Commitment to Priorities[*]

Paul Portner
Georgetown University

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1   Strong and weak imperatives

We have a clear sense that some imperatives are "stronger" than others:

(1)   a. Soldiers, march! (Strong)
      b. Have a cookie! (Moderate or Weak)

What are we judging when we describe one imperative as stronger than another? Several different factors seem to be involved. First, with some examples, the imperative is imposed upon the addressee; with others, the addressee's choice determines whether it takes effect:

(2)   a. Sit down, and don't get up until I tell you to!
      b. Have a seat, and I'll bring you some tea.

   Second, in some cases, the imperative "makes true" the corresponding modal statement (in an intuitive sense which we need to understand further); in others, the modal statement seems to be already true at the point when the imperative is used, and the fact expressed by the modal can be seen as justifiying the use of the imperative:

(3)   a. Friends, begin your meditation now! $\Rightarrow$
      b. They should begin to meditate now.
(4)   a. Do not park in the dry cleaner's lot! $\Leftarrow$
      b. They should not park in the dry cleaner's lot.

At the moment just before the meditation teacher utters (3a), it is not the case that the students should begin to meditate, but after their teacher says so, they should. The imperative makes it the case that they should begin to meditate. In contrast, when (4a) is uttered, it's already the case that the addressee should not part in the lot (because she will get a ticket). The imperative serves to urge the addressee to make the sensible decision.

A third type of difference involves the relation between imperatives and different levels of necessity. In some cases, an imperative allows an inference to a strong necessity statement, for example one involving *must* or *have to*; in other instances, the imperative does not imply the truth of a strong necessity statement, but we can infer a weak necessity (*should* or *ought to*) or a possibility statement (*may*):[1]

(5)   a. Soldiers, march! → They must march.

      b. Have a cookie! → He #must/should/may have a cookie.

Finally, intonation affects the intuitive strength of imperatives in a way similar to its effect on declaratives. In (6)-(7), the arrows represent forms of rising and falling intonation.[2]

(6)   a. It's cold out.[↓]

      b. It's cold out?[↑]

(7)   a. Have a seat!⇓

      b. Have a seat!⇑

In this paper, I will explore the idea that the discourse meaning of imperatives should be explained in terms of a model which tracks the commitments of individual participants in a conversation, as well as the joint commitments. Such models have been used to represent the "fact-seeking" side of discourse since at least Hamblin 1971, and Gunlogson (2001) employs such a model to explain the difference between rising and falling declaratives like those in (6). Recently, this type of theory has been used recently to analyze the discourse meanings of declaratives, interrogatives, and polar particles (Farkas and Bruce,

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[1] I currently believe that there are no mere permission imperatives. So, for example (5b) cannot be used to grant the addressee permission to have a cookie without implying that she should have a cookie, relative to an appropriate conversational background (plausibly, an addressee-based buletic one). The reasons for this assessment will become clear below.

It may be worth mentioning that these views about permission differ from those I argued for previously (Portner, 2011). However, I still espouse the analysis of free choice given there. That analysis proposed that choice-offering imperatives have as their semantic value a set of ordinary imperative meanings. For a choice offering imperative, the union of these alternatives is at least a weak necessity and each alternative individually is at least a good possibility.

[2] The notation ↓ represents the falling intonation which goes along the sentence being uttered "as an assertion", while ↑ represents the rising intonation when it is used "as a question". See Gunlogson (2001) for this use of ↓ and ↑. Similarly, ⇓ represents the intonation associated with the imperative being uttered "as a command", while ⇑ represents that associated with its use "as a request or permission". I will make a few brief remarks on the nature of these intonational patterns in Section 3.

2010; Roelofsen and Farkas, 2014). I will argue that a similar set of ideas is applicable to the deontic or "prioritizing" side of discourse as well.

2 Dynamic pragmatics

My analysis will be presented in terms of the framework of DYNAMIC PRAGMATICS. Dynamic pragmatics is an approach to discourse meaning which makes use of the following fundamental ideas:[3]

(8) **Dynamic pragmatics**:

1. Sentences have standard static semantic values.
2. The communicative effect of utterances in discourse is modeled as the effect they have on the discourse context.
3. The effect of a particular sentence is determined by pragmatic principles on the basis of the sentence's form or semantics.

There is important work on both imperatives and intonational meaning within dynamic pragmatics, and since our interest here is in the intersection of these two topics, it is perhaps the most appropriate approach on which to build. In section 2.2, I will make some remarks on the relation between dynamic pragmatics and other, closely related frameworks (dynamic semantics and speech act theory).

2.1 The development of dynamic pragmatics and the structured discourse context

In this section, I'll trace the lineage of some key ideas within dynamic pragmatics. Figure 1 provides a visually-oriented summary; see Portner (to appear) for references and further discussion.

Hamblin and the structured discourse context. Hamblin (1971) is perhaps the earliest formal analysis of discourse meaning which can be recognized as a version of dynamic pragmatics. As he explores a variety of ideas about meaning and discourse, he gives a series of systems which can be understood as generative grammars for dialogue. Here's my version of his System 7:

1. **Dialogue.**

   (a) There are five types of LOCUTIONS: assertions, retractions, inquiries, retraction-demands, and *I don't know*.
   In symbols: The set L consists of five non-overlapping subsets $\lambda, \mu, \xi, \eta, L_{\mathrm{o}}$.

