Craige Roberts, NYU and OSU
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Imperatives in a dynamic pragmatics

I offer a semantics and pragmatics for imperatives, developed in the framework of a dynamic pragmatics in the vein of Portner (2004, 2018, 2018b) and Roberts (1996/2012, 2012b, 2017, 2018).[1] The resulting account has the virtues of the best previous accounts (in particular those of Portner 2004, 2007, 2011b; Kaufmann 2006 (as Schwager), 2012; and Charlow 2011, 2014), while avoiding problems that arise in those accounts and others in the literature.

This account is essentially pragmatic in that a central aspect of the meaning of an imperative utterance—its apparent deontic force—is not given by its compositional, syntactico-semantic content, but instead arises from the interaction between that content and the pragmatics of the canonical use of imperative clauses. The semantics of imperatives, like that of other linguistic constituents, is static, with the usual truth conditional, compositional derivations. The dynamics, the way that content serves as an update on context, lies entirely in the pragmatics of use of the conventional content.

I begin in §1 by spelling out the desiderata for a theory of imperative mood, using those to establish benchmarks for the theory to be developed. In §2 I sketch the framework for dynamic pragmatics developed in my earlier work, emphasizing here those aspects which pertain directly to the account of the pragmatics of utterances with imperative content. In §3 I offer the formal semantics for imperative-type clauses and the pragmatics of their default use as directives, spelling out in §3.2 how this account satisfies the desiderata from §1. In §4 I offer some comparisons with other accounts. And in §5 I offer conclusions and prospects.

§1. Desiderata for a theory of imperative mood

The literature makes evident a number of important properties of imperative clauses. They:
a) typically have no subject (a strong cross-linguistic tendency), though they may appear to:

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(1) Eat your soup!
(2) Johnny eat your soup!
(3) Somebody help me up!

I'll call the entity, typically an agent (but see (6) below), to whom an imperative is directed the **target** of the imperative. Note that (3) shows that the target needn't be specific.[2]

b) display evidence of tense and aspect, always pertaining to a present or future time:

(4) a) Vote tomorrow!
b) #Please vote by last night!

(5) [In the short story "The lady or the tiger", a captive must choose one of two doors, knowing that behind one is a beautiful lady, behind the other a vicious tiger. He prays silently before opening one of the doors:]
Be the lady! [Carl Pollard, p.c.]

(6) [speaker is unexpectedly taking a friend home for coffee, can't remember what shape the house was in when she left. Silently to herself:]
Please don't be a mess!

(7) Please have this done by the time I get back.

Several authors (including Katz & Postal 1964:74-79, Arbini 1969, Huddleston 1970) have noted that when a tag is added to an English imperative, one uses the future form *will*. And von Fintel & Iatridou (2017) note that in rejecting an imperative, one also uses futurate *will*, as illustrated in their examples:

(8) a) Take out the garbage, will you?
b) Take out the garbage, won't you?
c) A: Take out the garbage!
B: No, I won't.

c) may occur embedded. In English this is only as the complement of a verb of saying, and only as directed to the actual addressee:

(9) John$_i$ said eat his$_i$ share of the chicken. He won't get home til late.

In (9) the third person *his*, coreferential with the subject *John*, precludes a direct quotation interpretation. In some languages, complement imperatives may have a shifted target, not the actual addressee but the agent of the embedding attitude (Zanutinni et al. 2012).

d) may be explicitly or implicitly conditional:

(10) If you're hungry, have some cheese and crackers.

(11) [Army combat instructor to students:]
Before you walk into an area where there are lots of high trees, if there might be snipers hiding in the branches, use your flamethrowers to clear away the foliage.
[after von Fintel & Iatridou 2003]

(12) [two crooks planning a robbery:]
A: What should I do if the cops arrive?
B: Start shooting.
modal subordination interpretation: 'if the cops arrive, start shooting'

[2] Apparent subjects are used to indicate the intended addressee, as in (2), where the lack of agreement in person between *Johnny* and *your* is symptomatic of non-subjecthood. When quantificational, the DP indicates the proportion of the interlocutors to whom the speaker addresses the relevant instruction, as in (3) and the following examples, (i) again displaying failure to agree with *your*, and (ii) indicating that none of the addressees are advised or permitted to move:

(i) Everybody get your math book out!
(ii) Nobody move! (Veltman 2009)

e) display a range of flavors, with two main types (Kaufmann's 2012 terminology), the Practical and the Expressive uses:

Practical: something the target can do. Only felicitous if it's possible for the target to realize the property denoted by the VP. The many sub-types include:

commands and prohibitions

(13) [Boss to tardy employee:] Tomorrow get to work on time!

(14) And don't dawdle!

permission

(15) Take your time!

(16) Have a cookie.

suggestion

(17) [To a friend who's been ill:] Take a day off to recuperate, why don't you?

pleas: (3) above

advice: speaker may be disinterested

(18) [Two friends chatting:]
A: I'm worried that this contractor will put a lien on my property. But the guy's completely unreasonable. I can't talk to him.
B: Hire an attorney.

instructions/directions

(19) A: How do I get to Harlem?
B: Take the A-train.

(20) To prepare an artichoke, pull out the central leaves and the fuzzy part down to the heart.

warnings

(21) Be careful! There are sharks in the water!

concessives

(22) OK, go to the silly party! See if I care.

Expressive: nothing can be done; either the matter is already settled, or the target isn't in a position to do anything about it. Grounded in the wishes, desires, etc. of the speaker.

wishes: (5), (6) above, and:

(23) Enjoy the movie! (Kaufmann 2012)

f) are closely related to deontic modal statements, in that they:

- permit valid inference of their deontic modal counterparts, as in the following pairs:

(24) [father to son:] Finish your homework before you surf the web.
You must finish your homework before you surf the web.

(25) [to a friend in trouble:] Hire an attorney.
You should hire an attorney.

- display constraints on interpretation of sequences of imperatives parallel to those on sequences of modal statements (Portner 2007, his (26), modified (27)):

(26) a. Be there at least two hours early.
b. Then, have a bite to eat. [odd as permission after the order in (a)]

(27) a. You must be there at least two hours early.
b. Then have a bite to eat at that cute little place on the corner. [odd as suggestion after the moral injunction in (a)]

- display similar performative constraints on follow-up to those displayed by *must* but not *should* (Ninan 2005, his examples):

(28) You should go to confession, but you're not going to.
(29) #You must go to confession, but you're not going to.
(30) #Go to confession! You're not going to go to confession.

- display a Deontic Moore's Paradox (Charlow 2011:49; Kaufmann 2015, her examples (31), (32)): Even if the speaker has no interest in realization of the prejacent, as with concessions or disinterested advice, they commit her to endorsing it in some fashion:
  (31) #You should go to Paris, but in fact, I think it is not advisable.
  (32) A: How do I get to Harlem?
  B: Take the A-train. #But I don't want you to do this.
- display non-Boolean behavior with disjunction ("Free Choice disjunction"), in some sense entailing both disjuncts, a phenomenon parallel with the free choice permission displayed by deontic assertions. This is reflected in a puzzle due to Veltman (2009):
  (33) Pay the bill online or take it to the gas company.
  (34) You can pay online or at the gas company.

  If the gas company website gives the instruction in (33) or (34), but the actual bill tells us *Don't pay the bill online*, intuitively they have given contradictory information. But if disjunction were Boolean in these examples, we wouldn't take them to be contradictory: the customer would simply conclude that she should take the payment to the company.

  Compare "Ross's Paradox" (1941) in imperative logic: disjunction introduction doesn't seem to be valid for imperatives, like deontics but unlike non-modal declaratives:

  (35) a. Have an apple! does not imply (35b)
  b. Have an apple or a pear!
  (36) a. You may have an apple. does not imply (36b)
  b. You may have an apple or a pear.
  (37) a. Noah ate an apple. implies (37b)
  b. Noah ate an apple or a pear.

  But the permission given by the disjunction (35b) seems to imply the permission given by the simple (35a).

g) differ in potential logical form from that of deontic declarative clauses: The deontic force of an imperative cannot occur under the scope (syntactic or semantic) of negation, nor can they occur in the antecedent of a conditional, as illustrated in the examples in (38a) and (39a), in contrast to the deontics in the (b) examples:

(38) a. Don't go out!
can't mean: 'there's no obligation to go out'
Instead, constitutes a direction to not go out.
b. You needn't go out.
'it's not the case that you are obliged to go out'
(39) a. */! If eat your vegetables, then you can't have dessert til you do.
ungrammatical or semantically anomalous, or—most likely—both.
b. If you have to eat your vegetables, then you can't have dessert til you do.

h) unlike assertions, are not felicitously subject to judgments of truth or falsity.

(40) A: How do I get to Harlem?
B: Take the A-train.
C: #That's false!
C′: No, take the number 37 bus.

As a response to (40B), (40C) is infelicitous. The felicitous (40C′) is not a truth value judgment, but a rejection of B's directions, i.e. a correction of B's proposed answer to A's question.

i) cannot occur with evaluative sentential adverbials (41), unlike deontic modal statements (42) or performatives (43):

(41) #Unfortunately, go to bed!

(42) Unfortunately, you must go to bed!

(43) Unfortunately, I now pronounce you man and wife.

This observation was initially due to Gärtner (2015), who didn't restrict the constraint to the evaluatives. But Matt Moss (p.c.) pointed out the acceptability of the following:

(44) [to a friend who's considering not taking his meds:] Obviously, take them!

Ernst (2000) classifies *obviously* as an evidential (epistemic modal) speaker-oriented adverb, whereas *unfortunately* in (41)-(43) is an evaluative speaker-oriented adverb. I find Ernst's other evidential adverbs to be acceptable with imperatives, as well: *clearly*, *plainly* can acceptably replace *obviously* in (44). Other evaluatives (*luckily*, *oddly*, *significantly*, *unbelievably*) and Ernst's discourse oriented adverbs (*frankly*, *honestly*) are, for me, as unacceptable as *unfortunately*. Hence, Gärtner's generalization seems a bit too broad. But all the evaluatives and discourse oriented adverbs are acceptable with deontic modal statements (the counterparts of (42)), unacceptable with imperatives.

j) strongly tend, across languages, when occurring in root clauses to be used with directive illocutionary force, just as declaratives tend to be used to make assertions, interrogatives to pose questions. This directive force has consequences for felicity, and leads to further differences from deontic modal statements, (f) above notwithstanding. Consider Portner's (2017) contrast (his (35)):

(45) 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!

(45a) contributes new content to the interchange, while at best (45b) sounds redundant, and odd because *so* suggests that what follows will be an informative conclusion.

I think this same difference results in the following contrast:

(46) You shouldn't park in the dry cleaner's lot, because you'll get a ticket if you do. But who cares—it's just a ticket and you're in hurry. So,…

a. park in the dry cleaner's lot!

b. #you should park in the dry cleaner's lot!

The imperative in (46a) contributes advice to the targeted addressee willing to accept the consequences of disregarding her legal obligations. But (46b) sounds odd, presumably because once the law-based ordering source has been evoked for *shouldn't p* in the first clause (Kratzer 1981), it seems inconsistent to immediately ignore it in order to conclude *should p*, and there is no other salient set of mores to restrict its domain.

k) may be disjoined with a declarative or interrogative, with an 'or else' implication:

(47) a. Take a step to the left or you'll fall down the stairs. [Kaufmann 2021]

b. Take a step to the left, or do you want to stay out of the picture?

Note that in these examples, the imperative itself is not issued as a directive. Rather, it seems like the speaker is talking about a possible action that the addressee might choose to make, the second disjunct pertaining to the consequences of *not* so choosing.

l) presuppose an Epistemic Uncertainty Condition (Kaufmann 2012): So far as the speaker knows, there are some future courses of events where the imperative is realized by the target, and others where it is not.

My goal here will be to offer a theory of the semantics and pragmatics of imperatives that accounts for all these characteristics.[3]

§2. **Dynamic pragmatics**

An **utterance** is an ordered pair of a linguistic constituent and a context of utterance (Bar-Hillel 1971).

Semantics is the study of how the conventional proffered content of an expression, under a syntactic analysis, is compositionally derived. Semantics radically under-determines meaning.

Pragmatics is the study of how context comes to bear in interpretation, concurrently with the compositional calculation of conventional content, to determine the meaning of a given content in its context of utterance.

