second in the afternoon, so that the first is an order and the second a suggestion, the pair can only be taken to mean that the speaker has changed his or her mind. Otherwise, it is bizarre because the speaker has given inconsistent imperatives, and the difference between an order and a suggestion seems not to reduce the sense of inconsistency.

### **Declarative — Common Ground — Epistemic Modal**

A question parallel to #2 is what the relationship is between the Common Ground and an epistemic conversational background. As far as the dynamics of conversation go, one is committed to treating everything in the Common Ground as part of the epistemic conversational background when evaluating an epistemic modal. Thus the following is odd:

- (33) • A: The book is not in the library.  
• B: Yes. #Maybe it's on the fourth floor of the library.

However, one is not committed to supplying every proposition relevant to the interpretation of an epistemic statement to the Common Ground:

- (34) • A: The book must be in the library.  
• B: Why do you say that? I couldn't find it there.  
• a. A: I can't say more, but trust me, it must be in the library.  
• b. A: I can't say more, but trust me, I know it's in the library.

I conclude that the Common Ground should be a subset of any epistemic conversational background.

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<sup>13</sup>The pattern with modal auxiliaries is interesting, somewhere in between imperatives and *ought to*: *You should/must stay inside all day . . . . But in view of what you want, you ?should/\*must go out and play a little bit*. The fact that the examples with *must* are bad follows from Ninan (2005)'s analysis.

### Declarative — Common Ground — Root Modal

The situation is parallel with the realistic (circumstantial) modal base used with root modals. Here are some examples involving a teleological reading of *should*:

- (35) • A: The book is not in the library.  
• B: Yes. #You should look for it on the fourth floor of the library.
- (36) • A: You should look for the book on the fourth floor of the library.  
• B: Why do you say that? I couldn't find it there.  
• A: I can't say more, but trust me, you should look there.

### Imperative — To-do List — Root Modal

Now we turn to the relationship between an imperative and the ordering source for a root modal. We'll focus on a deontic case; the bouletic and teleological examples work similarly. There is a wide variety of deontic conversational backgrounds modeling obligations in view of the law, tradition, morality, etc. Therefore, we expect that patterns like the ones we've been looking at should be unacceptable if the modal uses an ordering source which matches the To-do List, and acceptable with other kinds of ordering sources. Our first expectation is bourn out; example (37) is bad as expected.<sup>14</sup>

- (37) • A: Pay your taxes!  
• B: Ok. #Should I pay my taxes?

Moreover, it is very difficult to switch to an ordering source for the modal which does not match the kind of To-do List updated by the imperative. That is, if the imperative is seen as representing the law, for example, the modal very strongly prefers a reading based on what's necessary in view of the law; if the imperative is seen as representing what's morally correct, the modal strongly prefers a parallel interpretation. Because of this, examples (38)–(39) are nearly as bad as (37) even though the difference in kind between the To-do List and the ordering source is explicit and the contrast is overtly marked:

- (38) • A: Pay your taxes!  
• B: Ok. #But in view of my moral obligations, should I pay my taxes?
- (39) • A: Pay your taxes!  
• B: Ok. ?#But in view of my MORAL obligations, should I pay my taxes?

If we don't use a modal auxiliary but rather form our modal sentences with *have to* or *need to*, the examples are somewhat better, especially if the contrast is marked explicitly by syntax and intonation, as in (42):

- (40) • A: Pay your taxes!  
• B: Ok. #Do I need to pay my taxes?

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<sup>14</sup>If the individual to whom the obligations are relevant is changed, there are no restrictions:

- (1) • A: Pay your taxes!  
• B: Ok. Does everyone need to pay their taxes?

- (41) • A: Pay your taxes!  
 • B: Ok. ?But in view of my moral obligations, do I need to pay my taxes?
- (42) • A: Pay your taxes!  
 • B: Ok. But in view of my MORAL obligations, do I need to pay my taxes?

It seems that modal auxiliaries are in some way more closely tied to the To-do List than verbal expressions like *have to* and *need to*. I'm not sure what to make of this contrast, and will continue to focus this paper on the relationship between imperatives and modal auxiliaries.

