Permission and Choice

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Abstract

This paper provides an analysis of two related properties of imperatives: (i) their variation in discourse function and (ii) their licensing of free choice inferences. With regard to (i), it is argued that imperatives are semantically uniform, and that their wide range of interpretations is explained by two factors: differences in the grounds for issuing a given imperative and the logical relationship between the imperative and other commitments of the addressee. Concerning (ii), the same ideas which are used to analyze permission, in combination with an "alternatives" semantics for disjunction and indefinites, are able to explain free choice and related phenomena, such as Ross's Paradox and the licensing of *any*.

1 Introduction

Functions of imperatives

Imperatives can be used to perform a variety of intuitively distinct speech acts, for example ordering, advising, requesting, and permitting (Schmerling 1982; Davies 1986; Han 1998; Schwager 2005a; Portner 2007, among many others):

(1) (a) Sit down right now! (Order)
(b) Talk to your advisor about this. (Advice)
(c) Help me! (Request)
(d) Have a piece of fruit, if you like. (Permission)

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As Davies (1986) argues, it is not productive to focus on the details of the categories which happen to have names in English. Rather, we need to understand the nature of the variation: its source, limits, and effects. These distinctions are relevant to grammar. We see this, for example with the fact that particles may limit the range of meanings available, as shown by the following data from Badiotto, due to Poletto and Zanuttini (2003), and German, from Grosz (2009a):

(2) (a) You need to eat well, so you can grow up to be big and strong. (Advice)

Mànge-l ma!
eat-it ma

(b) We can't let the food go to waste. You have to finish it, even if you don't want to. (Order)

Mànge-l mo!
eat-it mo

(3) (a) Iss *bloß/ *JA/ ruhig den Spinat! Das stört mich nicht. (Permission)
eat BLOß JA RUHIG the spinach that disturbs me not

'Eat bloß/JA/ruhig the spinach! That doesn't disturb me.'

(b) Iss bloß/ JA/ *ruhig den Spinat! Sonst wirst du bestraft. (Order)
eat BLOß JA RUHIG the spinach or.else will.be you punished

'Eat bloß/JA/ruhig the spinach! Or else you'll be punished.'

One basic issue is whether any of these differences are semantic in nature. It is tempting to analyze the permission imperative in (1d) as different from the others, as it can be paraphrased with a possibility modal:

(4) (a) You must sit down right now! (Order)

(b) You should talk to your advisor about this! (Advice)

(c) Won't you please help me? (Request)

(d) You may have a piece of fruit! (Permission)

I will refer to (1d) as a PERMISSION imperative and the others as REQUIREMENT imperatives.

Choice phenomena

An intuitive way of describing the function of a permission sentence is to say that it offers the addressee a choice s/he didn't have before. When a permission sentence offers more than

one choice at the same time, we call it a "free choice" sentence. As is well-known, free choice sentences can be made with disjunction or an indefinite (including special indefinites like *any*).

The FREE CHOICE INFERENCE refers to the fact that a requirement or permission sentence (made with a modal or imperative, or by others means) implies that each disjunct, or each entity described by an indefinite, corresponds to a permitted option.

(5) **Free choice inference**

(a) You may take an apple or an orange. $\Rightarrow$ You may take an apple./You may take an orange.

(b) Take a piece of fruit! $\Rightarrow$ You may take this apple./You may take that pear.

Related is ROSS'S PARADOX, the lack of licit inference from a permission sentence to disjunction:

(6) **Ross's paradox**

(a) You may take an apple. $\not\Rightarrow$ You may take an apple or an orange.

(b) Take an apple! $\not\Rightarrow$ Take an apple or an orange!

The "paradoxical" aspect can be seen from the comparison with declaratives, where p entails $(p \vee q)$. I lump all this together under the label CHOICE PHENOMENA. A key testing ground for analyses of permission sentences will be how well they fit into our understanding of choice phenomena.

There has been a great deal of research on free choice in modal sentences. We may classify it into several major approaches:

1. **Traditional assumptions**
   Choice phenomena come about on the basis of fairly traditional semantic values and Gricean reasoning (Aloni and van Rooij 2004, Schulz 2005).

2. **Alternatives**
   Choice phenomena come about because the semantics introduces each alternative separately, one way (Zimmermann 2000, Geurts 2005) or another (Kratzer and Shimoyama 2002, Simons 2005, Menéndez-Benito 2005, Alonso-Ovalle 2006, Fox 2007, Aloni 2007).

3. **The Andersonian reduction**
   Choice phenomena come about because permission is defined, in the tradition of Anderson (1956), as something like 'If p, then things are ok' (Asher and Bonevac 2005, Barker 2009).

4. **Dynamic semantics**
   Choice phenomena come about because of the dynamic semantics associated with particular elements, for example deontic *may* (van Rooij 2008) or epistemic *might* (Ciardelli et al. 2009).

