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Optimizing the Future: Imperatives between Form and Function

Syllabus

(material in boldface: included in this reader)

Monday Clause types in grammar and in use

issues: notion 'imperative', a cross-linguistic understanding of clause-types, drawing the line between semantics and pragmatics

Gazdar, G. (1981) Speech act assignment. In: A. Joshi, B. Webber, and I. Sag (eds.) *Elements of Discourse Understanding*. Cambridge: Cambridge University Press.

Sadock, J. M. & A. M. Zwicky (1985) Speech act distinctions in syntax. In T. Shopen (ed.) *Language Typology and Syntactic Description*, vol I. Cambridge: Cambridge University Press. pp. 155-196.

Schwager, M. (2006) *Interpreting Imperatives*. Doctoral dissertation, Frankfurt University. Ch.1: "Individuating Imperatives", pp. 13-28.

Tuesday Classifying semantic approaches to imperatives

issues: reduction to propositions (three types: *you will, you should, I order you to*), pragmatic concepts as semantic denotata, update functions as semantic denotata, "traditional" semantic objects of particular/new logical types

Hamblin, C. L. (1987) *Imperatives*. New York: Blackwell. [three reduction strategies]

Krifka, M. (2001) Quantifying into question acts. *Natural Language Semantics* 9, 1-40.
Krifka, M. (2004) Semantics below and above speech acts. Talk at Stanford University, April 9. `http://amor.rz.hu-berlin.de/~h2816i3x/`
[pragmatic objects as semantic denotata]

Asher, N. & A. Lascarides (2003) Imperatives in dialogue. In P. Kuehnlein, H. Rieser, and H. Zeevat (eds.) *Perspectives on Dialogue in the New Millennium*. Amsterdam: Benjamins.
`http://homepages.inf.ed.ac.uk/alex/papers/imps.pdf`
[dynamic *you will*-reduction]

Mastop, R. (2005) *What can you do?* PhD thesis, ILLC Amsterdam. [new semantic types]

Portner, P. (2006) The semantics of imperatives within a theory of clause types. In K. Watanabe & R.B. Young (eds.) *Proceedings of SALT 14*. New York: CLC Publications.
`http://semanticsarchive.net/Archive/mjiZGQ4N/PortnerSALT04.pdf`
[particular semantic types]

Schwager, M. (2006) *Interpreting Imperatives*. Doctoral dissertation, Frankfurt University. Ch.3:"Ways of Interpreting Imperatives", pp. 37-79.
[overview & discussion]

Wednesday Modality

issues: descriptive and performative modals, Common Ground and Permissibility Sphere, context dependence

Lewis, D. (1979) A problem about permission. In E. Saarinen & al. (eds.) *Essays in honor of Jaakko Hintikka*. Dordrecht: Reidel.

van Rooy, R. (2000) Permission to change. *Journal of Semantics* 17, pp. 119-145.

Kratzer, A. (1991) The notional category of modality. In H. Eikmeyer & H. Rieser (eds.) *Words, Worlds, and Contexts. New Approaches in Worlds Semantics.* Berlin: de Gruyter.

Thursday Imperatives as modal operators

issues: imperatives as modalized propositions with an additional presuppositional meaning component

Schwager, M. (2006) *Interpreting Imperatives*. Doctoral dissertation, Frankfurt University. Ch.3: "Imperatives as Graded Modals", pp. 99-166.

Schwager, M. (2005) Permitting Permissions. In J. Gervain (ed.) *Proceedings of the 10th ESSLLI Student Session*, Edinburgh.

Friday Imperatives in connection to other grammatical phenomena

issues: temporality, conditionals, embedding, pseudo-imperatives

Schwager, M. (2006) Conditionalized Imperatives. In Christopher Tancredi & al. (eds.) *Proceedings of SALT 16*. CLC Publications.

Schwager, M. (2008) Imperatives and Tense. Talk at Workshop 'Tense Across Languages', Jahrestagung der DGfS, Bamberg.
`http://user.uni-frankfurt.de/~scheiner/bambergHO.pdf`

Schwager, M. (2006) *Interpreting Imperatives*. Doctoral dissertation, Frankfurt University. Ch.9: "Embedding Imperatives", pp. 193-218.

Schwager, M. (2005) Exhaustive Imperatives. In P. Dekker & M. Franke (eds.) *Proceedings of the 15th Amsterdam Colloquium, December 19-21, 2005*. Amsterdam: ILLC.