The pattern outlined above suggests the following generalization:

- (43) Within a sequence of sentences in a conversation, the To-do List strongly tends to be a subset of any deontic ordering source focusing on the same individual.

This point is similar to (7) and (22). That is, it seems that just as there is stability in the variety of To-do List in a series of imperatives, and in the variety of ordering source in a series of root modals, there is stability between the To-do List of an imperative and the ordering source of a root modal. Once a variety of To-do List has been selected for the interpretation of the imperatives, the parallel variety of ordering source must be used for the interpretation of the modal. We can view this pattern as arising from two factors:

1. The To-do List of a particular variety (e.g., my legal obligations) must be a subset of any deontic ordering source of the same variety. (This is parallel to the relationship between the Common Ground and an epistemic/realistic modal base.)
2. Within a sequence of sentences, it is difficult, and sometimes downright impossible, to employ a To-do List of one variety and a deontic ordering source of another variety. (We have seen that how difficult it is depends on the particular of modal element, with modal auxiliaries less flexible than expressions like *need to*.)

The facts discussed in this section, summarized by these two points, strongly suggest that the relationship between imperatives and root modals needs to be explained by a formal theory. It is not simply a matter of reasoning about the effects of someone's uttering an imperative on the truth value of a subsequent modal sentence. Rather, we need a way of talking about To-do Lists and ordering sources which allows us to state precise constraints on their natures and the relationships between them.

### 3.4 An extension of the model of imperative interpretation

In this section, we'll develop a formal model of imperative interpretation which, in combination with a slightly adjusted version of the semantics for modals presented by Kratzer (1981), provides an explanation of the facts discussed so far. Here are some concepts we'll use:

- (44) A conversational background  $cb$  is a function from worlds to sets of propositions (Kratzer (1977), Kratzer (1981)).
- (45) A To-do List function  $T$  assigns a set of properties  $T(\alpha)$  to any participant in the conversation  $\alpha$ .

At a particular world, a conversational background gives us a set of propositions. We're going to need to select out subsets of these sets:

- (46) A selection function  $f$  takes two arguments, a world  $w$  and a set of propositions  $S$ , and returns a subset of  $S$ .
- (47) A parameterized selection function  $h$  takes  $n$  arguments ( $n > 2$ ),  $n - 2$  individuals, a world, and a set of propositions  $S$ , and returns a subset of  $S$ .

Here is an example of a selection function:

$$(48) \text{ deontic}(w, S) = \{p : p \in S \wedge p \text{ expresses an obligation in } w\}$$

The real work is going to be done by parameterized selection functions. Here are some examples:

- (49) For any individual  $x$ , world  $w$ , and set of propositions  $S$ :
  - a.  $\text{deontic}_x(w, S) = \{p : p \in S \wedge p \text{ expresses an obligation of } x \text{ in } w\}$
  - b.  $\text{bouletic}_x(w, S) = \{p : p \in S \wedge p \text{ expresses a desire of } x \text{ in } w\}$
  - c.  $\text{teleo}_x(w, S) = \{p : p \in S \wedge p \text{ expresses a goal of } x \text{ in } w\}$

I'll call parameterized selection functions which have already had their individual arguments specified "selection functions" too. For example, I'll call  $\text{bouletic}_{\text{addressee}}$  a selection function. I typically use  $h$  as a meta-logical variable over selection functions.

Of course, in the end we will need to define many more finely grained selection functions; for example, the discussion of overt *you* subjects of imperatives suggests that we need to recognize a sub-variety of deontic selection function which picks out those propositions which are on the addressee's To-do List by virtue of the authority of the speaker (approximately, "orders"). But because in this section my goal is to develop a framework for imperative semantics that lets us understand the relationship between imperatives and modals in discourse, I will not spend time trying to describe particular selection functions in a precise way. Rather, I'll frame this discussion mostly in terms of general categories like deontic, bouletic, and teleological.