So conventional content is context-independent. The meaning of an expression uttered can only be determined in context. And this meaning is dynamic, in that unlike the expression's (static) semantic content, it is an update function on the context of interpretation.[4]

Following are the central tenets of my understanding of dynamic pragmatics, as that bears on interpretation:

I. The language game uses illocutionary acts **to share information in the interest of achieving the interlocutors' goals**. This universal function is reflected in the scoreboard of the language game, where we keep track of the state of play: We track both shared information and the current goals, plans and priorities to which the interlocutors are publicly committed, both individually and collectively.

A non-defective context is one in which the interlocutors share the same content in their individual representations of what's on the scoreboard. Here is a somewhat simplified

[3] I will not offer an account of imperatives conjoined with declaratives, like *Eat that junk food and you'll regret it!*. von Fintel & Iatridou (2017) argue that the first, imperative conjunct is not truly imperative; instead, the construction is one instance of a more general type of Conditional Conjunctions (Culicover 1972, Culicover & Jackendoff 1977, Keshet 2012, Klinedinst & Rothschild 2012) with a reduced first conjunct. Keshet & Medeiros (2019) offer experimental evidence that these conjunctions are only felicitous in contexts in which the future choices of the addressee are at issue, unlike conjoined declaratives with a conditional interpretation. I suspect that this can be explained by the future-oriented semantics of the imperative and the way that these bear pragmatically on the addressee's future goals and plans, as encoded in the semantics and pragmatics given below.

[4] I take pragmatics to be dynamic in two senses. The one exploited here is a globally dynamic pragmatics, of the sort Portner (2018) explores. But there is another sense, wherein the context of interpretation is locally dynamic in something like the sense of Heim 1983, where context changes internal to the utterance. Since locally dynamic context does not bear on the present account, I ignore it here, but see Roberts (2017).

version of the idealized scoreboard for a language game, characterized as a tuple of bodies of information:[5]

The **scoreboard K for a language game** at time *t* is a tuple, <I, M, <, CG, QUD, G>, where:

I is the set of interlocutors at *t*

M is the set of illocutionary moves made by interlocutors up to *t*, with distinguished sub-sets:

$A \subseteq M$, the set of assertions

$Q \subseteq M$, the set of questions

$S \subseteq M$, the set of suggestions

$Acc \subseteq M$, the set of accepted moves

$<$ is a total order on M, the order of utterance

CG, the common ground, is the set of propositions treated as if true by all $i \in I$ at *t*.

CG reflects all information about the current state of play in the scoreboard K itself.

$QUD \subseteq Q \cap Acc$ is the ordered set of questions under discussion at *t*, such that for all $m \in M$ at *t*:

a. for all $q \in Q \cap Acc$, $q \in QUD(m)$ iff CG fails to entail an answer to q and q has not been determined to be practically unanswerable.

b. QUD is (totally) ordered by $<$.

c. for all q, $q' \in QUD$, if $q < q'$, then the complete answer to q' contextually entails a partial answer to q.

d. for all $q \in QUD$ there is a $g \in G_{com}$ (see below) such that g is the goal of answering Q,

G is a set of sets of goals, plans, and priorities in effect at *t*, such that

for all $i \in I$, there is a (possibly empty) G_i which is the set of *i*'s publicly evident prioritized desiderata, including those goals and plans which *i* is publicly committed at *t* to trying to achieve; and

$G = \{ G_i \mid i \in I \}$.

Moreover:

a. for all $i \in I$, for all $g \in G_i$, *g* is a conditional goal, representing the intention to achieve the target goal should certain conditions be realized in the actual world at some $t' > t$.

b. for all $i \in I$, there may be additional structure(s) over G_i: Some goals sub-serve others, some goals are organized into plans, and the way that the agent *i* prioritizes her goals is reflected in a partial order.

and we can define:

$G_{com} = \{g \mid \forall i \in I: g \in G_i\}$, the set of the interlocutors' common desiderata at *t*.

$G_Q = \{g \in G_{com} \mid$ there is some $Q \in QUD$ and g is the goal of answering $Q\}$.

For all $i \in I$, if *i* is a sincere, competent and cooperative interlocutor in *D*, we can use G_Q to characterize two kinds of publicly evident goals and plans to which *i* is committed (at time *t*):

Discourse Goals of *i* = G_Q

Domain Goals of *i* = $G_i \backslash G_Q$

$G_{com} \backslash G_Q$: the set of common Domain Goals of all the interlocutors

The central elements on the scoreboard are CG, QUD and G. The rest is articulated for book-keeping purposes. Shared information is all reflected in CG (Stalnaker 1979), while current goals and plans are reflected in G and its discourse-specialized sub-structure QUD (Roberts 1996, 2004, 2012b; Porter 2004, 2007, 2018, 2018b), all of these regularly

[5] See Roberts 1996, 2004, 2012b.

updated to reflect the interlocutors' current commitments. Illocutionary acts are utterances by the interlocutors intended as moves in the game, which, if accepted by other interlocutors, result in particular types of update of the scoreboard, as we shall see.

Quite apart from the language game, there are many constraints on what it means for an agent to rationally intend to achieve a given goal, or a set of goals; see the extensive literature on the philosophy of action and on planning theory in artificial intelligence. Among other things, those goals must be in principle possible for the agent to achieve at some time in the future, and consistent with each other. I assume that such constraints obtain on G and its sub-parts. Since any information about the scoreboard itself will, by virtue of its being ideally evident to all interlocutors, be reflected in the CG, then for any goal $g \in G_i$ for interlocutor *i*, there will be a proposition $p \in$ CG to the effect that *i* is committed to achieving *g*. Such a proposition is effectively deontic: A commitment is a kind of obligation, so if *i* is committed to achieving *g*, *i* should do what is within her power in order to achieve *g*. But not all commitments are equally binding: I should have made my bed this morning, but I was in a hurry to finish my paper, a more pressing commitment, so the bed didn't get made. Hence, goals and plans are prioritized, sometimes in quite complex ways. Again, this is not specifically a matter for linguistics: It is a more general fact about how agents establish and manage goals. But it ultimately bears on the variety of ways in which we can understand the commitments related to acceptance of an imperative directive.

The scoreboard is updated with other publicly evident information and goals, as well, but these updates do not reflect illocutionary acts.

The discourse scoreboard is something to which all interlocutors are committed, so the presentation here constitutes a particular snapshot of their "commitment state". Individual commitments (e.g., to the truth of particular propositions) are reflected in CG. Just as the present representation articulates the information in CG to draw out the interlocutors' domain and discourse goals G and QUD, one could articulate the scoreboard further in such a way as to call out the commitments of individual interlocutors. I do not do so here because these individual commitment states are largely orthogonal to my point. Only the commitments reflected in G—the goals to which individual interlocutors are committed—are represented, as these *do* bear on the context update canonically associated with imperatives *qua* directives and on the inferences one can draw from their acceptance (secondary effects, like adding a deontic proposition to the CG, below).

II. Interpretation is the resolution of a simultaneous equation in multiple variables.

The determination of the meaning of an expression uttered is often characterized solely in terms of its compositionally determined truth-conditional content, as given (say) by the syntactic level of representation LF, modulo anaphora resolution. But that is not the view reflected here. Rather, though we take that content to be the foundation of interpretation—an inviolable constraint on the retrieval of the intended meaning, other concurrent constraints are equally essential. Call the latter the **pragmatic constraints** on interpretation.

Here's a very general, powerful pragmatic constraint, a realization in this framework of Grice's Relation:

RELEVANCE: Since the QUD reflects the interlocutors' publicly evident discourse goals at any point in a discourse, in order for an utterance to be rationally cooperative it must address the QUD.

An utterance *m* **addresses a question** *q* iff *m* either contextually entails a partial answer to *q* (*m* is an assertion) or is part of a strategy to answer *q* (*m* is an interrogation) or suggests an action to the addressee which, if carried out, will presumably help to resolve *q* (*m* is a direction).

Arguably RELEVANCE is not an arbitrary stipulation, an arbitrary rule, but follows from the intentional character of the language game. The QUD is a distinguished subset of the interlocutors' goals and intentions, those immediate in the game itself. Holding a goal commits a rational agent to achieving it, and one's immediate goals are those to be achieved first. Hence, if one is sincere in committing oneself to achieve the goals jointly established in the context, one is committed to addressing the QUD. This is what RELEVANCE captures: the constitutive nature of the goals and intentions in G and QUD in the language game. These reflect the intentions that both drive and constrain interpretation, facilitating meaning recognition in the Gricean sense.

There is now a growing body of experimental evidence that RELEVANCE plays a central role in the resolution of ambiguity and anaphora (work summarized in Roberts 2017), in presupposition resolution and projection (Tonhauser et al. 2018, Tonhauser 2020, Tonhauser et al. 2020), in the determination of the scope of operators and their domain restriction, and, as Grice emphasized, and a more general role in the structuring and interpretation of discourse (Clifton & Frazier 2012). The expectation of RELEVANCE is reflected in the way that the prosodic form of an utterance, across languages, both presupposes the QUD and constrains felicity in discourse (Roberts 1998).

But QUD also arguably plays a role in the determination of the intended illocutionary force of an utterance: the way in which that illocutionary act is intended to affect the discourse scoreboard (Roberts 2018). So consider again (12) from above:

(12) [two crooks planning a robbery:]
A: What should I do if the cops arrive?
B: Start shooting.

B replies to A's question using an imperative clause, thereby issuing a Directive. But we don't understand B to direct A to start shooting in the present circumstance. Rather, we understand B's utterance to be intended to be relevant to A's question, and in order to make it relevant, we understand it as in the following conditional paraphrase, borrowing the content of the *if*-clause from the question: 'if the cops arrive, start shooting'. Below I will capture this modal subordination to the irrealis scenario in A's *if*-clause in the usual

way, by taking it to restrict the domain of a tacit modal in the imperative, via the Kratzerian modal base.

Now consider (48) and (49):

(48) A: What did John hear on Fox News?
B: The Democrats have stolen the election—there's widespread fraud.

(49) [Context: A recently took a message from B's landlord, Mrs. Johnson:]
A: What are Mrs. Johnson's demands?
B: Pay your rent by Monday, and keep your bicycle out of the hallway.

In neither the declarative (48B) nor the imperatives in (49B) does the content of the root clause uttered by itself constitute an assertion or a directive, though in other contexts that is how we would understand them. Here, in order to address the questions posed by A, we take these contents to be those of an assertion made on Fox News (48) or of a directive posed by Mrs. Johnson (49). So in these contexts, neither the declarative clause nor the imperatives have their own illocutionary force. And it is only RELEVANCE that tells us that.

III. There are three central types of linguistic moves in the language game, as reflected in M in the scoreboard K above: These are the illocutionary acts—acts made in and by uttering some linguistic expression, and are found in all human linguistic discourse:

> An **assertion** is an illocutionary act wherein the speaker proposes that a proffered proposition be added to the CG.
> An **interrogation** is an illocutionary act wherein the speaker proposes that a proffered question be added to QUD.
> A **direction** is an illocutionary act wherein the speaker proposes that a proffered property indexed to the addressee x be added to G_x.

The use of *proffered* in these characterizations means that the proposed addition constitutes the contextually enriched meaning of the core conventional content of the utterance, rather than being, say, presupposed or conversationally implicated. There is, of course, an extensive literature in linguistics about how to distinguish proffered content from other aspects of the conventional content of a constituent, so this notion is independently motivated.

IV. Only utterances with a grammatical structure whose semantic content is

- complete (so that all functors are given their subcategorized arguments, with any anaphora or ellipsis fully contextually resolved),
- consistent, and
- coherent (all constituents and their denotata integrated into the syntactico-semantic structure)

may be understood to constitute illocutionary acts: to constitute moves in the language game. Therefore, only utterances whose content is understood to be that of maximal root

clauses may have illocutionary force (though, as we just saw, not all root clauses have illocutionary force by themselves).

V. There are three universally attested clause types, with corresponding semantic types:

A **declarative** clause denotes a proposition.
An **interrogative** clause denotes a question (a set of propositions).
An **imperative** clause denotes an addressee-targeted property.

One might want to model these somewhat differently in a given semantic framework (e.g., questions as higher-order functions). All that's crucial here is that the three clause-types differ in semantic type, as this feeds into thesis VI below.

VI. The default illocutionary force of a root sentence is a function of its clause-type. The fact that III and V are both language universals is not a coincidence, but is a reflection of the way that these semantic types are perfectly suited to the pragmatic functions served by their respective default illocutionary acts: Nodding to Wittgenstein, the clause types are tools designed for particular uses in the language game.