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[3]Lauer (2013) uses "dynamic pragmatics" for a rather different approach to discourse meaning, one on which pragmatic inference plays a central role. Lauer points out that Schlenker (2010) employs the phrase to describe Stalnaker's theory of presupposition and assertion; Schlenker's usage appears to be appears to be in accord with that advocated here.
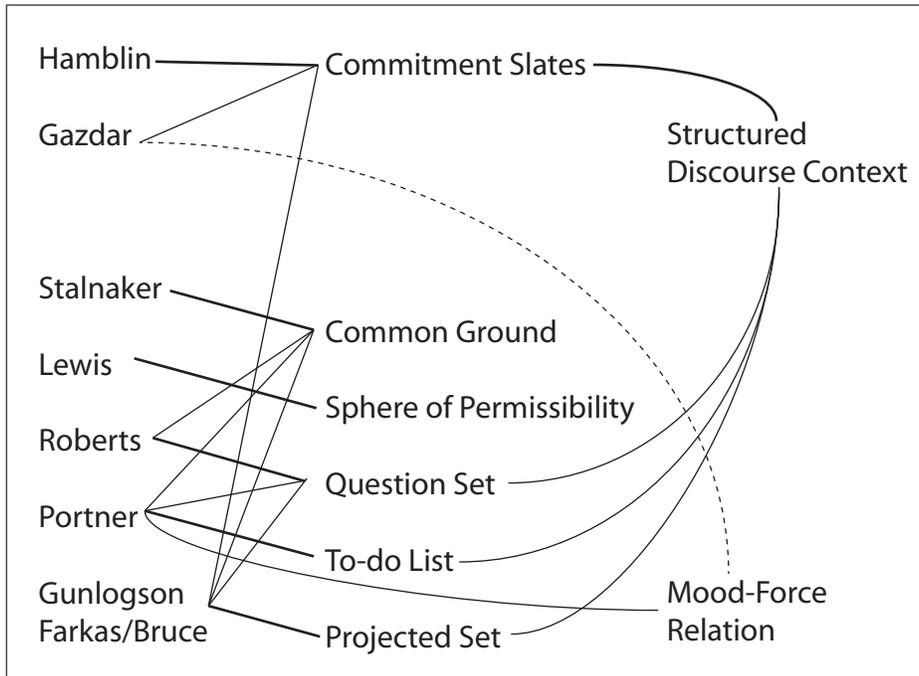
Figure 1: Evolution of dynamic pragmatics theories

    (b) A DIALOGUE is a sequence of locutions $\langle l_0, l_1, \ldots, l_i \rangle$.

2. **Commitment slates.**

    (a) A COMMITMENT SLATE is a set of assertions.

    (b) The relation between locutions and commitment slates: For each locution in a dialogue $D = \langle l_0, l_1, \ldots, l_i \rangle$, $CS_j(p)$ is a commitment slate representing participant p's commitments in D after locution j.

Note that Hamblin's system associates a commitment slate with each participant in the dialogue.

  Given this definition of dialogue, rules define the set of well-formed dialogues. Hamblin expresses the rules in a set-theoretic format; because the formalism is difficult to parse, some of the relevant rules are paraphrased below:

(9) a. Following an assertion, everyone's commitment slate includes that assertion.

     b. Following a retraction by participant p, p's commitment slate does not include that retraction, but every other participant's commitment slate remains unaltered.

c. An inquiry (i.e., question) is not allowed if its answer is in anyone's commitment slate.

d. Following an inquiry, the next locution must be an assertion by someone other than the speaker of the inquiry and must answer it.

Because Hamblin's ideas are formulated as a grammar of dialogue, its relation to more familiar dynamic theories is somewhat obscured, but we can easily reformulate Hamblin's ideas in a more familiar context-and-update format. In order to re-express Hamblin's approach, we begin by defining a "context" as follows:

(10) **Contexts.** A HAMBLIN CONTEXT is a locution and an associated assignment of commitment slates to individuals.
Specifically, the context for locution l_j is:

$C_{j-1} = \langle l_{j-1}, CS_{j-1} \rangle$, where CS_{j-1} assigns a set of assertions to every participant p in the discourse.

Here we have an important early exemplar of the STRUCTURED DISCOURSE CONTEXT. The discourse context is modeled as a set-theoretic object with components doing the job of representing different aspects of the discourse. In this case, the context has p+1 parts (where p is the number of participants) which serve to encode the most recent locution and all participants' commitments. All of the theories we will discuss in this section model the context as a set-theoretic object in a similar way, and for almost all it is structured with component parts to represents different relevant features of the context.

Given the definition of a context, (11) correspond to Hamblin's first rule (9a).

(11) For any context $C = \langle l, CS \rangle$: If l' is an assertion (i.e., $l' \in \lambda$), $C + l' = \langle l', CS' \rangle$, where for every participant p, $CS'(p) = CS(p) \cup \{l'\}$.

The other rules in (9) can also be translated into context-update rules. See Hamblin (1971) for details and Portner (to appear) for more discussion of Hambin's ideas in relation to modern discourse semantics.

Gazdar and sentential force. Gazdar (1981) sketches a theory of discourse meaning which builds on Hamblin's version of the structured discourse context. The key ideas of Gazdar's model can be summarized as follows:

1. **The content of a speech acts.** The semantic value of any sentence can be the propositional content of a speech act. These contents have various semantic types:

   (a) The meaning of a declarative sentence is a proposition.

   (b) The meaning of an interrogative sentence is a set of propositions.

2. **Illocutionary force.** An illocutionary force is a function from contents to update potentials.

3. **Update potential.** An update potential is a function from contexts to contexts.

4. **Contexts.** Though Gazdar doesn't commit to understanding contexts this way, he suggests Hamblin's (1971) commitment slates as a good basis for providing a definition of contexts.

5. **Speech act assigment.** A speech act assignment is a pair $\langle f, c \rangle$ consisting of a force f and a content c.

6. **Speech acts.** A speech act is $f(c)$, for any speech act assignment $\langle f, c \rangle$.

These ideas of Gazdar's are important because they make explicit a possible way of linking grammatical categories to functions within the dynamic pragmatics model. It will be helpful to make explicit some terminology:

(12) SENTENCE MOOD is an aspect of linguistic form conventionally linked to the fundamental conversational functions within semantic/pragmatic theory.

(13) These fundamental functions can be called SENTENTIAL FORCES.

It is often assumed that sentence moods correspond closely to syntactically defined clause types like declarative, interrogative and imperative. Given this, we can see that Gazdar proposes an important role for sentence mood within the system. In combination with the provisionally-assumed model of context from Hamblin, his analysis implies that declaratives are often associated with speech act assignments $\langle f, c \rangle$ where $f(c)$ updates one or more individuals' commitment slates, while interrogatives are often associated with speech act assignments where $f(c)$ creates a context in which an answer must come next.