Before we go on, one more technical refinement is necessary. Because I'm assuming that a To-do List is a set of properties, not a set of propositions, we'll need to allow selection functions to select from sets that include properties or propositions:

- (50) For any individual  $x$ , world  $w$ , and set of propositions and properties  $\Pi$ :
  - a.  $\text{deontic}_x(w, \Pi) = \{y \in \Pi : y \text{ expresses an obligation of } x \text{ in } w \vee y(x) \text{ expresses an obligation of } x \text{ in } w\}$
  - b.  $\text{bouletic}_x(w, \Pi) = \{y \in \Pi : y \text{ expresses an desire of } x \text{ in } w \vee y(x) \text{ expresses an desire of } x \text{ in } w\}$
  - c.  $\text{teleo}_x(w, \Pi) = \{y \in \Pi : y \text{ expresses an goal of } x \text{ in } w \vee y(x) \text{ expresses an goal of } x \text{ in } w\}$

When it is used to update a To-do List, the individual argument(s) of a parameterized selection function will be filled in by context; in the cases we'll discuss, there is just one individual argument, and it is the addressee. Moreover, when it is used to interpret a sentence in a context with Common

Ground  $CG$  and To-do List function  $T$ , it will be required that a selection function yield the same set for every world compatible with the Common Ground; that is,  $h(w, T(\alpha))$  is the same set for every  $w \in \cap CG$  and every participant  $\alpha$  in the conversation.

With these resources in mind, we are now ready to improve upon our formalization of the pragmatic function of imperatives. Intuitively, an imperative updates  $T(\textit{addressee})$ , and the property expressed by the imperative is selected by  $h(w, T(\textit{addressee}))$  for a salient selection function  $h$ . Which selection functions are available to a particular language (or natural language in general) is an empirical question. It seems that some varieties of deontic, bouletic, and teleological ones are among those available in English.

(51) **Pragmatic Function of Imperatives**

The canonical discourse function of an imperative clause  $\phi_{imp}$  is as follows:

- Intuitively: add  $\llbracket \phi_{imp} \rrbracket$  to  $T(\textit{addressee})$  and  $h(T(\textit{addressee}))$ , where  $h$  is a contextually provided selection function.
- More precisely: where  $C$  is a context of the form  $\langle CG, Q, T, h \rangle$ :
  - a.  $C + \phi_{imp}$  is only defined if the following condition is met:  
 $\exists X' \forall w \in \cap CG [X' = h(w, T(\textit{addressee}))]$
  - b. Provided that it is defined,  $C + \phi_{imp} = \langle CG', Q, T', h \rangle$ , where
    1.  $CG' = CG \cup \{w \in \cap CG : h(w, \{\llbracket \phi_{imp} \rrbracket\}) = \{\llbracket \phi_{imp} \rrbracket\}\}$
    2.  $T'$  is just like  $T$  except that  $T'(\textit{addressee}) = T(\textit{addressee}) \cup \{\llbracket \phi_{imp} \rrbracket\}$

The following sentences are interpreted with respect to different varieties of selection function:<sup>15</sup>

- (52) a. You sit down right now!  
 $\rightarrow h = \textit{speaker-authority-deontic}_{\textit{addressee}}$
- b. Have a piece of chocolate!  
 $\rightarrow h = \textit{short-term-pleasure-bouletic}_{\textit{addressee}}$
- c. Talk to your advisor more often!  
 $\rightarrow h = \textit{career-goal-teleo}_{\textit{addressee}}$

If the addressee accepts any of (52), the property expressed becomes a commitment in the sense it becomes part of the To-do List. Moreover, it becomes pragmatically presupposed that the property is selected by the selection function indicated. For example, (52a) will result in a context in which sitting down right now is on the addressee's To-do List, and in which it is pragmatically presupposed that sitting down right now is an obligation imposed by the speaker on the addressee.