Illocutionary Force Linking Principle [Roberts' (2018) modification and extension of Portner (2004), Zanuttini et al. (2011)]

a. The default illocutionary force of a root sentence S whose denotation ||S|| is a proposition is that of an assertion.
b. The default force of a root sentence S whose denotation ||S|| is a set of propositions is that of interrogation.
c. The default force of a root sentence S whose denotation ||S|| is an indexed property is that of direction.

Crucially, besides the default uses of the three main clause types given by the Illocutionary Force Linking Principle, there are other ways to commit the illocutionary acts in III. For one thing, as has been extensively discussed in the literature, not all moves made by uttering a clause whose root is clause-type *T* have *T*'s default illocutionary force: Pragmatic factors may over-ride the default:[6]

- If a speech act is evidently insincere or in some other way evinces lack of commitment, this may over-ride default force, as often explicitly indicated in tone-of-delivery. E.g., a declarative or imperative may be sarcastic, serve as an astonished echo of what someone else has just said, or constitute pseudo-advice (*Go suck an egg!* as an indication of disdainful write-off).
- Prosodic factors may be taken to over-ride the defaults, in the interest of consistency. E.g.:
  - Declaratives with rising intonation (Gunlogson 2001):
    (50) You're gonna be home late ↑

[6] I ignore fragmentary responses here, as arguably these are either anaphoric or elliptical for a complete clause.

The contribution of the rising intonation represented by '↑' (indicating at least uncertainty) is inconsistent with the commitment that's concomitant with assertion.[7] To avoid inconsistency, the intonation overrides the default force-linking, leading the addressee to understand the utterance as either only tentatively entertaining or questioning the truth of the proposition denoted. Taking the move to raise the question of the truth of the proposition expressed resolves that inconsistency. If assertive force were reflected in the syntactic LF of the declarative clause, this would be harder to explain: It would predict semantic anomaly rather than a pragmatic inconsistency to be resolved.

- Rising intonation can similarly mark an imperative clause, as in (51), where B doesn't so much propose that A ask her mother as tentatively suggest she entertain taking that action, again implicating a question about whether to do this.

  (51) A: I don't know what to do!
  B: Ask your mother ↑

- Falling intonation in questions:

  [Context: A and B both know that A has no money to spend on non-essential items.]

  (52) A: I'm really tempted to buy this coat. It's on sale!
  B: Does it fit in your budget ↓

  A rhetorical question may constitute a reminder. Speaker B in (52) isn't proposing that the question that's the proffered content of her utterance be addressed, but rather using the question to remind the addressee about the answer in the CG. The falling intonation (though not necessary) can be used to indicate the speaker's commitment to the question's resolution: the answer is entailed by the previous discussion of the budget.

Etc.

The conceptual foundations of this approach to pragmatics are Gricean. And the implications for pragmatic theory are wide-ranging. We'll see how this offers advantages over other approaches in the account of the imperative to follow.

§3. **Imperative semantics and pragmatics**

Here are the central features of the semantics of imperative clauses I propose:

- The **denotation** of an imperative is a property (semantic type <s,<e,t>>), as in Portner (2004, 2007).
- As in Portner (and Starr 2013), this property is **indexically directed** to a target agent. In English, the presupposed target is always the addressee, in both root and embedded imperative clauses, and the function corresponding to the property is only defined when its target argument is the addressee. In other languages the target of an embedded imperative may be shifted, reminiscent of shifted indexicals (Portner 2004); and in the closely related Korean jussive (Pak et al. 2004) even matrix clauses may be directed to the speaker, yielding a promise. Here, we'll focus only on the English imperative.

[7] Rising intonation arguably indicates something much more vague and general than "question force". Rather, it indicates a **lack of commitment**, **uncertainty**. This intonation on a declarative implies a question about whether the proposition so-marked is true so far as the speaker is concerned.

- As in Kaufmann (2012), the denotation of an imperative is **modal** and **conditional**, depending upon a Kratzerian modal base *f* and ordering source *g*. But instead of adopting Kaufmann's deontic modal operator, here modality is futurate, and *f* and *g* determine the applicable circumstances in which the property is to be realized, the accessible world/times in a branching future model.
- Instead of truth conditions, imperative clauses have **realization conditions**, spelling out what the world would have to come to be like for the property to count as realized, in the applicable circumstance(s), by the addressee to which it's directed.

Thus, an imperative clause is modal (ranging over non-past circumstances) but neither propositional in type nor deontic in flavor. To my knowledge, this is a unique combination in the literature.

Illocutionary force has no part in the conventional content of an imperative clause, but arises in its default use when it is uttered as a root clause, as we shall see.

Now for the details:

A *circumstance* is a world/time pair <w,t>.
A *proposition* is a set of circumstances.

Take $!_{f,g}[_S VP_i]$ to be the logical form of an English imperative clause, and take it to be uttered in context K (the scoreboard, as above), indexed to the addressee x_i, and relativized to a circumstantial modal base *f* and an ordering source *g*.

As in Kratzer, *f* takes a circumstance (<w,t> the circumstance of issuance) as argument to yield a set of propositions, those which would practically allow for the realization of the property by the agent; their intersection $\cap$f(<w,t>) is the set of circumstances <w′,t′> on non-past branches from the circumstance of issuance in which all the propositions given by *f* are true. Intuitively, a rational agent would try to realize the property only in those circumstances <w′,t′> which, besides allowing for its realization, are such that the realization is consistent with the agent's priorities at the realization time *t′*; we use the ordering source *g* to pick out these best options. As usual with a Kratzerian ordering source, *g*(<w′,t′>) also yields a set of propositions—reflecting relevant ideals (e.g. the wishes of either the speaker or addressee, their other priorities, plans, and risks, etc.)—and we order the branching futures at any given realization time <w′,t′> in $\cap$f(<w,t>) according to how close they come to realizing all the ideal propositions given by g(<w′,t′>). Then the circumstances of interest are those in $\cap$f(<w,t>) that are most ideal under *g* at a given realization time. Hence, these parameters work here just as they do in Kaufmann's modal theory of imperatives.

To simplify the exposition of the semantics of an imperative, we define the **applicable circumstances** (world/time pairs) for a directed property, relative to *f, g,* and the world and time of issuance <w,t>, using a simple notion of branching future:

Assume a strict order over times, across worlds: t < t′ just in case t is temporally prior to t′.

<w′,t′> is a **branching future** for <w,t>, **BF**(<w′,t′>,<w,t>), just in case t < t′ and w′ is just like w at all times t′′ s.t. t′′ ≤ t.

I.e., w′ and w have all the same entities with the same properties and relations, modal accessibility relations, etc., up through t, though they may differ subsequently.

Two circumstances <w,t′> and <w′,t′′> are on the **same branch** up until t, **SB**$_{<t}$(<w,t>,<w′,t>) just in case for all prior times t′′′ < t, w is just like w′ at t′′′.

I.e., w and w′ may differ at t or thereafter, but are alike to that point.

As usual, an ordering source *g* takes a circumstance to yield a set of propositions, in terms of which we define an ordering over circumstances.

Given circumstances *c*, *c′*, *c′′*: c′ $\leq_{g(c)}$ c′′ iff {p ∈ g(c): c′′ ∈ p} ⊆ {p ∈ g(c): c′ ∈ p}

'at least as many of the propositions given by g(c) are true in c′ as in c′′ '

Then for an imperative clause, given a futurate modal base *f* and an ordering source reflecting the agent's plans, goals and priorities at that realization time t′, we define a set of applicable circumstances at a given circumstance:

Applic$_{f,g}$(<w,t>) = {<w′,t′> | $\underline{\text{BF}}$(<w′,t′>,<w,t>) & <w′,t′> ∈ ∩f(<w,t>) &
∀w′′[<w′′,t′> ∈ ∩f(<w,t>) & SB$_{<t'}$(<w′′,t′>,<w′,t′>) → <w′,t′> $\leq_{g(<w',t'>)}$ <w′′,t′>]}

Paraphrasing, **Applic**$_{f,g}$(<w,t>) yields the set of applicable circumstances for a given <w,t> (the circumstance of issuance), under *f* and *g*, a set which contains all those circumstances:

(a) which are on a branching future of <w,t>, and so are effectively circumstances at some future time t′ (the realization time) in a branch with the "same" world-history up til t′ as <w,t>, and
(b) which are the type of circumstance in which the modal base is realized (so that the conditions that practically allow for the realization obtain), and
(c) in which the realization is maximally consistent with the relevant agent's other plans, goals and priorities at that realization time t′ as reflected in the ordering source: i.e, they are the agent's best options overall in that particular future branch at t′.[8]

We guarantee that the circumstances that *g* ranges over, <w′′,t′′>, are all on the same branch as the circumstances <w′,t′> given by *f* up to the realization time *t′*. This is motivated by the observation due to Thomason (1984) that what we ought to do at any given time in a given world is partly a function of what's possible (here: and optimal) *at that world-time*, factors that may change as we go forward, and certainly may differ across worlds (different branching futures from <w,t>).

The conventional content of an imperative clause has two parts: its presupposed content and its proffered content. The proffered content is expressed using the notion of applicable circumstances just defined, and constitutes the imperative's **realization conditions**:

[8] I take it that the determination of what constitutes a comparatively ideal circumstance along these lines is a matter to be determined by planning theory in the philosophy of action, and not for linguistic semantics.

CONVENTIONAL CONTENT of English $!_{f,g}[_S VP_i]$:
Given context K:
Presupposed content:
x_i = addressee(K)
f is a circumstantial modal base
g is an ordering source that ranks actions relative to relevant goals, priorities and ideals in G_K
and *f*, *g* are s.t. for any <w,t>, *f*, *g* yield $Applic_{f,g}$(<w,t>)
Proffered content: (semantic type <s,<e,t>>)[9]
λ<w,t> λx: x $\in \{x_i\}$. $Applic_{f,g}$(<w,t>) $\subseteq$ {<w′,t′>| x $\in$ ||VP||(<w′,t′>)}

The use of the imperative presupposes a targeted addressee, a modal base and an ordering source, such that the last two determine the (future) applicable circumstances. The proffered content takes as arguments a circumstance of evaluation <w,t> (the circumstance of issuance), and an entity (presupposed to be the addressee x_i). In matrix clauses, the circumstance of evaluation will be the speech time/world <w*,t*>, and in embedded clauses, it will be the world and time of the eventuality reported in the matrix. The proffered content tells us that the property denoted by the VP is realized by the targeted agent in the applicable circumstances. These realization conditions effectively involve a modal with the force of necessity, a relation between sets of circumstances.

An imperative is **conditional** under the proposed semantics in that the required realization is conditional on the applicable circumstances obtaining, as given by *f* and *g*. As in Kratzer, a modifying *if*-clause adds its proposition to the modal base determined by *f*. This, then, immediately predicts the correct interpretation for examples like (10) – (12):

(10) If you're hungry, have some cheese and crackers.
(11) [Army combat instructor to students:]
Before you walk into an area where there are lots of high trees, if there might be snipers hiding in the branches, use your flamethrowers to clear away the foliage. [after von Fintel & Iatridou 2003]
(12) [two crooks planning a robbery:]
A: What should I do if the cops arrive?
B: Start shooting.

On this account, these utterances are not conditional speech acts. In each, including (10), the speaker issues a direction. But, just as goals in G are generally conditional, so imperatives generally yield directions (or suggestions, etc.) to be realized contingent on certain conditions obtaining. An *if*-clause just makes explicit some of the conditions on applicability.

In some contexts of utterance, there may be but one applicable circumstance; e.g., if someone whose plane has been cancelled asks 'what do I do now?', one might answer 'rent a car', and in that case the current situation (*now*) is the single applicable circumstance. This is also the case in (10), where the 'now' in the antecedent of the conditional is tacit; this is not understood as a recipe for taking care of hunger at any time. In others, as in a recipe or driving directions, the

[9] The agent should be of type <s,e>, but I simplify to type *e*.

directive may constitute general instructions, intended whenever circumstances conform to the described scenario. This is the case in (11). (12) is neither specific to a particular moment nor completely general, but pertains to what A should do at any point during the robbery should the cops arrive.

Recall from the previous section that the default use of a root imperative clause, the natural use in view of its semantics, is to issue a direction to the target agent. Here is the default pragmatics for a direction issued by uttering an imperative in context K:

Direction:

If a targeted property is issued to the addressee *i* in a discourse context K and is accepted by *i*, then revise G_i in K, *i*'s evident plans and intentions, to include the realization by *i* of the property in any applicable circumstances.

G_i is revised to remove the goal of realizing the targeted property once it is no longer potentially applicable (it has been realized, or it is determined that it cannot be practically realized) or if the over-arching goals and plans it subserves have been realized or abandoned.