It is difficult to say whether Gazdar's theory should be classified as falling within dynamic pragmatics or speech act theory. He was thinking through how to improve upon the assumptions of classical speech act theory, and as he did this, he came very close to proposing a dynamic pragmatics model. Moreover, it is easy to read Gazdar's paper as implying an analysis of sentential force within dynamic pragmatics. It would be natural to build on his ideas to say that declaratives are conventionally associated with a force f_{assert} which updates every commitment slate by adding c, and that interrogatives are associated with f_{ask} which adds c as the most recent locution without affecting any commitment slates. However, later in the paper Gazdar in fact raises such an approach (as a form of the LITERAL FORCE HYPOTHESIS, the claim that every sentence has a literal force with which it is associated in every context of use), and explicitly denounces it. For example, he specifically argues that the classic example *Can you pass the salt?* is only associated with the force of requesting, and not at all with the force of asking. Because the paper is better remembered for its

argument against the literal force hypothesis than for its analysis of context and update potential, it is often seen as punctating the end of a line of research, rather than forming the beginning of one.[4]

Stalnaker and the common ground. Stalnaker's (Stalnaker 1974, 1978) COMMON GROUND is the set of propositions mutually assumed by the participants in a conversation. The common ground differs from the Hamblin context in that there is only one set of propositions representing *mutual commitments*,[5] rather than a record of commitments for each participant. As is well known, Stalnaker uses the common ground (and its reduction to the **context set**) to analyze acts of assertion and pragmatic presupposition.

Lewis and the sphere or permissibility Lewis (1979a,b) gives an analysis of imperatives which treats them as having the semantics of modal sentences but with a discourse effect which can be seen as extending the dynamic pragmatics approach. In the context of describing a language-game involving a master and a slave, Lewis proposes a truth-conditional semantics for imperatives involving two accessibility functions (functions from world-time pairs to sets of world-time pairs):

1. The SPHERE OF PERMISSIBILITY $f_{sp}(\langle w,t \rangle)$ is the set of worlds representing the requirements governing the slave's actions at w and t.

2. The SPHERE OF ACCESSIBILITY $f_{sa}(\langle w,t \rangle)$ is the set of worlds compatible with the actual history of w up to time t.

The sphere of permissibility represents the requirements governing the slave's actions at w and t, and the sphere of accessibility identifies the set of worlds compatible with the actual history of w up to time t. An order-type imperative is interpreted as a strong necessity statement with respect to the intersection of these two relations. That is, $!\phi$ is true with respect to $\langle w,t \rangle$ iff ϕ is true at every world both permissible and accessible from w and t (i.e., iff $f_{sp}(\langle w,t \rangle) \cap f_{sa}(\langle w,t \rangle) \subseteq \phi$).

What's important about Lewis's analysis from the perspective of dynamic pragmatics is what happens when the master uses an imperative which is not true with respect to f_{sp} and f_{sa}. In that case, a rule of accommodation applies which adjusts f_{sp} (if possible) so as to make the imperative true. In general, $f_{sp}(\langle w,t \rangle)$ adjusts to $f_{sp}(\langle w,t \rangle) \cap [\![\phi]\!]$. This intersective effect of an imperative on the sphere of permissibilty is in analogous to assertion (relative to the context set) on Stalnaker's analysis.

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[4]Levinson (1981) treats Gazdar's arguments as a reason to leave behind classical speech act theory, but Levinson (1983) suggests that his ideas about context and update potential may form the basis for a new, better theory of speech acts. I would suggest that this new theory of speech acts can be identified with dynamic pragmatics (although Levinson would probably not approve of dynamic pragmatics as it has developed).

[5]The mutual commitments can be called *shared* or *joint commitments*. It is not clear whether any difference in status is implied by these different terms (or others one may find).

An important difference between Lewis's theory and Stalnaker's analysis of assertion is that Lewis sees the effect which the imperative has on the sphere of permissibility as following from a general principle of accommodation. Accommodation applies to imperatives as follows:

(14) **Rule of accommodation for imperatives.** When $!\phi$ is spoken by the master to the slave but $!\phi$ is not true with respect to f_{sp} and f_{sa}, $f_{sp}(\langle w, t \rangle)$ adjusts to $f_{sp}(\langle w, t \rangle) \cap [\![\phi]\!]$.

According to Lewis, the dynamic pragmatic effect of an imperative is not a basic matter of the updating the sphere of permissibility by the imperative's content, but rather derived indirectly from three factors: its modal necessity semantics, the principle of accommodation, and an unstated rule which requires that accommodation apply in just this way to imperative sentences.[6]

Roberts and the question set. Roberts (2012, a revised version of Roberts 1996) builds a theory of discourse "moves" (divided into **assertions** and **questions**) using a dialogue-grammar similar to Hamblin's. Translated into a context-and-update format, Roberts' theory has the following crucial features:

(15) **Contexts.** A ROBERTS CONTEXT is a common ground and a question set.

- The most recent member of the question set is the QUESTION UNDER DISCUSSION.

(16) **Relevance.** A move m is RELEVANT to the question under discussion Q if and only if:

a. m is an assertion, and it provides at least a partial answer to Q, or

b. m is a question and a complete answer to m entails at least a partial answer answer to Q.

(17) **Context change potential.** An assertion-move, if accepted, updates the common ground. A question-move, if accepted, updates the question set.

Roberts' ideas are similar to Hamblin's but her notion of the question set allows a clear improvement upon Hamblin's treatment of inquiries, because it allows questions to have an effect on the evolution of the discourse beyond the immediately subsequent move. Moreover, in her use of Relevance, she gives a deeper

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[6]By limiting his attention to the master-slave scenario, Lewis is able to state that the sphere of permissibility adjusts, if it can, to make whatever the master says about permissibilty true. But such a formulation does not allow an explanation of the difference in actual function between imperatives and explicit modal necessity sentences. In other words, Lewis does not explain why imperatives, according to his theory, always (or virtually always) trigger accommodation when not true, while sentences with overt modals only do so sometimes.

explanation of this effect.[7] Though her use of the terms "assertion" and "question" is suggestive, for Roberts assertions and questions are act-types, not clause types; for this reason, we cannot confidently attribute to Roberts a theory of sentence mood and sentential force.