Chapter 1

Individuating Imperatives

In many respects, the discussion of imperatives is blurred by confusion as to what one is talking about. This is aggravated by the fact that researchers in different disciplines use 'imperative' as a terminus technicus for a phenomenon emerging at the respective interfaces. Consequently, linguists and philosophers working in various subdisciplines of their fields (including morphology, syntax, semantics, pragmatics, logic, artificial intelligence, ethics, ...) each have their own understanding of what an imperative is. Or rather, most of the disciplines show a tendency towards a default understanding, the principal parameter being whether the bias of the criterion used for individuation is on the form or on the function side.

This being an investigation in natural language semantics, I am interested in an understanding of imperatives that relates the concept to natural language grammar. The idea is to understand `imperative` as one of the major sentence moods, namely the one that is not concerned with what the world is like at the moment, but is rather used to request or command what the world is to become like. Being interested in grammar, I will of course also be concerned with `imperative` as a morphological form of the verb.[1] Before saying anything about the role of semantics with respect to imperatives, this pre-theoretic understanding of the topic has to be made more precise.

I see three radically different ways of determining what should count as an imperative. First, it could be taken as a classification for a certain linguistic form. Second, it could stand for a certain pair of form and function. And third, it could denote the class of objects that are used to fulfill a certain communicative function (theoretically, in the sense of potential usage, or empirically, referring to usages observed in a corpus).[2]

In the following, I want to show that neither of the two extreme positions (namely individuation by function, cf. 1.1, and individuation by form, cf. 1.2), can provide

[1] To avoid confusion, I will sometimes distinguish this as $\texttt{imperative}_{v-form}$ in the following.

[2] As I have already indicated above, the function itself could of course not be an appropriate object to be studied in semantics. Nevertheless, such a concept of a particular function in communication could still be used to single out the class of linguistic items one wants to talk about.

us with a concept of the object we are after intuitively, namely a sentence mood on a par with the slightly less controversial classes of declaratives and interrogatives.

1.1 Trying a Purely Functional Individuation

The solution adopted rarely in linguistics[3], but quite freely (and often implicitly) in more philosophically oriented literature, relies on a purely `functional conception` of imperatives. This is clearly what underlies Hamblin's (1987:3) decision not to *make a case for any particular use of the word* imperative *other than what I take to be the usual and natural one.* and leads to a couple of shortcomings discussed in Merin (1992).

But can we make the functional individuation precise enough to provide us with a useful classification for research in natural language semantics? I do not think so. The most widespread functional understanding of 'imperative' amounts to something like 'directive speech act' or 'conduct-guiding act in conversation'.[4] Such a purely functional understanding is hopelessly forced to classify as imperatives not only explicit performatives (cf. (1a)) or certain usages of modals (cf. (1b))[5], but likewise questions used in indirect speech acts (cf. (1c)) and elliptic utterances (cf. (1d)). All of them are used to give an order - certainly a most prototypically directive/conduct-guiding speech act. Therefore, we would have to call them imperatives (and this is indeed the position taken by Hamblin 1987).

(1) a. I hereby order you to leave.
b. You must leave immediately!
c. Could you please leave the room?!
d. Out!

It should be immediately clear that this fails to provide an interesting basis for semantic discussion. Taking into account linguistic considerations, we would clearly want to keep these cases separate.

An explicit argumentation for keeping e.g. indirect speech acts apart is given by Sadock and Zwicky (1985). In order to allow for strings normally taken to be interrogatives (cf. (1c)) to count as imperatives, we would have to assume that they were truly ambiguous between a question and an imperative understanding. But the case of indirect speech acts seems to be fundamentally different from other instances of natural language ambiguities. (i) The effect of indirect speech acts draws precisely on a deviation from a usage associated with their conventionally associated meaning. (ii) A duality between posing a question and giving a command does not seem to be part of the grammar of the respective language (English, in

[3]van Rooy (2000) maybe comes close to it in using 'imperative' to designate performatively used modal verbs.

[4]Broadie (1972) reserves 'imperative' for commands and orders and coins `imperation` for the larger conduct-guiding class of conversational moves.