We also have a divide between those who think that free choice with disjunction is a conversational implicature (Kratzer and Shimoyama, Menendez-Benito, Alonso-Ovalle, Aloni and van Rooij, Schulz), a matter of semantics (Geurts, Simons, Aloni, Barker, Ciardelli et al.), both (Fox), or something else (van Rooij). It will not be possible to consider all of these analyses in detail. My hope is to shed new light on the problem of free choice by focusing on choice phenomena as they occur with imperatives. While imperatives have been discussed in connection with choice phenomena, it is typically assumed that they are implicitly modal sentences, and so don't have anything special to teach us. I will argue, in contrast, that a treatment of imperatives which doesn't assume that they contain a modal operator serves as the basis for an insightful treatment.

Main claims of this paper

It is the goal of this paper to argue for the following hypotheses:

1. There is no semantic difference between requirement and permission imperatives.
2. Differences in function among imperatives mostly depend on the grounds upon which the imperative is issued.
3. True permission imperatives are derived from the logical relation between the imperative and the context to which it is added.
4. Choice phenomena with imperatives follow as a special case of the analysis of permission.

2 Background on the semantics of imperatives

There are two main approaches to the semantics of imperatives: the MODAL THEORY and the DYNAMIC THEORY.

1. The modal theory proposes that imperatives contain a modal operator, so that an imperative is very close in meaning to certain sentences containing *must* or *should*. (Han 1999, to appear; Schwager 2005a, Aloni 2007, Grosz 2009a). Within the overall modal approach, various authors may treat the so-called modal element proposed as more or less similar to

regular modals, and at some point we might better call this the "modaloid" theory, a less attractive term to be sure, but perhaps appropriately so.[1]

2. The dynamic theory claims that the meaning of imperatives consists (entirely, or virtually so) in the way they affect the discourse context (Portner 2004; 2007, Mastop 2005, in a sense Lewis 1979). The dynamic theory of imperatives is really a part of the dynamic theory of clause types (or of sentence mood, if you prefer that terminology). Imperatives are one of the three major clause types, alongside declaratives and interrogatives (Sadock and Zwicky, 1985), and we should aim for an explanation for why these three are universal (Portner, 2004). Assertion is commonly analyzed in terms of Stalnaker's concept of common ground (Stalnaker 1974, 1978), and asking a question has been analyzed in terms of a second discourse component, what Ginzburg calls the 'Question Under Discussion Stack' (Ginzburg 1995a; 1995b, Roberts 1996). Parallel to these, Portner (2004) proposes that imperatives are interpreted as contributing to the addressee's To-Do List.

The central theoretical claim of this paper is that the dynamic approach can explain, in a simple and natural way, both the variation in function among imperatives and choice phenomena.

Outline of the dynamic analysis of imperatives

Portner (2004, 2007) argues that the meaning of imperatives can be given within a dynamic framework as follows:

(7) **Pragmatic function of imperatives**

a. The To-Do List function T assigns to each participant α in the conversation a set of properties $T(\alpha)$.

b. The canonical discourse function of an imperative clause ϕ_{imp} is to add $[\![\ \phi_{imp}\ ]\!]$ to $T(addressee)$. Where C is a context of the form $\langle CG, Q, T\rangle$: $C + \phi_{imp} =$
$\langle CG, Q, T[addressee/(T(addressee) \cup \{[\![\ \phi_{imp}\ ]\!]\})]\rangle$

The To-do List is similar to ideas in Lewis (1979), Han (1998), Roberts (2004), and Mastop (2005). What's different is the Ordering pragmatics for imperatives. In particular, 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 (Portner 2004):

[1] If you want to treat the imperative modal as a purely dynamic modal, similarly to the treatment of epistemic modals in Groenendijk et al. (1996) and the treatment of expressions of expectation in Veltman (1996), I'd consider that an implementation of the dynamic theory. See van Rooij (2008) and Portner (2009) for discussion of how this might be done. The adherents of what I call the "modal theory" assume that the modal in question falls under a standard (static) analysis of modals, such as Kratzer's.

(8) **Ordering pragmatics for imperatives**

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

(b) 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 $w_1 \in \bigcap CG$ tend to make it more likely that there is no $w_2 \in \bigcap CG$ such that $w_2 <_i w_1$.

By contributing to the addressee's To-do List, an imperative affects the ordering of worlds, which in turn guides how the addressee's actions will be judged and understood. The Common Ground and To-do List are parallel at the discourse level to the modal base and ordering source in the sentential semantics of modals.

3 Variation in the function of imperatives

Given the above dynamic analysis of imperative meaning, we can turn to the variation in function of imperatives. Note that (7) applies to all imperatives, so the variation cannot be because some imperatives contribute to the To-do List, while others do not. Rather, in what follows I'll argue that variation in function should be explained as follows:

1. Subtypes of requirement imperatives are characterized by the grounds which justify issuing the imperative.

2. Some imperatives which are intuitively described as giving permission are actually requirement imperatives, also characterized by the grounds which justify their being issued.

3. True permission imperatives are characterized by the fact that they contradict something else in the To-do List; permission readings may be encoded via a presuppositional element.

3.1 The grounds for issuing an imperative

The kinds of illocuationary acts performed by requirement imperatives differ in characteristic ways in terms of the grounds which the speaker has for issuing them.

(9) (a) Speaker's authority $\Rightarrow$ Order
Sit down right now!