Portner and the To-do List. Portner (2004), building on Hausser (1980, 1983), presents an dynamic pragmatics model of the sentential forces of the three basic clause types. His version of the structured discourse context contains a common ground, question set, and function which assigns a TO-DO LIST to each participant in the conversation:

(18) **Contexts.** A PORTNER CONTEXT is a common ground, a question set, and a to-do list function.

    1. Common ground: a set of propositions

    2. Question set: a set of questions

    3. To-do list function: a function from participants in the conversation to to-do lists.

        • The to-do list of an individual a is a set of properties restricted to a.

The to-do list is understood to represent the mutual assumptions in the conversation about which actions are preferred. Technically, the to-do list defines a pre-order over the context set and an action by participant p is deemed rational and cooperative if it tends to make it the case that the actual world is maximally highly ranked according to p's to-do list. (Lewis's sphere of permissibility can be identified roughly with the intersection of the slave's to-do list.)

Portner makes an explicit claim about the relation between clause type and sentence mood, proposing that sentential force is assignmed on the basis of the compositional meaning of a sentence.

(19) **Semantic values.**

    a. The semantic value of a declarative sentence is a proposition.

    b. The semantic value of an interrogative sentence is a set of propositions.

    c. The semantic value of an imperative sentence is a property restricted to one individual (the addressee).

(20) **Force assignment.** The force of a root sentence S is a function updating the discourse context by adding $[\![\, S \,]\!]$ to the component of the context which is a set of objects from the same semantic domain as $[\![\, S \,]\!]$.

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[7]Around the same time, Ginzburg (1996) and Hulstijn (1997) present similar ideas in frameworks more closely related to speech act theory and dynamic semantics.

In Portner's work, we see a further development of Hamblin's, Gazdar's, Lewis's, and Roberts' ideas. While the most obvious new feature is the to-do list function, Portner also takes the step of associating each sentence mood with a single sentential force. (Of course, previous work in other approaches to speech acts and discourse meaning had made the same claim, for example Stenius 1967 and Sadock 1974.) He says that the force assignment principle must be used whenever it can be; for example, unless there is some reason why a particular declarative cannot be assigned the force of assertion (=update the common ground), it will be assigned that force. In combination with his assumptions about semantic values, this means that declarative type as a whole has a direct, conventional connection to the force of assertion (and similarly for interrogatives and imperatives). Portner does not discuss the exact parameters which would lead to a particular sentence's not receiving the force normally associated with its type, so it is not clear how he would respond to Gazdar's arguments against the literal force hypothesis. In particular, it's not clear whether he would say that *Can you pass the salt?* has the literal force of asking, or whether the contextual inappropriateness of the literal question in context would be enough to block the assignment of this force. Either way, however, it is clear that Portner sees clause type as the most important factor in force assignment, with contextual factors playing a secondary role. In this respect, he can be seen as weakening but not fully rejecting the literal force hypothesis.

The Santa Cruz school and the utility of commitment slates. Both Roberts and Portner assume that assertion is to be modeled with reference to the common ground rather than individual commitment slates for each participant. In this, they represent the majority of formal work in discourse semantics over the past thirty years; it has become a standard assumption—sometimes challenged, sometimes modified—that the common ground (or a similar construct) is the right tool for the job of modeling assertion. However, individual commitment slates have not been entirely lost to the literature. With the project of analyzing rising declaratives like (6a), Gunlogson (2001) presents a dynamic pragmatics model which, like Hamblin's, keeps track of the individual commitments of the speaker and addressee. Her key idea is the following:

1. Falling declaratives commit the speaker towards the proposition expressed.

2. Rising declaratives commit the addressee towards the proposition expressed.

Gunlogson's theory is somewhat inexplicit on some important points which play a role in her informal discussion. For example, it doesn't really make sense to say that rising declaratives commit the addressee in the same way that falling declaratives commit the speaker. The speaker can hardly commit the addressee in this way. Rather, falling declaratives seek confirmation that the addressee really is committed towards the proposition expressed. In addition, the theory does not incorporate an analysis of assertion, understood as the type of speech

act which aims to create joint commitment towards a proposition. A falling declarative only commits the speaker, and if the speaker intends for the addressee to share the commitment, this is must be inferred indirectly. In this respect, Gunlogson does not account for the intuition that falling declaratives normally aim for joint commitment.

It is also noteworthy that Gunglogson contradicts standard assumptions concerning clause type and sentence mood. Specifically, she classifies rising declaratives as questions and her theory does not have a clear concept of sentential force. These properties might be seen as problematical or refreshing, depending on one's perspective.

Farkas and Bruce (2010) develop Gunlogson's framework in a way which clarifies some of the issues on which her discussion was inexplicit or incomplete. Their notion of context incorporates the question set (called the "table") and adds a new component, the PROJECTED SET, which indicates anticipated future developments of the conversation.

(21) **Contexts.** A FARKAS/BRUCE CONTEXT is a tuple $\langle CS, cg, qs, ps \rangle$, where:

a. CS is a function from discourse participants p to p's discourse commitments.

b. cg is a common ground.

c. qs is a stack of issues to be resolved. [treated as a set below]

d. ps is a set of projected extensions of cg.

With ps, the system is able to represent the effect of a falling declarative as not only indicating the speaker's commitment, but also proposing its addition to the stock of shared commitments.[8]

(22) **Context change of a falling declarative.** The conventional effect of a falling declarative $S\downarrow$ in context C is: $C + S = C'$, where:[9]

1. $CS'(speaker) = CS(speaker) \cup \{ [\![S]\!] \}$

2. $cg' = cg \cup \{ [\![S]\!] \}$

3. $qs' = qs \cup \{ [\![S]\!] \}$

4. $ps' = \{c \cup cg \cup \{[\![S]\!] \} | c \in ps\}$

The presence of $[\![S]\!]$ in each element of ps indicates that the sentence's content will enter the common ground, unless a participant raises an objection. In other words, this theory makes the assumption that, though speakers do not normally have the right to make a proposition into a joint commitment simply by asserting it, they do normally have the right to create a bias in favor of its becoming a

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[8] It might be surprising that the proposition expressed by a declarative is added to the question set ("table") in (22). Because it does not affect the main points of interest here, I will not discuss the role of qs in this theory.