Recall that the goals in G on the scoreboard are themselves all conditional: We generally commit to achieving something conditional on certain assumptions and preconditions. So the conditional character of the proffered content of imperatives is not coincidental, in view of their canonical use is to add to this set of goals.

The fact that the plans in G_i are *evident* to the interlocutors implies that *i* is publicly committed to their realization under the applicable circumstances.

The pragmatics for a direction issued by uttering an imperative is parallel to Stalnaker's (1979) for assertion, Roberts' (1996) for interrogation.

Assertion: (following Stalnaker 1979)

If a proffered proposition is accepted by the interlocutors as true in a discourse K, the proposition is added to CG_K.

Interrogation: (Roberts 1996)

If a proffered question, a set of propositions, is accepted by the interlocutors in a discourse K, then the question is added to QUD_K.

A question is removed from QUD_K once its answer is entailed by CG_K, or it is determined to be practically unanswerable, or it is no longer relevant to some question or goal it subserves in the strategy of inquiry reflected in QUD_K (so the super-question or goal has been answered or abandoned).

Since all questions in QUD are reflected in G, interrogation is effectively a sub-type of direction, as reflected also in their removal conditions. In contrast, the CG is ideally monotonic, so there are no normal directions for removal of content from CG, retraction and other kinds of "removal" carrying significant costs.

Recall that Kaufmann (2012) observes that there are two basic flavors of directives: practical and expressive. The pragmatics I give above applies to practical directions. But expressives are not in general properties that an agent can choose to realize. So they have a different, but closely related pragmatic function, as elaborated below (keeping closely to Kaufmann's story about the Expressives):

Direction: (revised)

If a targeted property is issued to the addressee *i* in context *K*, and is accepted by *i*, then:

(a) **PRACTICAL DIRECTIONS**: if so far as the interlocutors know an agent can reasonably intend to realize the property, revise G_i in K to include the realization by *i*, in any applicable circumstances, of the property.

(b) **EXPRESSIVE DIRECTIONS**: if so far as the interlocutors know an agent can*not* reasonably intend to realize the property, revise the speaker *j*'s G_j in K to reflect that *j* prefers that the addressee *i* have the property in any applicable circumstances.
(This is a Jussive interpretation; cf. Promissives, Commissives and Exhortives in Zanuttini et al. 2012)

In either case, G_K is revised to remove the ideal of realizing the targeted property once it is no longer potentially applicable (it has been realized, or it is determined that it cannot be practically realized) or any over-arching goals and plans it subserves have been realized or abandoned.

When practical directions are accepted, the target is committed to planning to realize the corresponding conditional goal *should the applicable circumstances obtain*, and insofar as it's within her power. Practical directions can also modify the speaker's ideals unless the speaker is understood to be disinterested—cf. commands vs. advice (Kaufmann 2015). Expressive directions are not actionable (Condoravdi & Lauer 2012, Kaufmann 2012): either the matter is already settled (as in (6) above), or there's little or nothing the target can do about it (as in (5), and (23)), and the target may not even be an agent (as in (6)). In such a case the imperative is understood as the expression of the speaker's desires or wishes, an ideal to which she is committed. Accordingly, how the ideals and intentions of the interlocutors are modified, and whose are modified, is a function of the practicality of the imperative, as well as of other evident intentions; see Kaufmann (2012) for extended discussion. This is all a matter for practical reasoning, and is not linguistic *per se*.

In summary, the semantics of clause-type merely determines the semantic type of the clause in which it occurs. It is the pragmatics of sincere use that makes it an update.

§3.2 **Satisfying the desiderata**

The satisfaction of desiderata (a) (lack of overt subject), (b) (evidence of present/future time), (c) (occur embedded), and (d) (conditional character) will be obvious from the discussion in the previous section. With respect to (b), the use of *will* in English for imperative tags like (8) is even more natural if we take futurate *will* to be a modal, in such examples undergoing modal subordination via a modal base implied by the initial imperative.[10] With respect to (c), we

[10] See the extensive literature treating the future as modal cited in Giannakidou & Mari (2018).

generally expect that clauses of all types can be embedded; work on embedded imperatives (e.g. Pak et al. 2004, Crnič & Trinh 2009, Charlow 2010, Zanuttini et al. 2012, Kaufmann 2012, Kaufmann & Poschmann 2013, Portner 2012) can readily be modified to work in the present account. Crucially, since the imperative semantics given here includes no illocutionary force, this correctly predicts that such embedded uses, including those as sentential complements, will not be understood to issue directions.

Desideratum (h) (not felicitously subject to judgements of truth or falsity) and (i) (cannot occur with evaluative sentential adverbials) follow from the semantic type of an imperative clause: These are non-propositional, so they do not themselves have truth values. As Gärtner (2015) noted, performatives can be modified with evaluative sentential adverbials, so (i) is the strongest evidence for the non-propositional type of imperative clauses.

To clarify how this semantics is intended to capture the variable flavor of modals, desideratum (e), here is an informal application to a few examples from above, where <w*,t*> is the circumstance of utterance, and for simplicity we only consider g(<w*,t*>) rather than its value at the realization time:

a command:

(13) [Boss$_7$ to tardy employee$_{11}$:] Tomorrow get to work on time!

$f_{13}(<w^*,t^*>) \subseteq$ CG: {. . ., that x_7 has power over employees, that employees serve at the pleasure of x_7, that x_7 is x_{11}'s boss, that x_{11} has been late several times, that being late is unacceptable and displeases x_{11}, that it is in principle possible for x_{11} to be on time tomorrow, that x_{11} will come to work the day after the utterance time,. . .}

$g_{13}(<w^*,t^*>)$: {. . . , **p** = that x_{11} should continue to be employed, **q** = that x_{11} should please x_7, . . .}

- p, q correspond to goals in the employee x_{11}'s G_{11}, where q subserves p
- q corresponds to a goal in the boss x_7's G_7, though x_7 may be indifferent to p

The applicable circumstances for (13), given these *f* and *g*, are those in which the circumstances in $f_{13}(<w^*,t^*>)$ obtain and which come closest to the ideal in which x_7 pleases x_{11} and thereby retains her position. Then the realization conditions, what the world would have to come to be like in order for this command to be realized by the target employee, are that in all the applicable circumstances (where x_{11} is on the way to work the next day), x_{11} gets to work on time.

a conditional instruction:

(11) [Army combat instructor to students:] Before you$_6$ walk into an area where there are lots of high trees, if there might be snipers hiding in the branches, use your$_6$ flamethrowers to clear away the foliage.

$f_{11}(<w^*,t^*>) \not\subseteq$ CG: {. . ., that if your$_{generic}$ enemy sees you before you see them, there is a greater chance that they'll kill you than that you'll kill them, that hiding in high trees gives snipers an excellent vantage point over the entire area—better than that of someone entering on the ground level, that flamethrowers can destroy foliage at a distance from a

sheltered position, that you$_{generic}$ are in a combat situation with a high likelihood of enemy in the vicinity, that it is possible for you$_{generic}$ to use the flamethrower, . . .}

g_{11}(<w*,t*>): {. . . , **p** = that one should survive, **q** = that one should kill as many enemy as possible, **r** = that one should refrain from killing innocent non-combatants, . . .}

- for all addressees $x_{60} \in x_6$, *p*, *q*, *r* all correspond to goals in G_{60}, where presumably p < r < *q*, and *q* subserves *p*.

Note that the underlined propositions in f_{11}(<w*,t*>) are about a hypothetical type of situation, hence do not obtain at the issuance time; (11) might be uttered, e.g., in a classroom, describing how to behave in a combat situation. The remaining propositions are general knowledge in the CG. The applicable circumstances are those in which the circumstances in f_{11}(<w*,t*>) obtain and which come closest to the ideal in which x_{60} both survives and kills as many enemy as possible, preferably while not killing non-combatants. In order to realize these instructions in such a circumstance, x_{60} uses the flamethrower to exfoliate the trees.

an invitation (a type of permission):

(16) [The hostess$_7$ has just baked a batch of cookies. Speaking to her guest$_3$:] Have a cookie.

f_{16}(<w*,t*>) $\subseteq$ CG: {. . ., that x_7 is hostess; that a hostess controls what others may do in her home and, in particular, has the right to determine what may be eaten by guests; that x_3 is a guest; that a guest in someone's home has only those rights there that are granted by the host(ess); that the smell of fresh-baked goods tends to make one hungry; that most people like cookies; that bakers tend to be proud of their baking and enjoy praise of its virtues; that a guest should attempt to please their host(ess); that both x_7 and x_3 seem to be well-intentioned and want to meet their obligations as hostess and guest, . . .}

g_{16}(<w*,t*>): {. . . , **p** = that x_7 should strive to satisfy x_3's reasonable desires during the visit to her$_7$ home (especially by offering food); **q** = that x_3 should attempt to please x_7, **r** = neither hostess nor guest should impose their will on the other unnecessarily, . . .}

The applicable circumstances are those during the visit: the time of issuance <w*,t*> and immediately thereafter. $\cap f_{16}$(<w*,t*>) captures the assumption that the guest is likely to want to eat a cookie, but that, since he would only be within his rights to do so if he were given permission by the hostess, he (a) will not eat a cookie without permission but (b) would like to be given permission to do so. Then given the hostess's obligations, as partly given by *p*, and the observation that she seems to be positively inclined toward her guest, it can then be inferred that offering the guest a cookie is intended by the gracious hostess to invite him to do something pleasing. Then all would understand the utterance to amount to a proposal that the guest adopt the goal of eating a cookie, *should he wish to do so*. Though this is merely an invitation, and a hostess is not supposed to impose her will on a guest, note that the ideal guest who wants to satisfy the goal in *q* of pleasing a hostess who is proud of her cookies, having been given permission will, in fact, eat a cookie and praise it. So even though, by *r*, the hostess's offer is not

an obligation come-what-may, the guest's own desire to be a good guest may tend to impose on him an obligation to be polite in this respect. Due to the social roles that underlie them, invitations can be complicated. But in any case, they aren't orders.

a wish:

(5) [In the short story *The lady or the tiger*, a captive must choose one of two doors, knowing that behind one is a beautiful lady, behind the other a vicious tiger. Silently to himself before opening one of the doors, the captive says:] Be the lady!

$f_5(<w^*,t^*>) \subseteq CG$: {. . ., that there are two doors in front of speaker x_3 and behind one is a lady, the other a vicious tiger, that the vicious tiger would kill x_3 if its door were opened, that x_3 is just about to open one door *d*, that at the time of uttering (5) x_3 doesn't know what is behind *d*, that x_3 is addressing whatever entity x_{20} is behind *d*, that x_{20} cannot do anything about being either a lady or a tiger, . . .}

$g_5(<w^*,t^*>)$: {. . . , **p** = that x_3 should continue to live, . . .}

- p corresponds to a goal in the speaker x_3's G_3
- the entity behind the door, x_{20}, has no evident goals in this scenario

The applicable circumstances are those in which the propositions in $f_5(<w^*,t^*>)$ are true (both now and in the immediate future) and which come closest to the ideal in which x_3 continues to live. The wish will be realized in the applicable circumstances if x_{20} is the lady. Another way of characterizing these realization conditions is 'given the current circumstances and that I prefer to live, let the entity behind the door I'm about to open be a lady'. The wish is not actionable on the part of the speaker or the addressee, so this is an expressive direction.

With respect to desiderata (f), pertaining to parallels between imperatives and deontic declaratives: Portner (2004, 2007, etc.) offers an account of these examples that can be readily realized in the present account for all the practical directives. On his account, instead of G:

- Directions are intended to update the ToDo lists of the addressee.
- A ToDo list in a dynamic pragmatic context is, like G, a reflection of the target's public commitments. Accordingly, these commitments are also reflected in the CG as deontic propositions: If I'm committed to realizing δ, then it's true that I *should* do δ.

Substituting G for ToDo, this accounts for the deontic-like behavior of the imperatives in (24) – (30). Given that the *speaker* makes certain commitments in issuing a deontic assertion, something similar obtains with the issuance of a directive, accounting for the directive version of the Deontic Moore's Paradox (32b). In all these cases, it is not that the proffered content of an imperative clause entails the apparent inference or the infelicity, for that proffered content is not itself a proposition. Rather, **it is the pragmatics of an imperative that is deontic, not the conventional content itself.** We will explore the implications for the phenomenon of free choice disjunction in §3.2.1 below.