(b) Helps the addressee achieve her desires ⇒ Suggestion
Go for a nice walk!

(c) Helps the addressee achieve her desires in a situation where the speaker has authority to prevent the act ⇒ Invitation
Have a piece of fruit!

(d) Helps the addressee achiever her goals ⇒ Advice
Speak to your adviser about this!

(e) Helps the speaker achieve her desires or goals, without authority ⇒ Request
Let me taste that!

The above descriptions of each speech act are just suggestive, and firm definitions may be impossible. But they show the point: types of requirement imperative differ in the grounds on which they are offered, notably in the presence or absence of speaker's authority, the identity of the individual whose priorities are being advanced, and the nature of the priorities being advanced.

(10) **With/without** invoking authority, helps **participant** achieve priority of **type** ...

Portner (2007) shows that these distinctions are relevant to semantic/pragmatic theory. First, (2)-(3) show that language can mark such differences explicitly. Second, the various subtypes of imperatives parallel the subtypes of priority modal meanings:

(11) a. Sit down right now! (order)
b. Noah must sit down right now, or he'll be punished. (deontic)

(12) a. Go for a nice walk! (suggestion)
b. You should go for a nice walk. (bouletic)

(13) a. Speak to your adviser about this! (advice)
b. Noah should speak to his adviser about this. (teleological)

And third, one imperative or modal will constrain the meanings which are possible for subsequent imperatives or modals. Portner's (2007, p. 356) "psycho boss" provides one example:

(14) Be there at least two hours early. Then have a bite to eat.

Example (14) is odd because both sentences must be interpreted as expressing the same pragmatic function. Since the first sentence expresses an order, the second is interpreted that way as well, even though on its own it could easily be a suggestion. Thus, the boss comes across as excessively authoritarian, ordering an employee when to eat.

The differences among interpretations of priority modals are standardly analyzed in terms of the choice of ordering source (Kratzer 1981; to appear). In parallel to this, Portner (2007) analyzes the differences among the imperatives in terms of subsets to the addressee's To-do List. For example, an imperative which is issued on the grounds of the speaker's authority is added to a characteristic subset of the To-do List ("orders"). This partitioning of the To-do List allows one to define the links between the interpretation of imperatives and modals in context. See Portner (2007) for details.

The grounds for permission

Semanticists often analyze permission imperatives as being based on the addressee's desire (e.g., Wilson and Sperber 1988; Han 1998; Portner 2004; Schwager 2005b). Consider an invitation imperative, like (9c), issued because it will help the addressee achieve her desires, and without invocation of speaker's authority. In such a case, the addressee is free to refuse the imperative, and thus it will only lead to a requirement if the addressee wants it to be a requirement. This is a lot like permission, even more so if the context is one in which it is assumed that the speaker has the authority to prevent the act in question.

Wilson and Sperber (1988) have an interesting and, to my mind, convincing version of this view of permission. They describe permission as the situation where a speaker imposes a requirement in order to overcome the reluctance of the addressee to undertake an action in his or her own interests. (More recently, Schwager 2005b has developed a similar idea in terms of the modal analysis of imperatives.) Suppose that you aim to be a polite guest, and as a result have 'Do not take the fruit' on your To-do List. I could then say (9c), in order to put a contradictory requirement onto your To-do List. Let us assume for a moment that the To-do List must remain consistent. In that case, you could either refuse the imperative ("No thanks") or accept it while removing the politeness-based abstinence.[2] For practical purposes, you were given permission to have the fruit, because it was up to you whether to make it a requirement or retain not having fruit as a requirement. But technically the invitation is a requirement imperative, since at each point you had one or the other requirement. The pretense of always following a requirement serves a social function, describable in Politeness Theory as maintaining the host's negative face (Brown and Levinson, 1987).

3.2 Logical relations between imperative and To-do List

There's a sense of permission which cannot be explained in the above terms. This is the case where the permission-granting sentence is accepted, but its content is not required (in the broad

[2]Note that this treatment is in the same spirit as Kamp's (1973) analysis of permission as removing a prohibition. However, it does more than this: it removes the prohibition by adding a contradictory requirement. We'll return to Kamp's insights about permission in Section 3.2 below.

sense of following from the To-do List). The following examples show non-imperative permission sentences which do not impose a requirement:

(15) You are allowed to have an apple, but you are not required to.

(16) A: You may have an apple.
B: Thank you/OK. (Doesn't take apple.)

In contrast to explicit performatives and *may*, it's not so easy to use imperatives this way. In (17)–(18), if you don't want the apple, you usually have to refuse.

(17) #Have an apple, but you're not required to.

(18) A: Have an apple!
B: #Thank you/OK. (Doesn't take apple.)
Thank you, not right now. (Doesn't take apple.) [Refusal]

The refusal here points to an analysis of the kind sketched for (9c) above.

A conditional can work better in creating permission:

(19) Have an apple, if you like, but you're not required to.

(20) A: Have an apple, if you like.
B: Thank you/OK. (Doesn't take apple.)

If you like suggests the addressee-desire analysis (Schwager 2005b).