[9] My definition of the update of ps is slightly different from that of Farkas and Bruce (2010).

joint commitment. Farkas and Bruce do not discuss rising declaratives, but it would capture Gunlogson's idea to say that $S\uparrow$ affects $CS(addressee)$ rather than $CS(speaker)$, but affects qs and ps in the same way.[10]

Looking ahead. I am going to argue in favor of a dynamic pragmatics model which, roughly speaking, does for the to-do list what Farkas and Bruce do for the common ground. The model incorporates distinct representations of the speaker's and addressee's assumptions concerning the to-do list function. That is, the context encodes what each participant is understood to hold as a priority for himself and for each of the other participants; in addition to this, it also encodes the mutual commitments concerning each participant's priorities, and projected extensions of those mutual commitments, representing a bias in the context towards them. I believe that such a model allows us to address in an insightful way the variation in strength among imperative clauses.

Building on the works discussed above, in particular Portner (2004) and Farkas and Bruce (2010), I propose a structured model of the context which separates individual commitments, mutual commitments, and projected commitments towards both factual information and priorities:[11]

(23) A CONTEXT is a tuple $\langle MC, IC, PC \rangle$, where:

    1. $MC = \langle cg, tdl \rangle$

    2. For each participant p, $IC(p) = \langle cs_p, tdl_p \rangle$

    3. $PC = \langle pc_{cg}, pc_{tdl} \rangle$

Intuitively, the members of MC are the **mutual commitments** (the common ground and to-do list function), the members of $IC(p)$ are the **individual commitments** of p towards information (commitment slates) and priorities, and PC represents the **projected extensions** of MC.

2.2 Other dynamic theories of discourse meaning

Dynamic pragmatics is closely related to two other important approaches to the relation between semantics and discourse meaning. The first of these is DYNAMIC SEMANTICS (for ex: Groenendijk and Stokhof 1990, 1991; Heim 1992; Groenendijk et al. 1996; Aloni and van Rooy 2002; Starr 2013). The key difference between dynamic pragmatics and dynamic semantics concerns the assumptions about sentence meaning, and indeed we can define dynamic semantics by its adherence to the following tenet:

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[10]This approach would also let us assign a reasonable sentential force to all declaratives, namely the addition of the sentence's content to ps. But despite this apparent traditionalism in their understanding of sentence mood, later work in the same tradition (such as Roelofsen and Farkas 2014, similarly to Groenendijk and Roelofsen 2009) even more radically breaks down the difference between declaratives and interrogatives.

[11]I would assume a question set component as well, but it will not play a role in what follows.

(24) **Dynamic semantics**: Sentence meanings are update potentials.

Within dynamic semantics, the function of updating the context is embedded in the output of compositional semantics, while in dynamic pragmatics, it is assigned to the output of semantics.

Dynamic semantics and dynamic pragmatics have been intertwined throughout their development. For example, we see in Heim's work (Heim, 1982, 1983a,b, 1992) a change from a dynamic pragmatics perspective grounded in Stalnaker's system to an endorsement of full dynamic semantics: "the meaning of a sentence is its context change potential (CCP). ... A CCP is a function from contexts to contexts" (Heim, 1992, 185). It is useful to have a term for what's shared by dynamic pragmatics and dynamic semantics, and I will say they are both varieties of the DYNAMIC APPROACH.

Some influential work in the tradition of classical speech act theory bulds on ideas originating with the dynamic approach. Specifically, we find scholars who assume the DYNAMIC FORCE HYPOTHESIS (for ex: Gazdar 1981; Krifka 2001; Charlow 2011; Kaufmann 2012):

(25) **Dynamic force hypothesis**: Classical speech act theory combined with the idea that illocutionary force should be modeled using the tools of the dynamic approach.

As mentioned above, it is unclear whether Gazdar's analysis should be considered to be an early form of dynamic pragmatics or an early version of the dynamic force hypothesis. The more recent analyses given by Charlow (2011) and Kaufmann (2012) fall squarely within the dynamic force hypothesis. Both situate their theories within the tradition of speech act theory. Charlow then argues that root sentences which perform basic speech acts update one of the parameters of a structured discourse context; imperatives, in particular, update the "body of preferences" of the discourse context. Kaufmann understands the illocutionary force of both declarative and imperative utterances to involve updating the common ground.

It seems to me that, because dynamic pragmatics uses pragmatic principles to associate a given sentence's content with an update potential, it is particularly well-suited to making use of intonational factors in the assignment of force. Intonation can be one factor among several which plays a role in this assignment. In contrast, and while I believe that the fundamental ideas about imperative force and intonation developed below could be incorporated into either dynamic semantics or speech act theory, these approaches seem less well-suited to the task. To give a flavor for why this is the case, note that many scholars who follow these theories make the traditional assumption that a root sentence is divided into a force-indicator and a sentence radical which gives its propositional content; on such assumptions, the ideas were are developing here would then imply that intonation contributes in a systematic way to the force indicator. I do not know of any precedent for analyzing force compositionally within dynamic semantics, and while the speech act theorists Searle and Vanderveken (Searle

and Vanderveken, 1985; Vanderveken, 1990, 1991) derive illocutionary force in a compositional way, their work does not follow the dynamic force hypothesis. In the end, the question is not whether these powerful theoretical frameworks can incorporate commitment slates and make use of intonational information, but whether they can do so in the simplest and most explanatory way.

3   Individual and mutual commitment to priorities

In this section, I develop an analysis of imperatives which builds in crucial respects on the line of research represented by Gunlogson (2001) and Farkas and Bruce (2010). The central idea of the analysis is that, just as we must maintain both the common ground and individual commitment slates in our discourse model, we also must keep track of the shared to-do list function and individual participants' understanding of what priorities each participant is committed to. I will argue that such a model can naturally account for the differences between rising and falling intonation in imperatives and the pragmatic effects of certain discourse particles on imperatives (focusing on data from the Rhaetoromance variety Badiotto). Then I will argue that it can explain the differences between strong and weak imperatives outlined in Section 1. Finally, I consider whether the theory can be applied to imperatives which lack any obvious directive force, like instructions and wishes, showing that these do in fact fit into the dynamic pragmatics analysis of imperatives.