[5]Modals under such a usage are often called `performative modals`, cf. Section 3.1.2.

that case); in that, it differs crucially from structural ambiguities that can often be resolved by grammatical operations. Consider for instance (2) (their (144)/(145)):

(2) a. The boy decided on the boat. &&
b. The boat was decided on by the boy. 1

And (iii), indirect speech acts differ from classical ambiguities in not being language specific. *Equivalent forms in other languages are likely to be just as effective in getting requests across and would succeed for exactly the same reasons.* (Sadock and Zwicky 1985:192)

1.2 Trying a Purely Formal Individuation

Assume now in contrast that `imperative` classifies certain linguistic forms.[6] We could then only draw on formal features exhibited by certain morphological or syntactic entities, dependent on the possibility to understand 'imperative' as referring to verbal forms or to entire sentences. One possibility to make sense of imperatives as form types at sentence level consists in 'a matrix sentence that contains an uninflected main verb and lacks a subject pronoun'. This might be a good approximation to single out the class of linguistic elements traditionally understood as English imperative clauses (but cf. Bolinger 1967, Broadie 1972 for problems). We could then safely talk about the class of sentences that has exactly these properties in English. Nevertheless, in general, we take imperative to be a cross-linguistically applicable concept. And intuitively, what we want to single out here is not just a certain morphosyntactic property a language might instantiate or not (viz. a language might use sentences with uninflected verb forms and lacking subject pronouns for some purpose or other). It might indeed be interesting to see what is cross-linguistically encoded by such forms. And interestingly enough, we would find that many languages in fact use them to encode a clause type that often serves for requesting and commanding (thus the intuitive understanding of imperative we are after). Nevertheless, such an understanding of our empirical finding would already presuppose that we know what we are looking for. Remember that, to us, these formal properties only become of interest in connection with other properties, namely, (i) some sort of default function of influencing the addressee's behaviour, and (ii) in relation to other types of sentences that are traditionally classified as declaratives, interrogatives or exclamatives. Consequently, even if an imperative was to be identified with some sort of syntactically marked type of matrix sentence, we would still have to know which type of sentence to pick out (e.g. given an arbitrary language, we would not want to single out the type of object normally used for questioning). Again, that could not be done on the basis of purely formal criteria. Even if cross-linguistically lack of an overt subject pronoun and unusual

[6] In the following I will presuppose the common core underlying all attempts to single out imperatives. I will thus not be concerned with the possibility of understanding 'imperative' as referring to the class of interrogative complementizers.

inflectional poverty seem to constitute a characteristics of sentences traditionally classified as imperatives, other languages employ sentence final particles (e.g. Korean) or morphological marking of the verb (e.g. Maricopa[7]) to do so, and some even have special pronouns to designate the imperative subject (e.g. Yokuts[8]), (cf. Sadock and Zwicky 1985, Wratil 2004 for general discussion).

Therefore, we may conclude that the traditional concept of imperative as a cross-linguistic category can not be rendered in purely formal terms.

1.3 Imperatives as Clause Types Individuated by a Form-Function Pair

The (heuristic) concept of imperative I want to employ is an understanding as a `clause type` as put forth in Bach and Harnish (1979) and Sadock and Zwicky (1985).

Clause types are defined as pairs of form types at sentence level and their (prototypical) functions. They have to form a partition of the class of sentences (that is, each sentence belongs to exactly one clause type). Given this understanding of clause types as inducing a partition, we find sets of sentences the members of which differ only with respect to their respective sentence type, e.g. (3):

(3) a. Verena called Christian.
b. Did Verena call Christian?
c. Verena, call Christian!

The following observation concerning universal tendencies should be taken in favor of the cross-linguistic relevance of the distinction, thereby providing an incentive to explain these pairings:

> It is in some respects a surprising fact that most languages are similar in presenting three basic sentence types with similar functions and often strikingly similar forms. These are the declarative, interrogative, and imperatives. (Sadock and Zwicky (1985:160))

I assume that syntax distinguishes a set of form types D.[9] Pragmatics distinguishes a set of speech act types T.[10] A clause type system CT for a language L can now be defined as in (4).

(4) The clause type system of a language L is a set $CT_L \subseteq D \times T$, where D is the universal set of sentence level form types (LFs), T the universal set of speech acts.

[7] A North American Indian language spoken in Arizona.

[8] A family of North American Indian languages spoken in central California.

[9] With Gazdar (1981), I assume that these are not surface structures but logical forms. The objects of D are already language independent. Not all languages have to have grammaticalized the same inventory of form types at sentence level.

[10] Throughout the entire text, I will use Small Caps to indicate speech act types.