One way an imperative can give permission in this strict sense is via a choice sentence:

(21) A: Have an apple or a pear.
B: Thank you/OK. (Doesn't take apple, but does take pear.)

(22) A: Stay in or go out, either way.
B: OK.

Here, having an apple is not required. But even then, the overall disjunction gives a requirement:

(23) #Have an apple or a pear, but you're not required to do either.

(24) A: Have an apple or a pear.
B: #Thank you/OK. (Doesn't take apple or pear.)

The right context can also produce a permission reading in the strict sense. If B ends up bringing beer and no wine, she has not failed to do as requested:

(25) A: Please bring some beer to tomorrow's party.

B: But I have some good wine at home.

A: Then sure, bring wine!

The bottom line is that permission imperatives are severely restricted, and only come about in specific constructions and contexts.

Permission via an inconsistent To-do List

Let us work with the following Lewis-style example (Lewis, 1979):

(26) Monday carry rocks! Tuesday carry rocks! And Wednesday carry rocks! [...Tuesday comes along.] Take tomorrow off!

After the Master utters the first three imperatives, the Slave's To-do List becomes {*¬K(x,m), C(x, mo), C(x, tu), C(x, we)*}.[3] This To-do List implies that the Slave must not kill the Master (not explicitly stated, but surely assumed) and must carry rocks each of the three days.

Then on Tuesday, the Master gives permission to take Wednesday off. Thus, the To-do List becomes $\{\neg K(x,m), C(x,mo), C(x,tu), C(x,we), \neg C(x,we)\}$. This To-do List is inconsistent. Given (8), it implies that the Slave does as well as he can: he either carries rocks Wednesday, or he doesn't. Either way, he can make four of the five propositions in the To-do List true. See Figure 1. (More accurately, after having worked Monday and Tuesday, and not killing the Master, either working on Wednesday or taking the day off makes it the case that there is no better-ranked world.) Intuitively, the inconsistency of the To-do List represents the fact that carrying rocks on Wednesday was formerly required, but is no longer required. Crucially, killing the Master is still not an option, because $\neg K(x,m)$ is consistent with both options; the ordering pragmatics thus solves the problem of permission raised by Lewis (1979).[4,5]

[3] On the analysis of Portner (2004, 2007), the variable x should be abstracted over, to produce a property, and should be restricted to the addressee: $[\lambda x : x = addressee(c)\ .\ C(x, mo)]$. The restriction to the addressee is responsible for the fact that the property is added to the addressee's To-do List, as opposed to someone else's. I don't insert the λx or restriction, both for simplicity, and to indicate the fact that the points under discussion here don't depend on the decision to treat imperatives as properties, as opposed to sets of worlds.

[4] Mastop's (2005) dissertation is suggestive of an analysis of choice phenomena in imperatives similar to the one offered here, but because his views on permission imperatives are unclear, it is difficult to say whether he endorses the same perspective.

[5] It has been suggested to me (Peter Pagin, p.c.) that the analysis cannot account for the cruel dictator who purposefully imposes a contradictory set of laws, so that everyone is always susceptible to punishment. I'm not certain that such a use of imperatives would be considered pragmatically competent, but if it is, this kind of dictator would be defining the pragmatics of imperatives differently from (7). The alternative would be that an agent takes actions in world w which tend to make it that case that, for every world compatible with the common ground, w is at least as highly ranked. Doing so is impossible when the To-do List is contradictory.

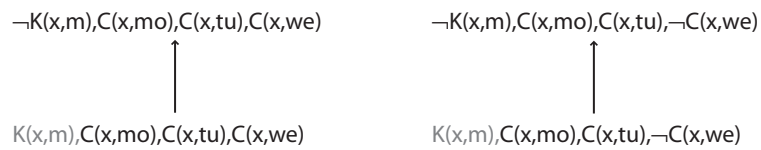

Figure 1: The choices on Wednesday

This analysis of permission has some similarity to that of Kamp (1973). Kamp proposes that permission is the removal of a standing prohibition. In the present treatment, the previous requirement (in this case, 'Carry Rocks Wednesday!', though it could be stated as a prohibition, 'Don't take Wednesday off!') is not removed, but it no longer has the effect of producing a requirement, once it is contradicted by another entry on the To-do List. At that point, it simply corresponds to one permitted option. (Please note, though, that I do not mean to imply that requirements are never removed from a To-do List. As we'll see below, such retraction does occur, but it is not necessary to produce permission.)

What's on the To-do List?

Example (27) poses a minor problem.

(27) Carry rocks every day! [...Weeks pass ...] Tomorrow, take the day off!

It seems that after the first imperative is uttered, the To-do List is $\{\neg K(x,m), \forall d[C(x,d)]\}$. Adding $\neg C(x,we)$ to this set leads to a situation where never working again is permitted. The solution to this problem is to expand the To-do List from $\{\neg K(x,m), \forall d[C(x,d)]\}$ to one more like like $\{\neg K(x,m), \forall d[C(x,d)], C(x,mo), C(x,tu), C(x,we), C(x,th), C(x,fr)\}$. There might be interesting ways to implement this, for example by giving the quantifier scope over a force operator. But I prefer an uninteresting way: the Slave knows that he is to work on Monday, on Tuesday, on Wednesday, etc. So the To-do List is expanded by inference. Once $\neg C(x,we)$ is added to this set, we represent permission to take Wednesday off (or not), but still require work on the other days. Note that this solution is essentially the one Kratzer (1977) applies to the pros and cons of striding and flying; van Rooij (2000) draws on "relevant entailments" for a similar purpose.