Before moving on to those main points, I should make a brief remark concerning the intonational patterns associated with strong and weak imperatives. Note that the intonations I'm marking as $\Uparrow$ and $\Downarrow$, as in (7), are not the same as those of rising and falling declaratives as discussed by Gunlogson. (26), with the final rise of a yes/no question or a rising declarative, is a question. Specifically, it is an echo question ($\approx$"Did you tell me not to sit here?") or a question which would be answered by an imperative ($\approx$"Would you tell me not to sit here?")[12]

(26)   Don't sit here?[↑]

The actual intonational analysis of $\Uparrow$ is still wide open. Bolinger (1989, p.150-170) has an interesting discussion of intonation in imperatives, generally confirming the intuition that steadily falling intonation is associated with commands and a rise with permission and invitation. I speculate that $\Uparrow$ is based on an H phrase accent or a complex pitch accent, replaced by L in $\Downarrow$.[13]

3.1   The basic idea

If the commitment slate approach, with its separation of the commitments of speaker and addressee, is relevant to imperatives, the first place to look might be

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[12]See Kaufmann and Poschmann (2013) on interrogative imperatives.
[13]Thanks to Jaye Padgett and an audience at UBC for preliminary discussion.

intonational patterns. Can we analyze intonational differences in imperatives in a way similar to rising and falling declaratives? To test out the basic idea, let's examine how a translation of Gunlogson's ideas to imperatives would work. For this project, let's call (7a: *Have a seat*⇑) a "rising imperative" and (7b: *Have a seat*⇓) a "falling imperative".

Rising imperatives propose the addressee's commitment to treating the imperative's content as a priority, while falling imperatives propose the speaker's commitment. We can express this using the context model of (23) as follows:[14]

(27) The conventional effect of a falling imperative S⇓ in context C is: $C + S$⇓$= C'$, where:[15]

   1. $tdl'_{speaker}(addressee) = tdl_{speaker}(addressee) \cup \{ [\![S]\!] \}$

   2. $pc'_{tdl}(addressee) = \{c \cup tdl(addressee) \cup \{ [\![S]\!] \} | c \in pc_{tdl}(addressee)\}$

(28) The conventional effect of a rising imperative S⇑ in context C is: $C + S$⇑$= C'$, where:

   1. $tdl'_{addressee}(addressee) = tdl_{addressee}(addressee) \cup \{ [\![S]\!] \}$

   2. $pc'_{tdl}(addressee) = \{c \cup tdl(addressee) \cup \{ [\![S]\!] \} | c \in pc_{tdl}(addressee)\}$

According to these definitions, both rising and falling imperatives add an expectation in pc_{tdl} that the imperative's content will be added to tdl, i.e. an expectation that the interlocutors will come to a mutual commitment about how to judge the addressee's actions. But falling imperatives in addition add the imperative's content to $tdl_{speaker}(addressee)$, while rising imperatives add it to $tdl_{addressee}(addressee)$.

The basic analysis captures some basic intuitions about rising and falling imperatives.

1. Falling imperatives

   (a) *Have a seat*⇓ would naturally be used in a context in which the speaker has directed the addressee to sit down, and doesn't care whether the addressee wants to.

   (b) The analysis correctly implies that the speaker rates futures in which the addressee sits down higher than those in which he does not, and creates an expectation that this judgment will become mutual.

2. Rising imperatives

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[14]It should be noted that the effect on IC is not an at-issue update. In the case of the speaker's own commitments, we can see this in the fact that the addressee's agreement is not required; in the case of the addressee's commitments, the speaker is is not imposing an update but seeking confirmation. So, the effect on IC either a presupposition or some form of backgrounded update.

[15]In general, apart from the differences stated, C' will be very similar to C. I do not say it is identical because there may be other parts of S, such as presupposition triggers and expressive elements, which independently affect C.

(a) *Have a seat*⇈ would naturally be used in a context in which it is assumed that the addressee will be more comfortable if he sits down, and is being invited to do so.

(b) The analysis correctly implies that the speaker thinks the addressee rates futures in which the addressee sits down higher than those in which he does not, and creates an expectation that this judgment will become mutual.

Only one point is perhaps less than obvious, namely that *Have a seat*⇈ creates an expectation that 'you sit down' will be on the addressee's mutually-assumed to-do list. But I think this is correct. The sentence implies that the speaker wants the addressee to be comfortable, and if the addressee accepts the update, the speaker is willing to accept the ensuing mutual commitment (to the speaker's accting upon his preference to sit down).

3.2 Modal particles in Badiotto

Poletto and Zanuttini (2003) discuss the role of modal particles in the Rhaetoromance language Badiotto. Every imperative must contain one of five particles: negation, *ma*, *mo*, *pa* and *pö*. Two of these, *ma* and *mo* are unique to imperatives.[16]

1. **Ma** is used in imperatives that give advice or permission, for example (Poletto and Zanuttini 2003: (8), (10)):

    (29) a. Màngel *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!'

    (30) a. *Puzenĕime *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** is used to give an order (Poletto and Zanuttini 2003: (12), (14)):

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[16]I previously discussed this data in Portner 2007.

(31) a. Puzenëieme *mo* ciamò i   ćialzà!
      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!'

(32) *Màngel *mo* che spo crësceste.
      eat-it   ma that then grow (2nd sg)

      'Eat it and you'll grow.'

Poletto and Zanuttini characterize the contributions of these particles as follows:

1. *Ma* "signals a command given from the vantage point of the hearer" and cannot be used when the command is given "for the benefit of the speaker".

2. *Mo* "signals a command given from the vantage point of the speaker" and cannot be used when the command is given "for the benefit of the hearer".

The model in (23) can be directly applied to these particles. Basically, "from the vantage point of the speaker" means that a constraint is being applied to the speaker's version of the to-do list function, and correspondingly "from the vantage point of the hearer" means that a constraint is being applied to the addressee's

Thus, I provisionally propose that *ma* has the same interpretation as that proposed for $\Uparrow$ in (28) and *mo* has that proposed for $\Downarrow$ in (27), though my understanding is that the Badiotto particles are actually rather less vague than the English intonational patterns are.