In order to analyze the relationship between imperatives and root modals in discourse, we will use selection functions to interpret modals as well. Now a context is of the form  $\langle CG, Q, T, h, f, g \rangle$ , where  $f$  and  $g$  are conversational backgrounds. The basic idea is that we will implement the modal semantics of Kratzer (1981) using  $f$  as the modal base and  $[\lambda w.h(w, g(w))]$  as the ordering source. For example, *should* may be analyzed as follows:

<sup>15</sup>In the interest of expository vividness, I make up some terminology for fine-grained selection functions which give a sense of exactly how they are interpreted; however, I don't intend to commit myself to precisely these selection functions turning out to be among those we want for semantic theory in the end.

- (53)  $\llbracket \text{should} \rrbracket^C = [\lambda p \lambda w : f \text{ is a realistic conversational background, and } g \text{ is a 'goal directed' conversational background} . \text{ for all } u \in \cap f(w), \text{ there is a } v \in \cap g(w) \text{ such that}$
- $v \leq_{h(w,g(w))} u$ , and
  - for all  $z \in \cap f(w) : \text{ If } z \leq_{h(w,g(w))} v, \text{ then } z \in p$ .

Here I made up the term ‘goal-directed conversational background’ to try to capture what’s shared by all of the ordering sources relevant to *should*. A goal-directed conversational background is analogous to a To-do List. It may contain such things as obligations, wishes, goals. In terms of Kratzer’s semantics, we can say that *should* uses a realistic modal base and a pragmatically salient subset of a goal-directed conversational background as ordering source; some likely candidates would be the subject’s obligations or desires. For example, in (54) we probably initially think of an interpretation that uses *deontic<sub>John</sub>* as the selection function:

- (54) John should leave.

It is also possible to use *bouletic<sub>John</sub>* and *teleo<sub>John</sub>* as selection functions here (among others), given the right contexts. It is interesting to note that in imperatives, the individual argument of the parameterized selection function is specified as the addressee, while in modal sentences, it is the referent of the modal’s subject. Presumably this is so because *you* is the implicit subject of imperatives (or perhaps it’s the other way around, i.e. *you* is the implicit subject of imperatives because the addressee is the argument of the selection function). The syntax/semantics interface of imperatives is of course an interesting topic, but unfortunately we don’t have space to develop a theory of it here.

We can explain the relationships observed in previous sections between imperatives and deontic modals in a sequence of sentences with the following two principles:

- (55) **Conversational background contains To-do List**  
 Given a context of the form  $\langle CG, Q, T, h, f, g \rangle$ , for all participants in the conversation  $\alpha$ , for all  $P \in T(\alpha)$ , and for all  $w \in \cap CG, P(\alpha) \in g(w)$ .<sup>16</sup>
- (56) **Same Selection Function**  
 The selection function remains the same through a unit of discourse

I don’t know how to define a ‘unit’ of discourse for the purposes of (56), but two-sentence sequences and exchanges like those in examples like (7)–(8), (22), and (37)–(42) would count as a unit by anyone’s definition. I will illustrate how the principles (55) and (56) serve to explain such data by looking at example (38), repeated below as (57). According to (55), the proposition that you pay your taxes must be part of the ordering source for *should*.

- (57) • A: Pay your taxes!  
 • B: Ok. #In view of my moral obligations, should I pay my taxes?

To interpret A’s utterance, B had to be able to figure out what selection function was intended, and B’s *Ok* signals that she thinks she was able to figure it out. At this point, if B intends to use

<sup>16</sup>I’m leaving aside consideration of the ordering sources used by epistemic modals. I don’t think that this principle applies to them, and so ultimately we may want the context to contain three conversational backgrounds:  $\langle CG, Q, T, h, f, g_1, g_2 \rangle$ .

the same selection function for the interpretation of *should*, there is no point in adding the *in view of* phrase. It would be redundant. If, in contrast, B intends to use a different selection function, the use of *in view of* would make sense, but this intention would conflict with the requirement that the selection function remain the same through a unit of discourse. Either way, B's utterance is predicted to be pragmatically anomalous. Note that it's acceptable for B to respond to A's imperative by inquiring about which selection function is intended:

- (58) • A: Pay your taxes!  
 • B: Are you telling me to pay my taxes in view of my moral obligations, or my legal obligations?