The desiderata in (g) [imperatives do not occur under scope of negation or in the antecedents of conditionals] reflect ways in which the proffered content of an imperative clause differs from that of its deontic declarative counterpart. The first difference, between (38a) and (38b), is straightforwardly predicted by this account because there is neither an imperative force operator

nor a deontic modal in the proffered content of an imperative. Then there is an independently motivated generalization which accounts for the difference: As attested by the failure of presupposed and conventionally implicated content to interact with operators in proffered content (Karttunen & Peters 1979, Heim 1983, Potts 2005), only proffered content can interact with operators at LF. Then since there is no deontic operator in an imperative clause which could take scope under negation in LF, we predict the lack of narrow scope relative to (proffered) negation in (38a), as opposed to the declarative in (38b) where negation takes wide scope over the proffered deontic.

(38) a. Don't go out!
can't mean: 'there's no obligation to go out'
Instead, constitutes a direction to not go out.
b. You needn't go out.
c. Does he not go out?/Doesn't he go out?

Moreover, clause-type—the result of complex morpho-syntactic factors, differing from language to language (Portner 2018)—only determines the semantic type of a sentential constituent, and is arguably not a reflection of a logical *operator* in LF. We see this also in interrogative mood, which effectively abstracts over a *wh*-constituent or polarity in the proffered content to yield a set of propositions; thus, (38c) has no meaning where negation is understood to take wide scope over those alternatives (or where the questioning itself is somehow denied). Just so, (38a) cannot denote either the propositional content of (38b) or a negative property, the complement of the property of not going out. And since the futurity of the applicable circumstances given by *f* and *g* is *presupposed rather than proffered*, again there is no possible scope interaction between the futurity and negation.

Similarly, the failure of imperatives to occur in the antecedent of a conditional follows from the semantic type of their proffered content. *if*-clauses denote propositions standing in some logical relation (depending on one's account) with the content of the main clause they modify. An imperative has the wrong type of denotation to serve in this role, making (39a) semantically anomalous. Hence, both parts of (g) are predicted by the proposed semantics for imperatives.

With respect to desideratum (j) (the use of imperatives with directive force), the explanation for the contrast noted by Portner between (45a) and (45b) follows from the present account just as it does in Portner's: One can reasonably issue a directive, a new *suggestion*, based on the asserted truth of the corresponding deontic (especially in view of the fact that people often don't do what they should do). Re-asserting the same declarative would be redundant, explaining the infelicity of (45b). In (46a) the speaker has just given an excuse for the addressee to ignore what she should do (after all, the consequences aren't that bad), so the imperative is acceptable; but this doesn't change the truth of the original negative deontic, explaining the sense of contradiction in (46b).

I leave (k) as an exercise for the reader, with the following hints: First, pragmatically, in order for a disjunctive statement to satisfy RELEVANCE, both disjuncts must address the QUD, and a directive addresses the QUD just in case the speaker has reason to think that if realized, the addressee will be in a position to resolve the QUD. Second, recall that an imperative (at least, one used as a practical directive), following Kaufmann & Kaufmann (2012) presupposes a

certain type of question, a decision problem. Third, keep in mind Karttunen's (1973) projection algorithm for disjunction, as realized also in Heim (1983). We see something comparable in Roberts' (1989) treatment of Partee's (p.c. to Roberts) famous *Either there's no bathroom here or it's in a funny place.*

As for (l), Kaufmann's Epistemic Certainty Condition, see Roberts (2018) where I argue that, like her other pragmatic constraints on felicitous utterance of an imperative clause, this follows from RELEVANCE and other features of the pragmatic framework in §2.

§3.2.1 Modeling Free Choice Disjunction and Ross' Paradox in imperatives[11]

Take disjunction to have its usual Boolean semantics. Hence, for any two properties P and Q, *P or Q* denotes the property of either having *P* or having *Q*: the join of the two disjuncts' denotata. In simple declarative clauses, such disjunction has the effect on entailment we saw in (37): Whenever one disjunct is true, the whole disjunction will be true. Similarly, in imperatives, on the current semantics, holding the contextual parameters *f* and *g* fixed, if one realizes one disjunct, one has thereby realized the whole disjunction. The puzzle of FC imperatives is why in the permissive imperatives the intuitive entailment seems to flip, so that (35b) with disjunction is sometimes said to entail (35a) without. And (35a) certainly does not grant the permission granted with (35b) (Ross's Paradox). The phenomenon of free choice permission is well known to show up in "weak" imperatives that involve mere permission (invitations, advice, etc.), but generally not in those that impose an obligation (orders, commands, prescriptions, etc.). These two imperative types are quite broad, with many different sub-flavors of each, as illustrated in the previous section.

Here, I adapt the explanation of these phenomena due to Portner (2012), minimally modified to reflect the proposal in §3.1. The essence of the explanation is that the pragmatic function of imperatives, if accepted, is to update the addressee's acknowledged set of conditional goals, appropriately modifying their priorities, as well. But permissions generally give the addressee more latitude for licit behavior than do obligations. And disjunctive imperatives of any flavor, since they can be realized by realizing either disjunct, generally allow the addressee more latitude than proffering either disjunct alone. The combination of these facts about imperative semantics and pragmatics explains free choice and Ross effects.

Pragmatically, if we assume that the speaker does have the proper authorizations to grant permission and/or impose obligations, both types of directive are performative, not in the sense that their contents are automatically accepted by the addressee, but that in proffering them the addressee is thereby licensed by the speaker to perform the permitted activities (if not already permitted), yielding a change in the interlocutors' common ground: what might previously have been prohibited has now become licit activity. Moreover, in the case of requirements, some action has become obligatory, whether the addressee adopts the corresponding goal or not. Arguably, it is the speaker's authority (if genuine) and the relative roles of the speaker and addressee which lead to these updates, and not acceptance *per se*.

[11] Thanks to Lucas Champollion (p.c.) whose probing questions led me to a more careful consideration of what this theory says about free choice disjunction.

I note that there is a type of imperative discussed in the philosophical literature called an *alternative-presenting* imperative by Rescher & Robison (1964) and Aqvist (1965), and illustrated with this example:

(53) Teacher: John, stop that foolishness or leave the room!
[John starts to leave.]
Teacher: Don't you dare leave this room! Stop that foolishness!

If we take the teacher to simply be giving John permission to leave the room in the second disjunct, this is inconsistent with forbidding him to leave the room with *Don't you dare.*... These authors claim that the teacher isn't really giving John a choice between two permitted alternatives. Charlow (2011), following Aqvist, takes this to motivate a different semantics for such disjunctive imperatives. But that isn't necessary on the present account (nor, I would argue, in Charlow's own). I think the key is that each disjunct in (53) is understood as a *conditional* goal John might adopt: As in Charlow (2011:193), imperatives are fundamentally conditional, so this is not an ad hoc assumption. In the schoolroom, presumably the foolishness in question is already proscribed, so the teacher knows that refraining from it/stopping it is already at the top of John's priorities *conditional on his desire to remain in good standing academically*. Thus for (53) we get the sense 'if John would remain in good standing, he must stop this nonsense, or else if he will not stop it, he must leave the room', so that, on the teacher's assumption that John wants to remain in good standing, the second disjunct acts as a threat. John must make a choice. Rationally, an authority in issuing an order presupposes that it can be carried out by the addressee, and in the case of a disjunction that both disjuncts are practical and permitted under the relevant conditions. Certainly, the teacher hopes John will make the right choice, from the academic point of view. But when he does not, the teacher insists, as he is authorized to do, that John not choose the second disjunct, thereby emphasizing that the threat is serious. This is not inconsistent on the part of the teacher: Presenting John with the choice between the disjoined conditionals is consistent with insisting that he choose the first. So there's nothing special either semantically or pragmatically about this example. All disjunctive imperatives are choice-offering, thereby implicating permission, it's just that some choices are bad ones.

To get clear minimal pairs of permission and requirement imperatives for use with the same model, we need a couple of predicates that work equally well in giving permissions and in issuing commands. Here's a go at it:

(54) [Concerned advisor to overworked graduate student:]
I'm worried about you. You need to get away from your desk, get some exercise.
(a) Go to the gym.
(b) Go to the gym or take a yoga class.
(c) Go to the gym and take a yoga class.

I take (54) to be a case where the advisor is giving the student permission to take some time off to take care of herself. But in this case, the student can choose whether to accept this advice: The advisor will presumably sign off on her dissertation even if she's haggard and in poor health, so the advisor is not using his status to impose an obligation on the student.

(55) [Doctor to out-of-shape patient:]
No more excuses.
(a) Go to the gym!
(b) Go to the gym or take a yoga class!
(c) Go to the gym and take a yoga class!

Here the doctor is giving a stern prescription to the patient. Perhaps the patient is busy/lazy, but there is an over-arching priority, 'patient wants to be healthy', which over-rides any lack of desire to exercise: When it's practically possible to exercise, then given that this is prescribed, she must do so.

Now consider scenarios (circumstances) where all the following obtain:

- The addressee can only perform a given exercise if permitted by the speaker, and such permission is given for both -juncts in disjunctions and conjunctions;
- (for simplicity) in disjunctive (54b) and (55b) *or* is understood to be exclusive: both activities are permissible but the addressee is not given permission to do both;[12] and
- it is practical both to go to the gym and to do yoga. Technically, this means that all the circumstances consistent with the circumstantial modal base *f* for the imperatives' interpretations will be those in which both types of exercise are do-able;

The ordering source *g* differs for the two kinds of imperative, as usual for permissions vs. obligations in the examples considered earlier. For the permission in (54), it includes the proposition that the addressee satisfies her wishes in the circumstance in which she finds herself: 'if you like' and 'if compatible with your professional goals'. For (55), however, *g* crucially includes the proposition that the patient wants to live a long, healthy life, and that, accordingly, she follows the doctor's advice. So in (55) *g* makes most ideal those circumstances in which the patient does as prescribed, while in (54) the most highly ranked circumstances are those in which the patient does as she pleases, given her professional goals, exercise preferences, current fatigue level, etc. Given the semantics for imperatives proposed above, this difference in *g* predicts that the conditional goals proffered by the two types of imperatives will differ because they will have different applicable circumstances—those circumstances given by *f* which are most ideal according to the relevant *g*.

Table 1 lays out how the present account predicts that the imperatives in (54) and (55) will be realized in a range of types of circumstances satisfying the conditions described above: those in the paired cells in T = {αγ, αδ, αε, βγ, βδ, βε}, where the addressee does the indicated exercise in response to either the permission or the doctor's prescription.

[12] I follow Charlow in not taking disjunction in imperatives to be semantically exclusive.

	circumstance type **α: wants exercise**		circumstance type **β: doesn't want exercise**	
	Illocutionary force: **permission**	Illocutionary force: **prescription**	Illocutionary force: **permission**	Illocutionary force: **prescription**
circumstance type **γ: prefers yoga, dislikes gym**	30a: ∅ 30b: y 30c: y	40a: g 40b: y 40c: g+y	30a: ∅ 30b: ∅ 30c: ∅	40a: g 40b: y 40c: g+y
circumstance type **δ: prefers gym, dislikes yoga**	30a: g 30b: g 30c: g	40a: g 40b: g 40c: g+y	30a: ∅ 30b: ∅ 30c: ∅	40a: g 40b: g 40c: g+y
circumstance type **ε: no preference, wants at most one**	30a: g 30b: g or y 30c: g or y	40a: g 40b: g or y 40c: g+y	30a: ∅ 30b: ∅ 30c: ∅	40a: g 40b: g or y 40c: g+y
circumstance type **ε: no preference, wants > one**	30a: g 30b: g or y 30c: g+y	40a: g 40b: g or y 40c: g+y	30a: ∅ 30b: ∅ 30c: ∅	40a: g 40b: g or y 40c: g+y

Table 1: Licit realizations of (54), (55) in different circumstance-types

These realizations (gym: g, yoga: y, both: g+y, neither: ∅) are licit in that they (a) are all practically realizable in these circumstances, as given by *f* (the gym and yoga studio are both open, etc.), and (b) are the most *g*-ideal (non)realizations by the addressee of the conditional goal denoted by the imperative form noted *under the circumstances* specified in α - ε. Hence, in each case, the exercise is permitted by a speaker who is authorized to license that activity, and, in case the utterance has the force of a prescription, the imperative satisfies the speaker's requirements.