Adding the category of `exclamatives` to these three most common types[11] , we arrive at the following classification:

(5) `Clause Type System`

a. `declarative.ct` := <declarative.ft, ASSERT>
b. `interrogative.ct` := <interrogative.ft, QUESTION>
c. `imperative.ct` := <imperative.ft, REQUEST>
d. `exclamative.ct` := <exclamative.ft, EXPRESS.SURPRISE>

Looking at the picture in (5), it is easy to see that the traditional way of assigning the same name to both the form type (.ft) and the pairing of this form type with a function type to give a clause type (.ct) could give rise to confusion. Having clarified this, we can pursue in taking clause types to consist of the respective form type paired with its prototypical function. Wherever a more fine-grained distinction is needed, I will indicate .ft or .ct respectively. The right hand side of the object is meant to indicate a function type, which I will understand as a `speech act type`.[12] Being ultimately interested in the semantics of imperatives, I will not be able to give an elaborate discussion of speech acts (but cf. Section 2 for the conception of the semantics-pragmatics interface). For the moment, it should suffice that speech acts are the moves in the conversational game people make with utterances. Thereby, they change the commitments (both with respect to how to act and what to believe) of the various participants in the conversations.

But not only does each form type $d \in D$ encoded by a language L correspond to its prototypical speech act type $t \in T$ (according to the clause type system CT of the respective language L), I will also assume that each normal utterance[13] is assigned a speech act type.[14] In Section 1.4, we will be concerned both with the prototypical pairing as encoded in the clause type system and the actual pairing of sentences and speech act types for concrete utterances.

Endowed with this understanding of clause types, we can try to individuate imperatives across languages as elements in a closed system of sentence types. The

[11] I abstract away from permissives, commissives and the like, as are for example found in Korean (cf. Pak, Portner, and Zanuttini 2004 for extensive discussion). Ignoring permissives might at first glance seem problematic when studying imperatives, given that this is a function partly covered by imperatives in other languages (cf. Section7). Nevertheless, I will argue that it is unproblematic in so far as even a language with an overtly marked permissive as Korean allows for a strikingly similar range of usages as for example German or English do (both lacking permissives).

[12] These are often called illocutionary forces, cf. e.g. Gazdar (1981), who reserves `speech acts` for the combination of sentence meaning and illocutionary force in a concrete utterance. *Speech act types* would then most likely be categories of speech acts comprising the sentence meaning, e.g. the type of 'commanding someone to pass the salt', a concept I have not reserved a term for. For me, the corresponding speech act type is just 'commanding'. I avoid the term 'illocutionary force' because of the heavy bias it seems to have achieved in favour of the `literal meaning hypothesis`, cf. (18).

[13] Gazdar (1981) introduces "normal utterances" for those utterances that are used to perform a speech act.

[14] Cf. Kissine (2005) for a DRT-implementation of the idea that utterances come with a speech type variable that has to be resolved just like any other presupposition.

crucial point of this understanding is that it ultimately gives primacy to the form side. That is, if we have individuated a certain sentence form type as being prototypically used as a request, a token of that form type in utterances that clearly cannot be meant as requests should not be taken as evidence for its 'not being an imperative' in those cases. At best, we could claim that two form types are related to one and the same surface structure, giving thus rise to an instance of ambiguity. At first glance, mutual exclusion or deviation from a clause type's prototypical function often seems to constitute an argument in favour of postulating such ambiguities. Consider for example (6).

(6) a. Close the door!
b. Be blond!

While it is easy to imagine (6a) used as a command (assumed to be the prototypical function of an imperative), usage as a command seems hardly possible for (6b). Should this mean that cases of apparent imperatives containing individual level verbs[15] like (6b) should belong to yet another clause type (e.g. `optative.ct`, prototypically linked to wishes)? Certainly not, I would say. Rather, we should make sure that mutual exclusion between clause types is not based on lexical properties. Instead of distinguishing two clause types that occur depending on lexical properties of the respective content propositions, I acknowledge that one and the same clause types interacts with certain lexical properties to render a particular speech act type more plausible in the respective context (ideally, all clause types should be able to co-occur with all propositions - especially imperatives are known to be problematic in that respect, though).

Note that the understanding of a clause type system we have put forth does not require all languages to encode the same inventory of clause types. In particular, not all languages have to encode imperatives (that is, have a clause type < imperative.ft , REQUEST>), though most of them do (cf. Sadock and Zwicky 1985; and Portner 2005, who also aims at an explanation for it, cf. Section 3.2.2).