Here B has indicated that she is not certain which selection function A intended for the imperative, and so there is no conflict with the *in view of* phrase.

If the subject of the modal sentence is not the addressee, there is no conflict:

- (59) • A: Pay your taxes!  
 • B: Ok. Should John pay his taxes?

Even though principle (55) implies that the proposition that B pays his taxes is in the conversational background used to interpret *should*, this proposition will not contribute to the ordering source because the selection function will not select it. The selection function will not select it because its individual parameter is the addressee in A's utterance and John in B's; that is, in the one case we use *deontic<sub>addressee</sub>* while in the other we use *deontic<sub>John</sub>*. That is, the fact that B should pay his taxes has nothing to do with whether John should.

## 4 Further Connections

### 4.1 Imperative particles in Badiotto

Data from the central Rhaetoromance language Badiotto provides evidence for the kind of subtyping of imperatives which this analysis provides. Every imperative in this language must contain one of five particles: negation, *ma*, *mo*, *pa*, and *pö*. I'll focus in particular on two particles, *ma* and *mo*, since their contributions are clearer than those of *pa* and *pö*.

#### 1. Ma

Poletto and Zanuttini (2003) describe *ma* as being used in imperatives that give advice or permission, for example (their (8), (10)):

- (60) a. Mängel *ma* che spo crësceste.  
 eat-it ma that then grow (2nd sg)  
 'Eat it and you'll grow.'  
 b. Tète *ma* n dé de vacanza!  
 take-yourself ma a day of vacation (2nd sg)  
 'Take a day off for vacation!'

- c. Va *ma* tres adërta fora!  
 go ma always straight ahead (2nd sg)  
 ‘Keep going straight ahead!’
- (61) a. \*Puzenëime *ma* ciamò i cialzà!  
 clean-me ma yet the shoes  
 ‘Polish my shoes!’ or ‘You still have to polish my shoes!’
- b. \*Arjigneme *ma* cà le bagn!  
 prepare-me ma here the bath  
 ‘Get my bath ready!’

## 2. Mo

They describe imperatives with *mo* as being used to give an order (their (12)):

- (62) a. Puzenëieme *mo* ciamò i cialzà!  
 clean-me mo yet the shoes  
 ‘Polish my shoes!’ or ‘You still have to polish my shoes!’
- b. Arjigneme *mo* cà le bagn!  
 prepare-me mo here the bath  
 ‘Get my bath ready!’

Poletto and Zanuttini (2003) describe imperatives with *ma* as being ‘from the point of view of the hearer’ and sentences with *mo* as being ‘from the point of view of the speaker’. That is, the examples with *ma* seem to describe actions which benefit the hearer, while those with *mo* describe actions which benefit the speaker. In terms of the ideas discussed so far, we can restate this as follows:

- (63) a. Imperatives with *ma* are interpreted with respect to the selection functions  
*bouletic*<sub>addressee</sub> or *teleo*<sub>addressee</sub>.
- b. Imperatives with *mo* are interpreted with respect to the selection function  
*deontic*<sub>addressee</sub>.<sup>17</sup>

Example (60b) is bouletic, examples (60a) and (60c) are teleological, and examples (62a) and (62b) are deontic.

It is also possible to reconstruct the ‘for the benefit of speaker/hearer’ analysis more directly. We can introduce a new selection function:

$$(64) \text{ ben}_x(w, \Pi) = \{y \in \Pi : y \text{ benefits } x \text{ in } w \vee y(x) \text{ benefits } x \text{ in } w\}$$

In terms of such a selection function, we have:

- (65) a. Imperatives with *ma* are interpreted with respect to the selection function  
*ben*<sub>addressee</sub>.

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<sup>17</sup>Probably a more specific selection function is required in order to capture the concept of an order relevant here. We may want to select just the set of requirements imposed by the speaker. Though more fieldwork is required in order to fine-tune the semantics, it should be clear how the framework could capture a variety of subtle distinctions.

- b. Imperatives with *mo* are interpreted with respect to the selection function  $deontic_{addressee}$ .