Definitions of permission and requirement

In Figure 1, we can say that not carrying rocks Wednesday is permitted, because some best-ranked worlds are ones in which $\neg C(x,we)$ is satisfied.

(28) S is a **permission sentence** in context c if an utterance of it in c results, as a matter of its conventional meaning, in a context c' in which some best-ranked worlds are in $[\![S]\!]$:

- $\exists w[w \in \bigcap CG \wedge w \in [\![S]\!] \wedge \neg\exists w'[w' \in \bigcap CG \wedge w' <_i w]]$

We can say not killing the Master is required, because all best-ranked worlds are ones in which $\neg K(x, m)$ is satisfied.

(29) S is a **requirement sentence** in context c if an utterance of it in c results, as a matter of its conventional meaning, in a context c' in which all best-ranked worlds are in $[\![S]\!]$:

- $\forall w[(w \in \bigcap CG \wedge \neg\exists w'[w' \in \bigcap CG \wedge w' <_i w]) \rightarrow w \in [\![S]\!]]]$

These descriptions make the limit assumption, for simplicity. A more precise and general version of (28) would say that S is a permission sentence iff $[\![S]\!]$ is a GOOD POSSIBILITY, with respect to CG and $T(addressee)$, in the terms of Kratzer (1981, 1991). Likewise, (29) would say that S is a requirement sentence iff $[\![S]\!]$ is a WEAK NECESSITY, with respect to CG and $T(addressee)$. This way of thinking about things lets us consider status of propositions which meet the criteria for other grades of modality in Kratzer's system. For example, (SIMPLE) POSSIBILITY would describe a situation where S-worlds and $\neg S$-worlds alternate endlessly in the ordering, as in a case where there's too much uncertainty concerning the effects of one's actions. According to (8), an agent doesn't have the right to pursue a possibility which is not a good possibility. (If you think that this is wrong, and that an agent can rationally and cooperatively pursue a simple possibility of this kind, the prediction can be changed by modifying (8b).) These points exemplify nicely how the theory of modality can be brought to bear within the dynamic approach to imperatives, even though no modal is syntactically present.

Permissibility is a gradable concept, as illustrated in (30):

(30) It is more permissible to take an apple than to take an apple and a pear.

The ordering pragmatics based on the To-do List allows us to use Kratzer's definition of comparative possibility to analyze graded permissibility. If the To-do List contains "Don't take an apple" and "Don't take a pear", (30) will be true. Ultimately, however, we'll need to integrate our analysis of the gradability of modal expressions into the general theory of gradability, perhaps based on degrees, so there is much more work to be done.

Permission vs. retraction

The analysis as developed so far captures those cases in which an addition to the To-do List in conflict with an existing directive results in permission. But as noted above, it takes a specific context for real imperatives to do this. Here's a case where it doesn't work:

(31) Bring beer to the party tomorrow! Actually, bring wine!

If the second imperative merely gives permission, we would expect that it's ok for the addressee to bring beer and no wine. However, we would say that the addressee did not comply with what was requested if he brings beer. We can describe this as the retraction of an existing requirement, and the imposition of a new one.

Of course, retraction also happens with declaratives:

(32) He's angry. Actually, he's in pain.

There is a difference between imperatives and declaratives, however. Given that the common ground should remain consistent, we expect that one of a pair of contradictory declaratives must be retracted, at least partially. However, as we've seen, a contradictory To-do List represents a perfectly acceptable situation in which multiple options are permitted, and there's no immediate motivation for retraction.

As mentioned above, some languages provide resources which allow the explicit marking of whether an imperative expresses permission or a requirement. Grosz (2009a) has the most semantically detailed discussion that I'm aware of. He points out that the particles *JA* and *bloß* disambiguate imperatives towards a command-type reading, and *ruhig* disambiguates towards a permission-type reading:[6]

(33) (a) Iss *bloß/ *JA/ ruhig den Spinat! Das stört mich nicht.
eat BLOß JA RUHIG the spinach that disturbs me not
'Eat bloß/JA/ruhig the spinach! That doesn't disturb me.'

(b) Iss bloß/ JA/ *ruhig den Spinat! Sonst wirst du bestraft.
eat BLOß JA RUHIG the spinach or.else will.be you punished
'Eat bloß/JA/ruhig the spinach! Or else you'll be punished.'

We may say that *JA* and *bloß* may only be used in requirement sentences, as defined above, and *ruhig* only in permission sentences. Grosz (2009b) admits that this analysis captures the relevant facts with imperatives and modals.[7]

These German data show that it is possible to explicitly mark an imperative as introducing a requirement or a permission. I would like to suggest that English affords itself of this possibility as well. Specifically, the absence of any marking indicates that the imperative should be a

[6] These forms are not always discourse particles, and we are to ignore the other uses. Furthermore, unstressed *ja* is assumed to be a different discourse particle.