In most languages, though not all, a morphological form of the verb figures prominently in distinguishing the form type (exceptions being e.g. Hungarian that uses subjunctives; or Chrow that marks imperatives by intonation, cf. Sadock and Zwicky 1985). To an overwhelmingly large extent, these forms are indeed confined to the sentence type, which leads to 'imperative' used interchangably for morphological verb form and sentence mood - a common practice I will also subscribe to as long as it does not cause any harm. Where there is need for clarification I will resort to 'imperativized verb' vs. 'imperative clause type'.

But some languages also distinguish subtypes of the imperative clause type,

[15] Cf. Kratzer (1995) for the distinction between `stage` and `individual level predicates`. It has been claimed at various points that individual level predicates cannot be imperativized (cf. e.g. Han 1998). I do not think that this is correct. (6b) is a perfectly natural thought (or, rather silent wish) for someone on his/her way to a blind date, hoping that the person one is about to meet would be blond.

as for example Tagalog, which distinguishes imperatives influencing immediate vs. non-immediate future, or Maidu[16] that distinguishes imperatives to be carried out in presence or absence of the speaker.

A closely related clause type (maybe not a subtype) is constituted by past imperatives as existing at least in Dutch (cf. Mastop 2005) and Tsakhura[17] (cf. Wratil 2004). These express that something should have been done at a particular time in the past (cf. Section 6.1.1 for discussion).

Another important area of typological variation is constituted by person agreement. Some languages seem to have specialized form types for third person imperatives (cf. Mauck 2005 on the Indian language Bohjpuri). Other languages allow for first person equivalents of imperatives (called `hortatives`). English *let's* + INFINITIVE has been handled as a case in point, likewise German subject-verb-inverted structures without interrogative intonation:

(7) a. Let's get started now.
b. Fangen wir endlich mal an!
start.1P.PL we finally PRT VPRT
'Let's finally get started.'

Nevertheless, these cases hardly ever reach the same degree of grammaticalization (cf. e.g. Hopper and Traugott 1993) as second person imperatives do. Therefore, in this study, I will confine my attention to the clearly addressee related constructions. Further research will have to show how much of it carries over to investigating these other cases. Hopefully, the insights gained into the case of second person related imperatives provide a basis for discussion of third and first person imperative-like clause-types (or imperative subtypes). There, the question is above all if the addressee still figures prominently as the one to bring about the action of someone else doing what is requested, or if this should rather be treated as an epiphenomenon, maybe due to Gricean (1975a) relevance. For some cases, it is quite hard to decide between a subcase of an existing clause type and an independent but related clause type. An instance where this has indeed led to some discussion (cf. Sadock and Zwicky 1985) is negation. The data in (8) would in principle allow for either of the theories spelt out in (9):

(8) a. Get yourself one more beer.
b. Don't get yourself one more beer.

(9) a. < imperative.ft, REQUEST>
< prohibitive.ft, PROHIBITION>
b. < imperative.ft, REQUEST>

Depending on whether one wants to assume (9a) or (9b), (8b) is understood either as a negated imperative (used e.g. to request that something should not happen), or an independent sentence type `prohibitive` (used to issue a prohibition). Opting for

[16] A cover term for three closely related North American Indian language spoken in California.
[17] A (Lezgi-Samur) Dagestan language spoken in Azerbaijan.

the solution in (9a) would lead one to claim that English does not allow for negated imperatives. Ultimately, questions of that sort can only be answered by closer investigation of the data in the respective language. For the case of English imperatives formed from propositions containing negation/prohibitives, I would want to argue in favor of (9b). A strong motivation for that is the fact that we find the same range of non-prototypical functions for the negative case as for the positive case. Just as (10a) can under certain circumstances be used as stepping aside from a prior request that the addressee should not go, so can (10b) from the one that he should go. Likewise, (10c) and (10d) seem to be parallel in being able to convey permissions to take an apple and to abstain from taking an apple respectively.

(10) a. Okay, go then.
b. Okay, don't go then.
c. Take an apple, if you like.
d. Don't take one, if you don't want to.

I will therefore conclude that (at least in English) negation counts as part of the semantic object that expresses the content of a request (or a commission or permission in less prototypical cases).[18]

Having said that much, I want to show that the adopted understanding of 'imperative' leaves us with a wide range of functions besides the prototypical request.

The very detailed study of German imperatives by Donhauser (1986) lists at least the following functions imperatives can be used for; typological studies like Palmer (1986), Bybee, Pagliuca, and Perkins (1994), and Xrakovskij (2001) parallel these observations for all sorts of languages whose imperatives have been studied. It is particularly interesting that this spectrum of usages is even available in languages that have more specialized forms grammaticalized to express one or the other of them (e.g. Korean has an explicitly marked clause type `permissive` in addition to imperatives, but can still employ imperatives to convey permissions).