Notable comparisons:

1. As expected, in every type of circumstance considered, the addressee's licit realizations are more restricted in response to a prescription than in response to permission:
   a. What one does in response to a prescription of a given form (a, b, or c) is the same whether one wants to exercise (column 3: αγ, αδ, αε) or not (column 5: βγ, βδ, βε), does or does not like a particular exercise (γ vs. δ rows).
      i. The only type of prescription case where one has a choice is in response to (55b) with disjunction, which potentially makes a difference under both columns α and β in whether one chooses g or y, depending on whether one prefers the gym or yoga or has no preference (random choice). (55a) always has the value g, and (55c) always has the value g & y.
   b. But in response to a permission, assuming the preferred exercise is allowed (so excepting (54a) in α, where only g is allowed), what *a* does differs as a function of her druthers: does/doesn't want to exercise (α vs. β), prefers g or y or neither (αγ vs. αδ vs. αε). Values for (54a) vs (55a), and for (54c) vs. (55c) differ across the pairs of cells for every circumstance type.

2. Whenever g or y is a realization in the permission column (54) for a given circumstance type, that realization is also in the corresponding prescription column (55) for that type. So for $u \in (a, b, c)$, $v \in \{g,y,g+y\}$, $\tau \in T$, if $v \in real(54u)(\tau)$, then $v \in real(55u)(\tau)$.
3. But this is not the case in the other direction: It may be that a given exercise type is obligatory in a prescription column but needn't be realized in the corresponding permission column.

Portner (2012) introduces a technical relation *warrant* to permit him to explain the intuited entailments between imperatives:[13]

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

For example, (54b) warrants (54a) because if we first update the context of utterance with (54b), the resulting licit realization in a given context type $\tau \in T$ is no different than the licit realization in τ if we first update with (54b) and then update with (54a): the later addition of (54a) adds no additional options or obligations. Portner's dynamic pragmatics for imperatives involves updating the addressee's ToDo List, whereas on the present account it involves updating the addressee's G with a conditional goal; but in most cases this yields much the same result. Portner uses *warrant* to explain examples like Ross' Paradox and Free Choice in imperatives like (54a) and (54b), as follows:

> When we say that [(54a)] does not "entail" [(54b)], 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, [(54b)] does warrant [(54a)].

Considering the licit realizations in the range of types of circumstances considered in Table 1, this explains:

For permissions:

- Free Choice disjunction in permission imperatives:
  - (54b) warrants (54a): $\alpha\gamma+(54b)/\{y\} = \alpha\gamma+(54b)+(54a)/\{y\}$.
    - Since the addressee has been given permission by the speaker with (54b) to either go to the gym or do yoga and in this context prefers doing yoga, adding the permission to go to the gym (with (54a)) makes no difference: that permission is already warranted.
  - (54b) warrants (54a) in all the other circumstances in Table 1.
- Ross's Paradox in permission imperatives:
  - (54a) doesn't warrant (54b): $\alpha\gamma+(54a)/\varnothing \neq \alpha\gamma+(54a)+(54b)/\{y\}$
    - (54a) doesn't warrant doing yoga, so the subsequent permission (54b) to do yoga makes a difference, since in circumstance $\alpha\gamma$ yoga is preferred to the gym.
- Conjunction entailments in permission imperatives:

[13] In its ordinary sense, various on-line dictionaries take *warrant* to subsume both 'to justify' and 'to necessitate', both 'to authorize' and 'to guarantee', so that it is appropriate both in examples involving mere permission and in those involving obligation.

(54c) warrants both (54a) and (54b), even in $\alpha\gamma$, $\alpha\varepsilon$:

$\alpha\gamma$+(54c)/{y} = $\alpha\gamma$+(54c)+(54a)/{y}

$\alpha\gamma$+(54c)/{y} = $\alpha\gamma$+(54c)+(54b)/{y}

But neither (54a) nor (54b) warrants (54c), since in $\alpha\varepsilon$:

$\alpha\varepsilon$+(54a)/{g} ≠ $\alpha\varepsilon$+(54a)+(54c)/{g+y}

$\alpha\varepsilon$+(54b)/{g, y} ≠ $\alpha\varepsilon$+(54b)+(54c)/{g+y}

For obligations:

- Lack of Free Choice in obligation imperatives:

  (55b) doesn't warrant (55a): $\alpha\gamma$+(55b)/{y} ≠ $\alpha\gamma$+(55b)+(55a)/{g}, and same for $\beta\gamma$.

  Unlike with the permissions, a prescription should be realized, and with a simple prescription like (55a) the addressee has no latitude. After (55b), the issuance of (55a) may have one of two outcomes in circumstance $\alpha\gamma$: either (my hunch) it over-rides the prescription in (55b), in which case the addressee goes to the gym instead (and doesn't do yoga), or (Portner's) both directives remain on the scoreboard with two corresponding optima, the set {g,y}, a conflict to be resolved. In any case, the addressee's options for satisfying the requirements seem to change.

- Ross's Paradox in obligation imperatives:

  (55a) doesn't warrant (55b): $\alpha\gamma$+(55a)/{g} ≠ $\alpha\gamma$+(55a)+(55b)/{y}, and same for $\beta\gamma$.

- Conjunction entailments in obligation imperatives:

  (55c) warrants (55a), (55b) even in $\alpha\gamma$, $\beta\gamma$:

  $\alpha\gamma$+(55c)/{g+y} = $\alpha\gamma$+(55c)+(55a)/{g+y} = $\alpha\gamma$+(55c)+(55b)/{g+y}

  But neither (55a) nor (55b) warrants (55c):

  $\alpha\gamma$+(55a)/{g} ≠ $\alpha\gamma$+(55a)+(55c)/{g+y}

  $\alpha\gamma$+(55b)/{y} ≠ $\alpha\gamma$+(55b)+(55c)/{g+y}

The Lack of Free Choice in obligation imperatives yields an explanation of Veltman's puzzle about (33):

(33) Pay the bill online or take it to the gas company.

The addressee is under obligation to pay her bill: If paying online is more convenient, (33) permits that, her preference (under *g*) ruling out the dispreferred in-person option. But subsequent *Don't pay the bill on-line* would rule that option out, hence strikes us as "contradicting" the permission previously explicitly issued.

So the difference between permissions and requirements is captured by restricting the licit realizations of these imperatives in essentially different ways, modeled with the contextually given ordering source *g*, That permission is granted and obligation is imposed by the speaker is a consequence of the mere utterance, and hence carries over to the conditions given by *g* in the conditional goal to be adopted. Thus, the apparent non-Boolean behavior is not semantic but essentially pragmatic. Setting this account in the formal Gricean framework for pragmatics in §2, thus helps to explain, again without stipulation, desideratum (f).

As Portner (2012) shows, the approach to free choice in imperatives extends straightforwardly to an explanation of how and why it arises in imperatives with indefinites. The difference between his account and mine is that I can use the ordering source *g* to capture the different conditions that distinguish the permissions and prescriptions, something that is not available to Portner because he has no modal in his imperative semantics.

Space precludes a detailed comparison to other accounts of free choice and Ross's paradox in imperatives. As just noted, the present, Portner-based approach, like that of Charlow (2011), is essentially pragmatic. Unlike many other accounts of free choice (Aloni & van Rooij 2004, Schulz 2005, Kratzer & Shimoyama 2002, Menendez-Benito 2005) this approach involves no Gricean reasoning or conversational implicature; nor does it require the partial intentions assumed by Harris (forthcoming). Neither does this account involve special semantic devices devoted to alternatives (Geurts 2005, Simons 2005, Fox, 2007, Aloni 2007) or modals (van Rooij 2008, Ciardelli et al. 2009). Given the usual semantics of disjunction, the Kratzerian pragmatics of domain restriction in modals, and the semantics and pragmatics of imperatives in §3.1, Free Choice and Ross's effect in imperatives are straightforward effects of the relative roles of the interlocutors and their rights and obligations, reflected in the conditional character of the goals pragmatically associated with imperatives.

§4. **Comparison with other accounts**[14]

At this point, it should be clear to anyone familiar with the literature on imperatives that the present account adopts important features of the most linguistically sophisticated, complete accounts on offer, especially that of Portner (2004, 2007, 2011b); Kaufmann (2006 (as Schwager), 2012); and Charlow (2011, 2014). The criteria of adequacy in §1 are based largely on their work and related work in philosophy of language, and many of the central features of this account are borrowed from theirs, as I have tried to make clear above. Here I will focus on a few ways in which this account improves on others, resulting in empirical superiority. Some of the crucial similarities and differences are reflected in Table 1:

[14] For background on clause type, mood, and illocutionary force, see Portner's excellent *Mood* (2018), especially the masterful exposition of the literature in Chapter 3, Sentence Mood, and his §3.3.3, pp.199-220 on imperatives. I have tried to respect his terminology and the careful distinctions he makes. Kaufmann (2021) is an excellent critical overview of the literature on imperatives.

	I	II	III	IV	V	VI	VII
Features: **Accounts:**	semantic type	modal in proffered content, presuposes *f, g*	deontic flavor of semantic modal	illocutionary force is proffered	dynamic pragmatics plays essential role	integrated with goals, plans, priorities G	always actionable
Charlow (2011, 2014, 2018)	property of 'plans'	yes	yes	no	no	yes	no
Kaufmann (2006, 2012)	proposition	yes	yes	no	no	no	no
Portner (2004, 2007, 2018, 2018b)	indexed property	no	N/A	no	yes	no	yes
Roberts	indexed property	yes	no	no	yes	yes	no
Helps Satisfy Desiderata:	(a) no subject, (g) conditional antecedent, (h) not true/false, (i) no eval adjectives, (j) non-assertive	(d) cond'l, (e) flavors, (f) free choice inferences	(b) futurate, (g) scope relative to negation at LF	(c) embedded	(f) deontic parallels, (k) disjuncts, (l) Epistemic Uncertainty	(e) flavors	(e) Expressive option

Table 1: Comparison of Some Theories of Imperative Semantics and Pragmatics

In the table, each theory is characterized with respect to seven possible features, listed across the top row: *yes* if they have them, *no* if they don't. The value is given in green if, as in my account, this choice helps to satisfy the desiderata listed in the last row beneath the relevant features. The choices in red are deemed problematic for the theory in question.

For example, Portner's theory, from which I borrow heavily (features I, IV, and V), does not have a modal in the proffered content of an imperative clause (feature II), and this makes it difficult for him to give a natural account of conditional imperatives and of how the modal base and ordering source determine the range of attested directive flavors, as illustrated in §3.2, and their role in free choice disjunction (§3.2.1). Portner derives modal force solely from the pragmatics of imperatives; in his theory they are added to a ToDo list, which (like my G) has an essential deontic character. But because everything in that list is to *do*, he cannot readily account for expressive directions (VII). And in order to account for different directive flavors, he has to posit different ToDo lists, each with their own flavor: How many of these lists are there, what is

their relationship, and how are they related to the rest of the pragmatics? These problems are avoided on this account by introducing directives into a unified, independently motivated G, with complex relations between the goals, plans and intentions it includes. Moreover, G reflects the evident goals and plans not only of the addressee but of the speaker as well, so that to model how we grasp the intended meaning of an imperative utterance we can naturally bring to bear the speaker's intentions and the relative rank of speaker and addressee—as reflected in some of the examples worked out in the previous section; in particular the speaker's intentions can be naturally brought to bear as well in expressive directives and for other jussive functions like Promissives, and for the kind of directions (Charlow 2011) issued in response to questions based on mere curiosity (where the addressee may not intend to follow them and the speaker doesn't care either).

From Kaufmann's detailed, subtle theory I have borrowed the modal aspect of the semantics of imperatives, and the use of Kratzer's *f* and *g*. There are two crucial differences between her theory and mine. First, she takes imperatives to denote propositions (I), problematic for desiderata (a), (h), (i) and (j). She argues that the failure of imperatives to occur in the antecedent of a conditional (g) follows from their performative character, since performative modal declaratives with *hereby* are also infelicitous in conditional antecedents. But if the deontic modal in an imperative is part of its proffered content, why can't the modal in an imperative occur embedded under the scope of negation (g)? Second, Kaufmann does not explore how an independently motivated dynamic pragmatics can help to explain the pragmatic features of imperatives (V) (VI): She simply stipulates Epistemic Uncertainty and a range of other constraints on imperative interpretation as presuppositions of imperative mood; but here these are derived from the role of imperatives in the more general dynamic pragmatics plus the character of G in the context (as explained in Roberts 2018). And though Kaufmann uses *f* and *g* in her excellent, detailed exegesis of the range of directive flavors, I would argue that drawing their contents from CG and G in the context of utterance, given QUD, helps to make sense of how we understand which conditions and priorities come to bear in a given context of utterance (VI). Finally, with the dynamic pragmatics and updating to G, we can explain the deontic flavor of directives, as does Portner, as a pragmatic feature (III), making the proffered modal itself merely futurate (b), and thereby helping to explain the differences from the logical form of a deontic declarative (g).