I do not propose that *mo* requires  $ben_{speaker}$  because we have no clear examples of *mo* being used in requests, that is in imperatives which expresses a course of action which is for the benefit of the speaker, but which is not an order. An example would be (66):

(66) Please, help me!

Further fieldwork should reveal whether *mo* is better described as ‘deontic’ or ‘speaker’s point of view’.

## 4.2 Embedded Imperatives

A number of languages allow imperative clauses to be embedded. We’ll focus on Korean data here (data from Miok Pak, p.c.):<sup>18</sup>

- (67) a. Inho-ka Sooni-ekey cip-ey ka-la-ko malha-ess-ta  
 Inho-NOM Sooni-to home-to go-IMP-COMP say-PAST-DEC  
 ‘Inho said to Sooni to go home.’
- b. Inho-ka Sooni-ekey cip-ey ka-la-ko ceysiha-ess-ta  
 Inho-NOM Sooni-to home-to go-IMP-COMP propose-PAST-DEC  
 ‘Inho proposed to Sooni to go home.’
- c. Inho-ka Sooni-ekey cip-ey ka-la-ko myenglyengha-ess-ta  
 Inho-NOM Sooni-to home-to go-IMP-COMP order-PAST-DEC  
 ‘Inho ordered Sooni to go home.’
- d. Inho-ka Sooni-ekey cip-ey ka-la-ko yokwuha-ess-ta  
 Inho-NOM Sooni-to home-to go-IMP-COMP request-PAST-DEC  
 ‘Inho requested that Sooni go home.’

The matrix verbs which can embed imperatives cover the range of forces that imperatives may have in root sentences. What I want to consider here is how the selection function can play a role in the interpretation of embedding structures like these. An interesting way to look at this involves the idea that the matrix verbs in (67) select “monsters” (Kaplan (1989), roughly as in Schlenker (2003)).<sup>19</sup>

- (68) a.  $\llbracket s \text{ say to } h \phi_{imp} \rrbracket = \{w : C \text{ is a context representing what } \llbracket s \rrbracket \text{ says to } \llbracket h \rrbracket \text{ in } w \wedge C + \llbracket \phi_{imp} \rrbracket = C\}$

<sup>18</sup>While Han (1998) claims that imperatives cannot be embedded in Korean, Shim et al. (1977), Pak (2004), and Pak et al. (2004) show that they can be.

<sup>19</sup>Alternative definitions like the following are also attractive:

- $\llbracket s \text{ order } h \phi_{imp} \text{ at } t \rrbracket = \{w : C \text{ is a context representing the conversation between } \llbracket s \rrbracket \text{ and } \llbracket h \rrbracket \text{ in } w \text{ just prior to } \llbracket t \rrbracket \wedge C' \text{ is a context representing the conversation between } \llbracket s \rrbracket \text{ and } \llbracket h \rrbracket \text{ in } w \text{ just after } \llbracket t \rrbracket \wedge h_C = deontic_{addressee(C)} \wedge C + \llbracket \phi_{imp} \rrbracket = C'\}$

- b.  $\llbracket \text{s order h } \phi_{imp} \rrbracket = \{w : C \text{ is a context representing what } \llbracket \text{s} \rrbracket \text{ says to } \llbracket \text{h} \rrbracket \text{ in } w \wedge h_C = \text{deontic}_{\text{addressee}(C)} \wedge C + \llbracket \phi_{imp} \rrbracket = C\}$

The semantics of *say* is open as to what type of selection function is used to interpret its complement. In contrast, *order* requires a deontic function (or some sub-species thereof). Parallel to this, *suggest*, *propose*, *request* and the like would place their own restrictions on the selection function. In this way, we can see these verbs as imposing sub-varieties of imperative force on their complements.