[7] Grosz (2009b) suggests that there is a problem for the dynamic analysis based on the occurrence of these particles in purpose clauses, but the existing literature (see, for example, Bach 1982, Jones 1991, Johnston 1999, Whelpton 2002) does not support his assumption that a covert modal is present.

requirement sentence, while the presence of any of a number of expressions, for example initial *or*, *please*, *go ahead*, *by all means*, and *if you like*, as well as intonation or contextual evidence, may indicate that it is a permission sentence. We can make this proposal more explicit by proposing phonologically null particles analogous to *JA* and *ruhig*:

(34) (a) A root sentence S containing *REQ* presupposes that the context in which S is used is one in which it is a requirement sentence.

(b) A root sentence S containing *PERM* presupposes that the context in which S is used is one in which it is a permission sentence.

English imperative sentences normally contain *REQ*, unless *PERM* is indicated by linguistic material, intonation, or context.[8] Thus, the second sentences in (31) contains *REQ*, presupposing that the context is one in which the the addressee is being placed under a requirement to bring wine. Assuming that the addressee will bring just one kind of drink, the only way for this presupposition to be satisfied is for 'bring beer' to be retracted. In this way, the presupposition provides a motivation for retraction similar to that observed with the declarative in (32).

In contrast to (31), an example like A's second imperative in (25), repeated here, would contain *PERM*:

(35) A: Please bring some beer to tomorrow's party.

B: But I have some good wine at home.

A: Then sure, bring wine!

The presupposition of *PERM* is straightforwardly satisfied in this context (assuming that B will not bring both wine and beer). Thus, after this sequence, B would be in compliance with A's request whether he brings beer or wine.

A third situation worth considering occurs when the *PERM* is present, but the context is one in which the imperative would impose a requirement. The following is modeled on Grosz's (2009a) example (18):

(36) A: Do I turn left here?

B: Sure, turn.

If something like 'Continue straight ahead' is on A's To-do List, B's imperative will will yield permission, not a requirement — the correct result. But if nothing on the To-do List is incompatible with turning left, it will yield a requirement, and while this result is compatible with the presupposition of *PERM*, it is not empirically correct. The permission reading of (36) can

[8] Another implementation of these ideas would have only one particle, with its absence implicating the other interpretation.

be explained as a scalar implicature, however, considering that *REQ* is stronger than *PERM*.[9] That is, the presence of *PERM* implicates that *REQ* would not be appropriate. In order for *REQ* not to be appropriate, 'Continue straight ahead' (or another direction incompatible with turning left) must be accommodated.

To summarize the results of this section, the dynamic theory allows a uniform account of the meaning of imperatives. The distinction between permission and requirement imperatives is essentially pragmatic, having to do with the relationship between the imperative and the other entries in the To-do List. As a result, whenever an imperative is constrained to function in one way or the other (as a permission sentence or as a requirement sentence), this must be encoded in the pragmatics, for example as a presupposition.

4 Choice Phenomena

4.1 Disjunction and Choice

Given the above analysis of permission, we can also give an explanation of free choice disjunction in imperatives and of Ross's paradox. In (37), (a) implies that it's ok to take an apple, and it's ok to take a pear; this is the free choice inference. (It's probably not ok to take both.) In (38), (b) does not follow from (a), in some sense; this is Ross's paradox.

(37) a. Take an apple or a pear! $\Rightarrow$

b. You may take an apple./You may take a pear.

(38) a. Take an apple! $\not\Rightarrow$

b. Take an apple or a pear!

I follow the alternatives camp in analyzing disjunction as creating alternatives within a Hamblin semantics. Crucially, these alternatives are typically, and perhaps always, EXCLUSIVE (Menéndez-Benito 2005; Alonso-Ovalle 2006, 2008, Aloni 2007).[10] Thus (37) denotes the set:

[9] In any context in which the presupposition of *REQ+S* is met, that of *PERM+S* is also met. We could also modify (34b) so as to include the presupposition that S is not a requirement sentence.

[10] The literature on alternative semantics differs on whether exclusivity is a semantic or pragmatic phenomenon. For example, Menéndez-Benito takes the position that exclusivity is a introduced in the semantics, Alonso-Ovalle assumes that it is an implicature, and Aloni does not take a stand on the issue.

You may wonder how to analyze cases where disjunction seems to be inclusive. I know of two possibilities:

(i) Alternatives are not automatically made exclusive. Exclusivity is merely an implicature. (This is the traditional analysis, transferred into alternative semantics; see Alonso-Ovalle 2006).