In several respects, Charlow's theory is the most similar to this one. He differentiates the semantic type of an imperative clause from that of other clausal moods (I), includes a modal in the proffered content (II) (albeit, like Kaufmann, a deontic (III)), and takes the proffered content to be a property of plans. Charlow uses the term *plan* to denote a set of propositions, of the type given by the ordering source *g* in our account at any given circumstance of evaluation. The value of that function is correlated with a preference ordering over worlds, as in Kratzer: worlds which realize more of those propositions are ranked higher than others. So a property of a plan is a function from plans to propositions: "the property a plan has when it is in line with how the imperative tells the agent to plan". In our terms, if the proposition resulting from the addressee realizing the imperative is among those characterizing the addressee's ideal plan—something they intend to realize as given by *g*, then it is "in line with" that plan. Thus, one might compare Charlow's semantics for imperatives with mine, as follows: Whereas I abstract on the subject of a modal proposition to derive a property (targeted to the addressee), Charlow starts with the modal proposition (his is deontic in flavor vs. my futurate) and abstracts on the ordering source

of the modal. He doesn't offer a dynamic pragmatics, but one could readily adopt that and characterize his resulting plan as a modification to G. Charlow (2011) displays a sophisticated grasp of the ways that plans and priorities are organized and how this comes to bear on the attested flavor of a given directive (VI), one completely compatible with my understanding of G. And unlike Portner, he does not assume that the plans in question are always actionable, leaving room for both Expressives and other "soft" imperatives like invitations and idle inquiries (VII). He takes directive force to be part of the conventional character of the illocutionary force (feature IV), but says it's "defeasible". It strikes me that he could just as well adopt Portner's Force Linking principle, as I have done here. In parallel with Kaufmann on the values of III and V/VI, Charlow shares a few of the same problems in satisfying the relevant desiderata. But more deeply, I question the derivation of the proffered content of a clause containing a modal operator by abstraction on the ordering source *g*: There is no evidence that *g* itself is a syntactically subcategorized argument of a modal. And it doesn't seem like proffered content, instead (like domain restriction generally, per von Fintel 1994, Roberts 1995) acting like a speaker's presupposition. This is not a devastating criticism, but I would submit that insofar as the present account is more in line with the subjectless surface form of imperatives, and with the similarities across languages between imperatives and subjectless infinitivals (Portner 2018), the property denotation is more linguistically natural.

There are, of course, many other recent linguistically-informed theories of the imperative worthy of careful consideration. Among them:

- Han (1998): for most imperatives—those with the canonical morphosyntax—**builds illocutionary force into semantic content at LF**, at least of root imperatives, using this to drive verb-movement to the left periphery in many languages. Important for its cross-linguistic emphasis.
- Truckenbrodt (2006a): initially **builds illocutionary force into the functional head C at LF**. In a response to commentaries (2006b), he instead takes force to be given by a pragmatic rule applying to root clauses.
- Barker (2012): takes imperatives to denote actions. The current account verifies the underlying intuition: instead of *denoting* actions, here (non-expressive) imperatives *propose* actions.
- Condoravdi & Lauer (2012): Offer an excellent account of performative speech acts; see Roberts (2018) where I adopt their view of these and discuss its implications for speech act theory. **Build illocutionary force into compositional semantic content**.
- Krifka (2014, 2021): **builds illocutionary force into LF**, predicting that force is part of the conventional proffered content of an utterance. Assumes force even in embedded clauses.
- Starr (2018): Like Portner, takes imperatives to denote an indexed property; but **builds illocutionary force into the semantics of imperatives**, giving them a dynamic, context-change-potential interpretation.
- Moltmann (to appear): argues that attitudinal objects, including **imperatives, incorporate illocutionary force**, with correspondingly different satisfaction predicates, using a notion of *direction of fit* from speech act theory to distinguish between two main classes.

As highlighted, most of these accounts share the assumption that the illocutionary force of an imperative is built into their conventional content. For example, Krifka (2021) stands in a long, illuminating tradition of German linguistic work on speech acts. We agree about one of the

novel aspects of his account, from the perspective of that tradition: Illocutionary force is about update potential; it tells us how the utterance is intended by the speaker to update the context of utterance. But Krifka builds illocutionary force into the conventional content of imperative clauses, as reflected at LF, changing the static content of the clause into a dynamic semantics, a Context Change Potential.

From a theoretical point of view, whether encoding force in LF is a good idea depends how what role we want LF to serve in the overall account of meaning we're developing. If you want a single representation of the meaning of an utterance, no matter where all elements of that meaning come from, then so be it: that's your LF. For example, Krifka captures at LF several differences between assertions and explicit performatives, or between descriptive and performative uses of speech act verbs like *nominate*. But this is not the only way to capture the particular attested (in)felicities he discusses there. For example, he observes that an adverb like *truly, indeed,* or slifted (parenthetical and post-posed) *I guess*, indicating level of commitment, is appropriate where the speaker uses a declarative to make an assertion and feels the need to encourage its acceptance by indicating confidence in its truth. But it is quite odd when the speaker expects that her interlocutor knows she is issuing an explicit performative, since (if the speaker is authorized to so perform) the very act of utterance makes the content of the speech act true, the presence of the addressee at such a performance then constituting the best evidence for its truth. As just paraphrased, the infelicity of such adverbs with performative uses is a matter of pragmatic anomaly; there is no need to reflect, say, performativity at LF.

And from an empirical point of view, putting Force in the LF of root imperative clauses is problematic for several reasons, among them those reviewed under II in §2:

(a) Sometimes a root clause by itself has no illocutionary force, instead constituting a fragmentary answer, s.t. only the entire content retrieved has illocutionary force: (48), (49).

(b) There is no determinate correspondence between the syntactic form of an utterance (its syntactically-given clause-type) and the illocutionary force we understand its utterance to have: Moves may involve evidently insincere uses of the utterance content; a particular clause-type can be used to make a different kind of speech act than it canonically makes (rising declaratives and imperatives, rhetorical questions): (51), (52); and in general, there's no way of determining whether the content *is* asserted/asked/suggested without considering contextual factors like the QUD.

Arguably, the consistent determinates of illocutionary force are contextual factors. And there is another problem:

(c) Encoding force at LF would suggest that this force could be directly addressed in affirming or denying the truth of the proposition expressed. But, the speaker's intentions and commitments in making the utterance cannot be called into question by saying *That's true!* or *That's false!*. Illocutionary force is never part of what's at-issue in the content of an utterance.

Accounts which put force in LF appear to make the wrong predictions on all these counts.

Moreover, purely LF-based accounts of force fail explanatorily: They don't predict which contexts will give rise to a directive interpretation of an imperative utterance and which will not. But once we have a framework which does this, arguably encoding the directive force in LF is

both unnecessary (e.g., for felicity with adverbs, as in Krifka's account) and problematic (for (a) – (c)). Hence, it should be avoided.

§5. Conclusions and prospects

As Emmon Bach taught (class lectures, UMass/Amherst, mid-1980s) "With lambdas you can build the Brooklyn Bridge." Indeed. What I have done in the formal semantics for imperatives is to take the virtues of Kaufmann's approach, building modality into the semantics for imperatives, and abstract on the subject in her semantics to yield a property, thereby deriving some of the virtues of Portner's. Simultaneously, I abstracted away from the deontic character of her modal, deriving that flavor, as in Portner, from the pragmatics.

The assumption that the difference between the clause types arises from their differing semantic types is a realization of the intuition underlying the use of force operators in logical form from Frege till today, which is that there is some kernel content in common between sentences like those in (56), and that the basic content is that observed in the declarative (56a):

(56) a. You will finish your paper.
b. Will you finish your paper?
c. Finish your paper!

Frege's intuition is captured by the fact that the content of the interrogative in (56b) and that of the imperative in (56c) can both be derived from that of the declarative in (56a) by abstraction: In (56b) we abstract over the polarity in (56a) to derive a set of propositions, one being (56a) and the other its negation—reflecting the alternative values for truth. If we had a *wh*-question like *What will you finish?*, we would instead abstract over the *wh*-element to derive a set of propositions differing in the value of the object. In the imperative (56c) we abstract over the subject to yield a property. Then by the Force Linking Hypothesis, the resulting abstracts play distinct roles in the exchange of information in discourse.

What of the modality I have argued we find in the proffered content of an imperative clause like (56c)? That is just a reflection of the essential future orientation of an imperative. We find the same futurate modality in (56a) and (56b)—on a modal view of the future, all these clauses will involve the kind of modal relation we see in the imperatives. It's just that imperatives are always futurate. I take it that this constraint follows not from any stipulation about their LF, but from their pragmatic function: to propose (conditional) goals or ideals for realization. Note in the specification of the scoreboard in §2 that all goals in G are intended to be "realized in the actual world at some $t' > t$", where t is the scoreboard time—i.e., the realization time of a goal will always be in the future relative to the time of utterance. Given the canonical use of imperatives to *propose* an addition to the addressee a's G_a, the goals proposed cannot be satisfied at past circumstances, on pain of incoherence of G_a. It is this essential goal-like default function of imperatives that's reflected in their futurate modality.[15]

[15] In some languages (e.g. French) we find a past subjunctive imperative. But I take it these are effectively counterfactual, with a future orientation relative-to-some counterfactual past time.

But I would argue that the most interesting feature of the present account is the way that it illustrates thesis II in §2: Interpretation is the resolution of a simultaneous equation in multiple variables. What is crucial here is the **architecture of interpretation** as that bears on the resolution of the meanings of imperative clauses, intended to reflect a cognitively interesting competence theory of interpretation which is empirically adequate as well in that it predicts which interpretations will arise in which contexts and explains why. In effect, I have proposed that this architecture involves two independent modules, concurrently constraining the possible interpretation of a given utterance of an imperative clause: the morpho-syntactically determined semantics and the dynamic pragmatics. In a competence theory of interpretation, on this conception, morpho-syntax (with its rule-by-rule correlated compositional semantics) and pragmatics offer strong concurrent constraints, which must be simultaneously satisfied in order for an utterance to be meaningful and felicitous. These two modules thereby constrain each other tightly, though the conventionally given, compositional interpretation is the inviolable foundation. There is a strong analogy with the architecture of visual perception: In parsing an image, percepts at the retina must be respected; but they underdetermine the parse, which is concurrently guided by knowledge and expectations funnelled into the parse by specific sub-modules. See Roberts (2017) for extended discussion and citation of relevant literature.

Just so, in the derivation of meaning, a compositionally determined representation of conventional content, say LF, constitutes the output of the first module. This tightly constrains what belongs in LF: We only encode some particular aspect of the meaning of an expression in its LF if we have evidence that some element(s) in the morpho-syntax of the expression regularly, without fail make(s) that particular contribution to compositional interpretation. Aspects of meaning that vary from context to context are at most represented as variables to be contextually resolved (in ways that may be conventionally constrained, via presuppositions like *f*, *g*, and x_i in our proffered content for the imperative).

If some aspect of meaning, like directive force, does not come about completely regularly, then it does not belong in LF: If we find that it is a clear part of the meaning of the expression only in some utterances, like the free choice implication in disjunctive permission directives, we investigate whether that aspect of meaning can be predicted to arise, or not, as a function of the context of utterance interacting with the proffered content given by the LF. And if that is the case, as I argued in §3.2.1, we determine what contextual factors predict its distribution and how. But in order to do this, we need a theory of context and of how that interacts with conventional content. That is the role that the dynamic pragmatics in §2 is intended to serve: It is the second module of interpretive competence.

The difference between LF-based vs. pragmatic accounts of illocutionary force is not just a matter of taste, but a matter for empirical investigation. More work is needed, both empirical and theoretical, to test the adequacy of the particular assumptions I've made above against the full range of behavior of imperatives in discourse. I hope this essay will spur that kind of investigation.

References

Arbini, Ronald (1969) Tag-questions and tag-imperatives in English. *Journal of Linguistics* 5(2):205–214. http://dx.doi.org/10.1017/S0022226700002243.

Aloni, Maria 2007) Free choice, modals, and imperatives. *Natural Language Semantics* 15:65-94.

Aloni, Maria & Robert van Rooij (2004) Free choice items and alternatives. In G. Bouma, I. Krämer & J. Zwarts (eds) *Proceedings of KNAW Academy Colloquium: Cognitive foundations of interpretation*. Amsterdam: Edita KNAW, 5-25.