Of course it would be possible not to treat the embedding verb as selecting a monster in this way. We could just treat the property expressed by the imperative as an argument of the matrix verb in the usual way. This would not say that there’s anything special about an embedded imperative. It might as well be an embedded subjunctive or infinitive. However, the imperative form does not behave as subjunctives and infinitives typically do; it can only be used with directive matrix verbs. We can account for this restriction by saying that imperatives can only be interpreted via that ‘+’ defined in (51), with (68) showing how an embedding predicate can take advantage of that. In other words, the property expressed by an imperative clause cannot be the argument of any operator other than +, and this means that they will always have directive force with respect to a real (“root”) or derived (“embedded”) context. I’m not sure why this restriction would hold, but it would explain the fact that few languages allow imperatives to be embedded, and the fact that when imperatives are embedded, it’s under directive verbs.

## 5 Conclusion

This paper has made two main empirical contributions. First, it has shown the parallels between the varieties of directive force which imperatives may convey on the one hand and the varieties of root modal interpretation on the other. And second, it has demonstrated that these parallels are real at the discourse level; the way you interpret an imperative affects the interpretation of subsequent imperatives and modals, and the way you interpret a modal affects the interpretation of subsequent modals and imperatives. On the theoretical level, it has analyzed these connections in terms of a link between To-do Lists and ordering sources and a selection function which picks out pragmatically coherent subsets of To-do Lists and ordering sources. Using the selection function, we keep track not just of what we should do, but more precisely of what we should do because it’s an obligation, because we want it, because it’s useful to our purposes and so forth. The fact that these categories are both cognitively and interactionally real is demonstrated by their importance to both modals and imperatives.

I would like to conclude with some thoughts on how this analysis of imperatives contributes to semantic and pragmatic theory. A basic question for pragmatic theory concerns the practical foundation which drives our explanation of pragmatic phenomena. We talk for many reasons, but which reason, or reasons, should be represented in formal pragmatic models? Semanticists often consider the goal of conversation to be the exchange, and hopefully growth, of information. The concept of common ground models this feature of discourse; the field’s history of focusing on declaratives and, to a lesser extent, interrogatives confirms this understanding of what is central. Once we take the pragmatic contribution of imperatives seriously, however, our perspective on the goals of conversation shift. We can see conversation as fundamentally about planning and coordinating action; sharing and increasing the information at our disposal is part of this, but at some point we have to decide what to do. Often we’ll make explicit what we’re going to do; the

To-do List models this aspect of conversation. Root modals play the role of allowing us to reason about possible future actions. But no matter what conclusion one may reach about the necessity of a particular future action, this is not the same thing as publicly committing to it. Modals relate to common ground and imperatives to the To-do List, and neither should be reduced to the other.

Sub-varieties of directive force and sub-varieties of modal interpretation parallel one another because we care about particular kinds of rationale for action (e.g., authority, desires, goals). The fact that it is difficult to switch the selection function within a unit of discourse shows that we tend to focus on one particular kind of rationale for action at a time. We pick a selection function which represents the type of rationale we're interested in. For example, if we're talking about what we should do in light of certain goals, we'll pick a teleological selection function. Then, we'll reason about it (using modals, among other means) and plan in light of it (using imperatives, among other means).

I wonder whether the way we manage the selection function will ultimately have to be modeled in terms of some kind of recursive structure, just as analyses of interrogatives in discourse have shown that the question under discussion can spawn sub-questions under discussion (Ginzburg (1995a), Ginzburg (1995b), Roberts (1996)). On the one hand, just thinking about the nature of planning may lead one to expect that we might start with a high-level selection function (our goal is to eat dinner) which then leads to lower-level selection functions (our goal is to cook some dumplings). But on the other, the nature of clause type systems across languages is not encouraging. Whereas we have two universal clause types devoted to exchanging information, declaratives and interrogatives, we only have one, imperatives, devoted to sharing what we're going to do. Moreover, this type is typically limited to placing requirements on the addressee; we don't universally have canonical ways of expressing what the speaker or third parties are committed to doing (though the existence of exhortatives in many languages and promissives in Korean, cf. Pak et al. (2004), shows that there are more constructions to be studied – see Pak et al. (2006)). So perhaps our ability to use language to coordinate what we're going to do is fundamentally impoverished compared to our ability to talk about what is the case. That might explain a lot.

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