(ii) Alternatives are always exclusive, but they may appear to be non-exclusive due to the workings of situation semantics. In particular, each alternative is the set of minimal (exemplifying) situations where only one disjunct is true, but this doesn't rule out that these are part of larger situations in which both disjuncts

(39) $\{(\lambda x[\exists y[A(y) \wedge T(x,y)] \wedge \neg \exists y[P(y) \wedge T(x,y)]], (\lambda x[\exists y[P(y) \wedge T(x,y)] \wedge \neg \exists y[A(y) \wedge T(x,y)]]\}$

- Or for short: $\{T(x,a), T(x,p)\}$

The rule specifying the discourse function of imperatives should be modified to allow for the denotation to be a set of properties:

(40) **Pragmatic function of imperatives** (ver. 2)
The canonical discourse function of an imperative clause ϕ_{imp} is to add every member of $[\![\ \phi_{imp}\ ]\!]$ to $T(addressee)$. Where C is a context of the form $\langle CG, Q, T\rangle$:
$C + \phi_{imp} =$
$\langle CG, Q, T[addressee/(T(addressee) \cup [\![\ \phi_{imp}\ ]\!])]\rangle$

Because the alternatives are exclusive, an utterance of (37) results in an inconsistent To-do List which gives the (minimal) ordering of worlds illustrated in Figure 2. In this setting, the addressee will behave correctly by taking either an apple or a pear. (Of course if $\neg K(x, host)$

Figure 2: Both choices ok

is already on the To-do List, none of this will permit killing the host, but I leave this out of the figure for simplicity.)

In many contexts, it will be ok to take neither an apple nor a pear. A natural situation of this kind occurs when the imperative is designed to overcome the politness-based reluctance of addressee to impose on the speaker (cf. Wilson and Sperber 1988). That is, we assume an initial To-do List $\{\neg T(x,a) \wedge \neg T(x,p)\}$. In this context, (37) leads to the To-do List $\{T(x,a) \wedge \neg T(x,p), \neg T(x,a) \wedge \neg T(x,p), \neg T(x,a) \wedge T(x,p)\}$ and to the order in Figure 3.[11]

are true. (This is Kratzer's idea; see Menéndez-Benito 2005 for discussion.)

Employing (ii) would require transferring the analysis of imperatives into situation semantics, as needs to be done anyway, if you believe in situation semantics.

[11] In German, this type of reading seems to be marked by *ruhig* plus disjunction, as opposed to *JA* in the case illustrated by Figure 2. Accounting for these cases will require extending the definitions of permission and requirement to sentences which express multiple alternatives, and then getting the scope relations right. Thanks to Elena Herburger for discussing this contrast.

T(x,a),¬T(x,p) ¬T(x,a),¬T(x,p) ¬T(x,a),T(x,p)

Figure 3: All three choices ok

Negation

Negative imperatives do not involve exclusive alternatives:

(41) Don't take an apple or a pear!

This case can be handled in either of two ways. If exclusivity is a scalar implicature, then we would expect it not to be generated in this environment (following Alonso-Ovalle 2006). In the present framework, the denotation will then be:

(42) $\{\neg\exists y[A(y) \wedge T(x,y)], \neg\exists y[P(y) \wedge T(x,y)]\}$

Adding both alternatives to the To-do List results in best-ranked worlds being ones in which the addressee takes neither. Moreover, on this approach worlds in which the addressee takes just an apple are automatically ranked as better than ones in which he takes both an apple and a pear, a point which proves an advantage in the case of the addressee who can't help eating an apple at the beginning of the party.

If exclusivity is introduced in the semantics, negation must prevent it by collapsing alternatives before exclusivity is applied:[12]

(43) $[\![\ not\ ]\!](A) = \{\{w : \neg\exists p[p \in A \wedge w \in p]\}\}$

In that case, (41) denotes the set (containing the set) of worlds in which the addressee takes neither an apple nor a pear, also resulting in the right prohibition.

Ross's paradox

Intuitively, the solution to Ross's paradox comes from the observation that a master who says (38a) would not necessarily endorse (38b), since the latter would permit an action not permitted

[12] Aloni (2007, fn.12) identifies the need to collapse alternatives in this context. Note that Aloni's approach involves a modaloid imperative operator, and predicts that disjunctive imperatives are ambiguous between choice-offering and alternative-presenting readings. As she notes, the latter are marginal (at best), a fact which does not seem amenable to her pragmatic explanation ("a pragmatic preference for stronger interpretations", p. 88).

by the former. But a master who says (38b) would have no problem endorsing (38a). We want to say that an imperative ϕ WARRANTS another imperative ψ iff adding the latter to a To-do List which already contains the former never changes the ordering of worlds. A more general statement, in which regular entailment falls out as a special case, is the following:

(44) For any sentences ϕ, ψ: ϕ warrants $\psi =_{def}$ for every context c (in which $c{+}\phi$ is defined), $c{+}\phi = (c{+}\phi){+}\psi$.

When we say that (38a) does not "entail" (38b), what we mean is that the former doesn't warrant the latter. It doesn't warrant it because the disjunction gives the addressee an additional choice. In contrast, (38b) does warrant (38a). Warrant encompasses Kamp's (1973) notion of P-ENTAILMENT, a concept also important for van Rooij (2008). This definition of warrant is equivalent to one of Veltman's (1996) definitions of validity in update semantics (specifically, his valid$_2$), as pointed out by van Rooij. Veltman, however, does not have a treatment of imperatives. And while van Rooij extends p-entailment to commands, he doesn't provide a general definition. I use the term "warrant", because the "p" stands for "permission" (we want something more general) and because "entailment" is not felicitious for sentences to which we don't intuitively attribute truth or falsity.