3.3   Strong and weak imperatives.

Now let us return to the earlier inventory in Section 1 of ways in which some imperatives are strong and other weak.

A. With some examples, the imperative is imposed upon the addressee; with others, the addressee's choice determines whether it takes effect:

(33) a. Sit down, and don't get up until I tell you to!

   b. Have a seat. You'll be more comfortable.

This distinction is related to the basic difference between rising and falling imperatives. Example (33b) would be uttered with rising intonation; it is just (7a) with some more context. Example (33a) would naturally be uttered with falling intonation. It adds 'sit down' to $tdl_{speaker}(addressee)$ and $pc_{tdl}(addressee)$; this indicates that it's the speaker's preference which

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serves as the basis for the expectation that 'sit down' will be added to the addressee's to-do list.

In some contexts, like that assumed for (1a) and maybe that of (33a) as well, the speaker has a type of **authority** which really leaves the addressee with no role to play in determining whether the imperative takes effect. We can model this by saying that such imperatives go directly onto the to-do list, without a stage at which they are projected (in $pc_{tdl}(addressee)$) but not yet shared (in $tdl(addressee)$).

B. In some cases, an imperative makes true the corresponding modal statement; in others, it is justified by it:

(34)   a. Friends, begin your meditation now! $\Rightarrow$ They should begin to meditate now.

        b. Do not park in the dry cleaner's lot! $\Leftarrow$ They should not park in the dry cleaner's lot.

When (34a) is used, the proposition that the students begin to meditate goes onto $tdl_{speaker}(addressee)$ and $pc_{tdl}(addressee)$, indicating that the meditation teacher has as a priority that the students begin to meditate and that he projects this as a mutual commitment. At this point, the teacher's preferences can serve as the basis for the modal statement. (Technically speaking, we say that $tdl_{speaker}(addressee)$ can serve as an ordering source for *should*, cf. Portner 2007.) The teacher has authority similar to that of the officer who orders his soldiers to march in (1a), but the spirit of the meditation class does not involve imposing his will directly on the students; we can say that a meditation teacher employs a gentle form of authority. Thus, the priority does not immediately become a mutual commitment, but it is expected that the teacher's mere projection of mutual commitment is enough to motivate its subsequently becoming a mutual commitment.

Turning now to (34b), its initial effect is to add 'do not park' to $pc_{tdl}(addressee)$ and $tdl_{addressee}(addressee)$. This indicates that the speaker thinks the addressee prefers not parking in the dry cleaners lot and that she expects that this preference will be promoted to the mutually committed status. But why would it be so promoted? This utterance is not based on authority in any sense, not even the gentle authority of the meditation teacher, and so the speaker must have a reason in mind why the addressee would want to accept the priority of not parking in the cleaner's lot. This reason—namely, that parking there will be worse for the addressee because his car would be towed—makes true the modal statement even prior to the imperative being uttered. This is why (34b) urges an action on the addressee which is already justified by modal fact.

An alternative way of thinking about the imperative in (34b) might be that it just means 'you should not park in the dry cleaner's lot'. That is, we might identify the meaning of the imperative here with that of the *should*

sentence, rather than saying it has a separate directive meaning.[17] However, the following contrast seems to show that such an approach to (34b) would not work:

(35) You should not park in the dry cleaner's lot, because you'll get a ticket if you do. So, ...

   a. do not park in the dry cleaner's lot!

   b. ??you should not park in the dry cleaner's lot!

The imperative *Do not park in the dry cleaner's lot!* has a function here, namely urging the addressee to do something for her own good, which the modal declarative cannot have in this context.

C. Some imperatives license an inference to a strong necessity statement; others do not.

(36) a. Soldiers, march! → They must march.

   b. Have a cookie! → He #must/should have a cookie.

To understand this contrast, we must begin with an idea about the difference between *must* and *should*. I would like to build on recent work which argues that *must* claims are based only on assumptions to which all parties to the conversation are committed in the context, while *should* claims may involve some assumptions which are not so contextually committed (Rubinstein, 2012; Portner and Rubinstein, 2013, 2014). The intuition behind this approach can be illustrated with the following examples:

(37) a. We must make sure all our citizens have proper health insurance.

   b. We should make sure all our citizens have proper health insurance.

In the case of (37a), the speaker is saying that ensuring universal coverage follows from assumptions which are not up for debate. (Of course they might really be up for debate, but the speaker doesn't grant that.) It is a bid to cut off further discussion. With (37b), the speaker says that ensuring universal coverage follows from a contextually relevant set of assumptions, but does not assume that there is no debate about whether all of these assumptions are accepted by all parties. For this reason, (37b) seems to invite further discussion.

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[17]In very rough outline, this is the modal theory of Kaufmann (2012). In fact, (35) is a direct counterexample to Kaufmann's proposal that imperatives are synonymous with *should* sentences, except for the fact that they are restricted to contexts in which the latter are understood performatively. The felicity of the imperative in (35a) shows that this would have to be a context in which a *should* sentence would have a performative meaning, and yet the infelicity of the *should* sentence in (35b) cannot be used in that way.

While this sketch of the difference between *must* and *should* obviously does not amount to a convincing argument (see the references cited for the argument), this way of looking strength does allow a neat explanation of the contrast in (36). Because of the authority behind it, (36a) adds 'march' directly to the addressee's to-do list, where it has a mutually assumed status. As such, it can be used as a premise for a *must*-statement. In contrast, (36b) projects 'have a cookie' as a future shared assumption about the addressee's priorities, but does not automatically give it this status. Since it is not yet represented as being mutually assumed, it cannot serve as the basis for a strong, *must*-type necessity statement. However, as a projected commitment, it a perfect candidate to serve as a premise for a *should*-type modal statement.

3.4 Imperatives which are not fully directive.

Several kinds of imperatives have posed problems for previous dynamic analyses because they are not used with the intention to create a mutual commitment to judge some action positively. In other words, their directive force seems somehow incomplete or deficient. In terms of the current theory, they do not seek to update the addressee's to-do list. I would like to discuss briefly how they fit into the picture being developed here.