Barker, Chris (2012) Imperatives denote actions. *Sinn und Bedeutung 16*.

Bratman, Michael E. (1987) *Intentions, Plans, and Practical Reason*. Harvard University Press, Cambridge, MA.

Charlow, Nathan (2010) Restricting and embedding imperatives. In *Logic, language and meaning: Revised selected papers from the 17th Amsterdam colloquium*, eds. Maria Aloni, Harald Bastiaanse, Tikitu de Jager & Katrin Schulz, 223–233. Berlin: Springer.

Charlow, Nathan (2011) *Practical language: Its meaning and use*. Ph.D.Thesis, University of Michigan.

Charlow, Nate (2014) Logic and semantics for imperatives. *Journal of Philosophical Logic* 43:617-664.

Ciardelli, Ivano, Jeroen Groenendijk & Floris Roelofsen (2009) Attention! *Might* in inquisitive semantics. *Proceedings of SALT 19*. CLC Publications.

Clifton, Charles Jr. & Lyn Frazier (2012) Discourse integration guided by the 'Question under Discussion'. *Cognitive Psychology* 66.2:352-379.

Condoravdi, Cleo & Sven Lauer (2012) Imperatives: Meaning and illocutionary function. In C. Piñon (ed.) *Empirical Issues in Syntax and Semantics*, Volume 9, pp. 1–21.

Crnič, Luka & Tue Trinh (2009) Embedded imperatives in English. In Arndt Riester & Torgrim Solstad (eds.) *Proceedings of Sinn und Bedeutung* 13:113–127. University of Stuttgart.

Culicover, Peter W. (1972) OM-sentences: On the derivation of sentences with systematically unspecifiable interpretations. Foundations of Language 8(2). 199–236. http://www.jstor.org/stable/25000588.

Culicover, Peter W. & Ray S. Jackendoff (1997) Semantic subordination despite syntactic coordination. *Linguistic Inquiry* 28(2). 195–218. http://www.jstor.org/stable/4178974.

Ernst, Tom (2000) Semantic features and the distribution of adverbs. *ZAS Papers in Linguistics* 17, 2000, 79-97. Available on-line at http://www.zas.gwz-berlin.de/fileadmin/material/ZASPiL_Volltexte/zp17/zaspil17-ernst.pdf

von Fintel, Kai & Sabine Iatridou (2003) Epistemic containment. *Linguistic Inquiry* 34(2):173-98.

von Fintel, Kai & Sabine Iatridou (2015) A modest proposal for the meaning of imperatives. Ms., MIT.

Fox, Danny (2007) Free choice disjunction and the theory of scalar implicatures. In Uli Sauerland & Penka Stateva (eds.) *Presupposition and implicature in compositional semantics*. Palgrave-Macmillan. Ms., MIT, 71-120.

Gärtner, Hans-Martin (2015) Root infinitivals and modal particles. An interim report. Ms., HAS-RIL, Budapest.

Geurts, Bart (2005) Entertaining alternatives: Disjunctions as modals. *Natural Language Semantics* 13:383-410.

Giannakidou, Anastasia & Alda Mari (2018) A unified analysis of the future as epistemic modality. *Natural Linguistics and Linguistic Theory* 36:85–129. DOI 10.1007/s11049-017-9366-z
Gunlogson, Christine (2001) *True to Form: Rising and falling declaratives as questions in English*. Routledge, Abingdon.
Han, C.-H. (1998) *The Structure and Interpretation of Imperatives: Mood and force in Universal Grammar*. Ph.D. dissertation, University of Pennsylvania.
Harris, Daniel W. (forthcoming) Imperative inference and practical rationality. Forthcoming in *Philosophical Studies*.
Heim, Irene (1983) On the projection problem for presuppositions (pp. 114–126). *Proceedings of WCCFL 2*, Stanford University.
Huddleston, Rodney (1970) Two approaches to the analysis of tags. *Journal of Linguistics* 6(2):215–222. http://dx.doi.org/10.1017/S0022226700002619.
Karttunen, Lauri (1973) Presuppositions of compound sentences. *Linguistic Inquiry* 4:169-193.
Karttunen, Lauri & Stanley Peters (1979) Conventional implicature. In C.-K. Oh & D.A. Dineen (eds.) *Syntax and Semantics*, Volume 11. NY: Academic Press.
Katz, Jerrold J. & Paul M. Postal (1964) *An integrated theory of linguistic descriptions*. Cambridge, MA: MIT Press.
Kaufmann, Magdalena (2006) (as Schwager) *Interpreting imperatives*. Ph.D. Dissertation, University of Frankfurt.
Kaufmann, Magdalena (2012) *Interpreting Imperatives*. Springer, Studies in Linguistics and Philosophy 88. Revised version of M. Schwager (2006) Ph.D. thesis, University of Frankfurt.
Kaufmann, Magdalena (2021) Imperatives. In Daniel Gutzmann, Lisa Matthewson, Cecile Meier, Hotze Rullmann & Thomas Ede Zimmermann (eds.) *The Wiley Blackwell Companion to Semantics*. John Wiley & Sons, Malden, MA. DOI: 10.1002/9781118788516.sem067
Kaufmann, Magdalena & Stefan Kaufmann (2012) Epistemic particles and performativity. *Proceedings of SALT 22*:208-225.
Kaufmann, Magdalena & Claudia Poschmann (2013) Embedded Imperatives and Echo-Questions. *Language* 89.3:619-637.
Keshet, Ezra (2012) Focus on conditional conjunction. *Journal of Semantics* 30(2):211-256. http://dx.doi.org/10.1093/jos/ffs011.
Keshet, Ezra & David J. Medeiros (2019) Imperatives under coordination. *Natural Language and Linguistic Theory* 37(3):869-914.
Klinedinst, Nathan & Daniel Rothschild (2012) Connectives without truth tables. *Natural Language Semantics* 20(2):137–175. http://dx.doi.org/10.1007/s11050-011-9079-5.
Kratzer, Angelika (1981) The notional category of modality. In H. J. Eikmeyer & H. Rieser (eds.), *Words, Worlds and Contexts* (pp. 38--74). Berlin: de Gruyter.
Kratzer, Angelika & Junko Shimoyama (2002) Indeterminate phrases: The view from Japanese. In Y. Otsu (ed.) *The proceedings of the third tokyo conference on psycholinguistics*. Tokyo: Hituzi Syobo, 1-25.
Krifka, Manfred (2014) Embedding illocutionary acts. In Tom Roeper & Margaret Speas (eds.), Recursion, Complexity in Cognition (Studies in Theoretical Psycholinguistics 43), 125-155. Berlin: Springer.

Krifka, Manfred (2021) Performative updates and the modelling of non-assertoric vs. assertoric speech acts. Slides from a talk at the EXPRESS Workshop on Non-Assertoric Speech Acts, Amsterdam, January 28-29, 2021.
Menéndez-Benito, Paula (2005) *The grammar of choice*. Ph.D. Dissertation, University of Massachusetts, Amherst.
Moltmann, Friederike (to appear) Truthmaking, satisfaction, and the force-content distinction. To appear in G. Mras & M. Schmitz (eds) *Force, Content, and the Unity of the Proposition*. Rutledge.
Ninan, Dilip (2005) Two puzzles about deontic necessity. In J. Gajewski, V. Hacquard, B. Nickel & S. Yalcin (eds.) *New work on modality*, Vol. 51 of *MIT Working Papers in Linguistics*. Cambridge, MA: MITWPL, pp.149-178.
Pak, Miok, Paul Portner & Rafaella Zanuttini (2004) Deriving Clause Types: Focusing on Korean. In *Proceedings of the Linguistic Society of Korea 2004*, Yonsei Institute of Language and Information Studies (pp. 359–368). Seoul: Hanshin Publishing Company.
Portner, Paul (2004) The semantics of imperatives within a theory of clause types. In K.Watanabe & R. Young (eds.) *Proceedings of SALT 14*. CLC Publications.
Portner, Paul (2007) Imperatives and modals. *Natural Language Semantics* 15:351-383.
Portner, Paul (2011) Permission and choice. In G. Grewendorf & T.E. Zimmermann (eds) *Discourse and Grammar: From sentence types to lexical categories*. Studies in Generative Grammar. Mouton de Gruyter, Berlin.
Portner, Paul (2017) Imperatives. In Maria Aloní & Paul Dekker (eds.) *The Cambridge Handbook of Formal Semantics*. Cambridge University Press., https://doi-org.proxy.ohiolink.edu:9100/10.1017/CBO9781139236157
Portner, Paul (2018) *Mood*. Oxford University Press.
Portner, Paul (2018b) Commitment to priorities. In Daniel Fogal, Daniel W. Harris & Matt Moss (eds.) *New Work on Speech Acts*. Oxford University Press, pp.297-316.
Potts, Chris (2005) *The Logic of Conventional Implicatures*. New York: Oxford University Press.
Roberts, Craige (1989) Modal Subordination and Pronominal Anaphora in Discourse. *Linguistics and Philosophy* 12.6:683-721.
Roberts, Craige (1996/2012) Information Structure: Toward an integrated theory of formal pragmatics. Published, with a new afterword, in 2012 in *Semantics and Pragmatics* 5.7.
Roberts, Craige (1998) Focus, the Flow of Information, and Universal Grammar. In Peter Culicover and Louise McNally (eds.) *The Limits of Syntax*, Academic Press, pp.109-160
Roberts, Craige (2004) Context in dynamic interpretation. In Laurence Horn and Gregory Ward (eds.) *Handbook of Contemporary Pragmatic Theory*, Blackwell, 197-220.
Roberts, Craige (2012b) Information Structure: Afterword. *Semantics and Pragmatics* 5.7.
Roberts, Craige (2017) Linguistic convention and the architecture of interpretation. *Analytic Philosophy* 58.4:418-439.
Roberts, Craige (2018) Speech acts in discourse context. In Daniel Fogal, Daniel W. Harris & Matt Moss (eds.) *New Work on Speech Acts*. Oxford University Press, pp.317-359.
van Rooij, Robert (2008) Towards a uniform analysis of *any*. *Natural Language Semantics* 16:297-315.
Ross, Alf (1941) Imperatives and logic. *Philosophy of Science* 11:30-46.
Schulz, Katrin (2005) A pragmatic solution for the paradox of free choice permission. *Synthese* 147:343-377. URL http://www.jstor.org/stable/20118661.

Simons, Mandy (2005) Dividing things up: The semantics of Or and the modal/Or interaction. *Natural Language Semantics* 13:271-316.
Stalnaker, Robert (1979) Assertion. In Peter Cole (ed.) *Syntax and Semantics* 9.
Starr, William B. (2013). A Preference Semantics for Imperatives. Ms. Cornell University, URL http://williamstarr.net/research/a_preference_semantics_for_imperatives.pdf.
Thomason, R. H. (1984) Combinations of tense and modality. In D. Gabbay & F. Guenthner (eds.) *Extensions of Classical Logic*, Volume 2 of Handbook of Philosophical Logic, pp. 135–165. D. Reidel.
Judith Tonhauser (2020) Projection variability in Paraguayan Guaraní. *Natural Language and Linguistic Theory* 38:1263-1302.
Judith Tonhauser, David Beaver & Judith Degen (2018) How projective is projective content? Gradience in projectivity and at-issueness. *Journal of Semantics* 35:495-542.
Judith Tonhauser, Marie-Catherine de Marneffe & Judith Degen (2020) Evaluative adjective sentences: A question-based analysis of projection. *Glossa: a journal of general linguistics* 5(1): 87. 1–33.
Truckenbrodt, Hubert (2006a) On the semantic motivation of syntactic verb movement to C in German. *Theoretical Linguistics* 32(3):257-306.
Truckenbrodt, Hubert (2006b) Replies to the comments by Gärtner, Plunze and Zimmermann, Portner, Potts, Reis, and Zaefferer. *Thoretical Linguistics* 32(3):387-410.
Veltman, Frank (2009) Imperatives at the semantics/pragmatics borderline. Ms., University of Amsterdam ILLC.
Veltman, Frank (2018) Notes on imperatives. Available at https://staff.fnwi.uva.nl/f.j.m.m.veltman/papers/CompilationImp.pdf
Zanuttini, Rafaella, Miok Pak & Paul Portner (2012) A syntactic analysis of interpretive restrictions on imperative, promissive and exhortative subjects. *Natural Language and Linguistic Theory* 30.4:1231-1274.