4.2 Indefinites and choice

Free choice imperatives with indefinites work the same way as those with disjunction.

(45) (a) Pick a card!

(b) $\{P(x, c) : c \in \textbf{card}\}$

Figure 4 gives the ordering, with choices taken to be exclusive. (This is some kind of trick where the addressee can see the cards' faces.) Lack of time precludes me from getting into the complexities of indefinites in detail, as the literature is too extensive for me to do justice to. See Kratzer and Shimoyama (2002) and Menéndez-Benito (2005) for discussion of indefinites in alternative semantics.

P(x,A♠) P(x,2♠) P(x,3♠) P(x,4♠) P(x,5♠) P(x,6♠) ...

Figure 4: All 52 choices ok

I would like to point out that Kadmon and Landman's (1993) analysis of free choice *any*, as extended to modal permission and command sentences by van Rooij (2008), will explain the licensing of *any* in imperatives. According to this analysis, *any* is a domain widener, and is licensed when widening strengthens the claim made; van Rooij's addition to this picture is that warrant (i.e., p-entailment) is a relevant kind of strengthening. Note the following fact:

(46) If $D \subseteq D'$, $[\![\phi_{imp}]\!] = \{P(x,c) : c \in D\}$, and $[\![\psi_{imp}]\!] = \{P(x,c) : c \in D'\}$: ψ_{imp} warrants ϕ_{imp}.

Hence, *any* is predicted to be licensed in imperatives.

5 Conclusion and next steps

The range of interpretations displayed by imperatives can be explained in terms of the dynamic theory without postulating any semantic ambiguity. Most subtypes are characterized by the grounds which justify issuing the imperative, and such distinctions are formalized as subsets of the To-do List. Permission imperatives (in the strictest sense) arise when the imperative adds a property which is inconsistent with the rest of the To-do List, and it is possible to force a permission interpretation via presupposition. Choice phenomena fall out as the special case when a single imperative adds multiple inconsistent properties to the To-do List.

There are two significant projects which should be tackled next:

1. Conditional imperatives. As we saw in (20), a conditional imperative can easily produce a permission sentence. In order to bring this data into the analysis, we need an account of conditional imperatives within the dynamic theory. We will need to work with an analysis of conditionals which allows for an interaction with dynamic aspects of meaning, such as that of Isaacs and Rawlins (2008).

2. Modals. Modal sentences also show choice phenomena. Previous work on choice phenomena with imperatives has assumed that they should be reduced to choice phenomena with modal sentences, thus supporting the modal theory of imperatives. My suggestion would be to do the opposite, explaining choice phenomena observed in modal sentences in terms of dynamic (or "performative") aspects of their meaning which parallel the dynamic meaning of imperatives.[13] Such an approach predicts that choice interpretations will not

[13] A potential problem is brought up by Kamp (1973). He argues that (i) is performative but does not give rise to free choice (his (13), p. 67; thanks to Chris Barker for pointing out Kamp's example):

(i) You may pillage city X or city Y. But first take counsel with my secretary.

However, I'm not convinced that this sentence is performative in the required sense. On its own, (i) does not permit any action — before consulting with the secretary, the vassal had better not pillage either city. (Of course,

be equally present with all modal sentences (in contrast to imperatives, which always show choice phenomena), but rather will depend the presence of a performative component of meaning. There is data suggesting that this prediction is correct. While many modal sentences show choice readings, none of the following do:

(47) (a) At the top of the mountain, you can find snow or ice to make drinking water.
$\not\Rightarrow$ At the top of the mountain, you can find snow to make drinking water, and you can find ice to make drinking water.

(b) A: Can any of the students speak Chinese or Japanese?
B: Chou Wei-han can.[14]
$\not\Rightarrow$ Chou Wei-han can speak Chinese and Chou Wei-han can speak Japanese.

(c) All of our students should take logic or stats.
$\not\Rightarrow$ All of our students may take logic and all of our students may take stats. (The syntax and semantics students should take logic, while the phonology and socio students should take stats. The former should not take stats, and the latter should not take logic.)

As far as I can tell, these are not examples in which choice interpretations are cancelled or dispreferred; they simply do not have them. Previous work has either assumed that all modal sentences will show choice readings, or has focused on particular modal elements (e.g., van Rooij 2008, Ciardelli et al. 2009), not aiming to cover other cases. We do not have much understanding at all of when choice readings occur and when they do not. Regardless of whether the suggestion to relate choice phenomena to performativity is correct, in order to develop a general theory which covers both the cases which show choice phenomena and those which do not, more empirical work will be needed.

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in a different sense, it is performative, in that it is guaranteed to be true on the basis of the fact that the speaker is the King.) Only once the secretary is consulted can the vassal add the the legal kind of pillaging to his To-do List.

[14]Compare the non-elliptical reply, *B: Chou Wei-han can speak Chinese or Japanese*, which does license the choice inference.

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