Instructions, directions, disinterested advice. Charlow (2011) discusses the instruction (38), asked to a stranger on the street:

(38) a. How does one get to Union Square from here?
      b. Take Broadway to 14th (for example).

(See also Kaufmann 2012 and Condoravdi and Lauer 2012.)

We can describe the pragmatics of instruction imperatives in this model as adding the imperative's content to the addressee's individual plans (i.e., to $tdl_{addressee}(addressee)$) but not to the projected mutual commitments (i.e., not to $pc_{tdl}(addressee)$). This makes sense because the person giving the instruction is not going to judge the stranger positively for taking Broadway, or negatively for not doing so. He simply doesn't care. More generally, he does not expect to form any mutual commitments with the person who asked for directions, since their conversation is going to end after (38b) with a "Thanks."

Absent wishes. Kaufmann (2012) discusses the wish (39):

(39) Please, be rich! [On ones way to a blind date] (absent wish)

(See also Charlow 2011 and Condoravdi and Lauer 2012.)[18] In terms of the model, absent wishes are the opposite of instructions. They can be described as

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[18]It might be thought that the stativity of (39) is the reason for its wish-type interpretation. However, the following shows this is not the case:

adding the imperative's content to the speaker's preferences $tdl_{speaker}(addressee)$ while not treating it as a projected commitment. The speaker is representing himself as committed to preferring that the addressee be rich, but not expecting a mutual commitment towards this preference.

Example (39) shows another property noted by Mastop (2011): the individual being treated as addressee is not really an addressee. She is not even truly in the context of utterance, and so some sort of context-shifting is involved in such examples.[19] The fact that the "addressee" is absent may be part of the reason why 'be rich' is not added to $pc_{tdl}(addressee)$ — there can be no expectation of a mutual commitment with someone who is not really present.

Counterfactual imperatives. Mastop (2011) discusses example (40), considering it a type of imperative:

(40) Was toch lekker thuisgebleven.
      Was prt   prt   at.home.stay-pp

      'You should just have stayed at home.'

I do not think this type can be accounted for just with the separation of speaker's and addressee's commitments. The reason is that 'you stayed at home' will not establish an ordering relation among worlds compatible with the common ground, since there are no worlds in which the addressee stayed home in that set. Nor will turning attention to the speaker's commitment slate ($cs_{speaker}$) help, since the speaker is also assumed to know that the addressee did not stay home.

As Mastop argues, such examples (if they are to be treated as imperatives on the dynamic pragmatics approach) require that the range of alternatives under consideration be extended. In our terms, this would mean that that the common ground or speaker's commitment slate is reduced so that some possible worlds in which the addressee stayed home are compatible with it. This expansion of the set of relevant alternatives is similar to what happens with factive and anti-factive predicates like *be glad* and *wish* (see for ex: Heim 1992; Villalta 2008).

4   Summary and further issues.

In this paper, I hope to have accomplished two things: First, I aimed to review the dynamic pragmatics approach in way which both distinguishes it clearly

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(i) Please, don't ask what I do for a living! [On one's way to a blind date]

(The speaker doesn't want to have to explain what a linguist does.) Rather, not expecting mutual commitment towards a member of $tdl_{speaker}$ is a basic property in itself.

[19] In fact, (39) does not mean that the speaker prefers that the particular person who will actually show up for the date be rich, but rather than the speaker prefers that a rich person be the (ostensible) addressee. If her date turns out to be poor Joe, she would not complain that Joe is not rich, but rather that she was not set up with a different, richer person.

from dynamic semantics and speech act theory and highlights its insights and contributions. And second, I proposed an analysis of imperatives which makes use of both individual and shared commitments to explain certain aspects of the variation in function among imperatives.

The ideas developed in this paper raise a number of important issues, and I would like to call attention to the following in particular:

A. How reliably does intonation indicate the useage of imperatives in the ways relevant to semantic/pragmatic theory?

Note that an addressee-benefit imperative like (34b) can be uttered with falling intonation (esp. with focus on *not*: *Do NOT park in the cleaners!*). And Bolinger states that (41) can be uttered with rising intonation "if I wish to threaten imminent retribution" (Bolinger, 1989, 152).

(41) Put it down!

(Here we may had adjusted the boundary tone to indicate an implicit conditional interpretation ... *or I'll shoot!*) These points may only indicate that we do not understand in enough detail which intonational features are relevant to sentential force. Matters are also more complex than they've been portrayed with declaratives; note, for example, that an assertion-type declarative can be uttered with rising intonation (and a wince) when the speaker is in fear of immediate retribution:

(42) I crashed the car.

At our current stage of understanding it's reasonable to limit our attention to the few intonational patterns about which we have some understanding.

B. Compositionality. Do intonational features contribute to sentential force in a compositional way? More generally, do those features have meaning independent of the clause type they are associated with?

A starting point would be Gunlogson's hypothesis that the overall sentential force of a declarative is compositionally derived from a declarative "proto-force" and an intonational specification of whether this force targets the speaker's or addressee's commitment slate. An alternative view would hold that sentence mood and intonation specify two separate dimensions of discourse function, with the ultimate force of the utterance being a combination of the two.

C. The nature of sentence mood. The traditional view distinguishes sentence moods syntactically, for the most part identifying each with the root occurrences of one clause type. However, Gunlogson, Farkas and Bruce, and the authors of inquisitive semantics have implicitly challenged the status of declaratives and interrogatives as separate sentence moods (although they are analyzed as separate clause types).

> Our discussion of imperatives suggests that a standard association of clause type and sentence mood is correct (at least when it comes to imperatives and declaratives). The imperative clause type is associated with the sentential force of updating the addressee's to-do list — although it often does so indirectly and sometimes not at all. This qualifies it as a sentence mood. Non-directive imperatives like instructions and idle wishes would also have imperative sentence mood, although they do not have the associated sentential force, because they have grammatical properties which lead to that force in more canonical contexts.

These issues are obviously of both great difficulty and fundamental importance to semantics and pragmatics. The goal of this paper has merely been to motivate a better dynamic pragmatics model in which they can be studied.

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Paul Portner
Department of Linguistics
Georgetown University
Washington DC 20057 USA
portnerp@georgetown.edu