(11) a. Lies das!
read.IMP this
'Read this!' COMMAND
b. Bleib weg vom Projektor!
stay.IMP away from-the projector
'Stay away from the projector!' WARNING
c. Geh nicht auf diese Party!
go.IMP not to this party
'Don't go to the party!' PROHIBITION
d. Hab viel Spaß auf der Party!
have.IMP lot fun at the party
'Have fun at the party!' WISH
e. Dreh bitte das Licht ab.
turn.IMP please the light off

[18] Compare also Sadock and Zwicky (1985) for arguments against an independent clause type `denial`.

'Turn off the light, please!' REQUEST

f. Nimm den A, wenn du nach Harlem willst.
take.IMP the A, if you to Harlem want
' Take the A train if you want to go to Harlem.'[19] ADVICE

g. Fahr zur Hölle!
go.IMP to-the hell
'Go to hell!' CURSE

(12) a. (Es beginnt um 8, aber) komm früher, wenn du magst!
(it starts at 8, but) come.IMP earlier, if you like
'(It starts at eight, but) come earlier if you like!'[20] PERMISSION

b. Ok, dann komm eben nicht! (Wenn du dich für so schlau hältst.)
ok, then come.IMP PRT not (if you yourself for so clever take)
'All right, don't come then! (If you think you are so clever.)'
CONCESSIVE

(13) a. Komm pünktlich und du kriegst einen Sitzplatz.
come.IMP in-time and you get a seat
'Come in time and you'll get a seat.' `Conditional` ***and***, `(IaD)`

b. Komm pünktlich oder du verpaßt den ersten Vortrag!
come.IMP in-time or you miss the first slot
'Come in time, or you'll miss the first slot!' `Conditional` ***or***, `(IoD)`

Being faced with this wide range of speech act types imperatives can be associated with in appropriate contexts, I first want to record that reducing this range of speech acts or accounting for the assignment of a respective speech act type to an imperative token in a given context constitutes a tricky problem for pragmatics or the semantics-pragmatics interface, cf. (14).

(14) The `Problem of Functional Inhomogeneity` (FIP)
Cross-linguistically, imperatives get associated with a rather inhomogeneous range of speech act types (COMMANDS, WARNINGS, PROHIBITIONS, WISHES, REQUEST, ADVICE, CURSES, PERMISSIONS, CONCESSIONS, ...) and, at least in some languages, also further functions (in a pre-theoretic sense of the word) on a sub-speech act level (namely as conditional antecedents).

For the challenge of how to explain the encoding of the clause type pairs, keeping an eye on FIP means above all not to overdo the task of determining the prototypical function so as to exclude assignment of further, more marginal functions as mentioned by FIP. In addition, we have to note that besides general inhomogeneity as recorded by FIP the range of functions observed embodies a particular, highly intriguing inhomogeneity. Most of the speech act types (such as REQUESTS, COMMANDS, PROHIBITIONS, WISHES, WARNINGS, ADVICE,...) assigned to imper-

[19] Billy Strayhorn/via Sæbø (2002).
[20] Example from Hamblin (1987).

atives seem somehow concerned with constraining the development of the situation so as to verify the proposition expressed within the imperative. But a few of them (PERMISSIONS, CONCESSIONS) are concerned with opening up further possibilities for developments of the situation. This pragmatic distinction of sharpening or liberalizing commitments is often paired by universal vs. existential quantification as assigned in semantics to the elements that are used to achieve that effect (e.g. the modal verbs *must* and *may*, cf. Section 2). Let us record this as the `Problem of Quantificational Inhomogeneity` (QIP), cf. (15).

(15) The `Quantificational Inhomogeneity Problem` (QIP)
The functional spectrum associated with imperatives in many natural languages displays both elements that are normally associated with universal quantification in semantics (COMMANDS, REQUESTS, WISHES,...) and elements that are usually associated with existential quantification in semantics (PERMISSIONS, CONCESSIONS).

Can we respond to FIP (and especially QIP) by eliminating some of the speech act types as being assigned to homophonous doubles of imperative clauses only? I think there are two good reasons against such a strategy: (i) on the one hand, there is the theoretical obstacle of how we have carved out the clause type system (namely, under a bias for the form side), and (ii) on the other hand, there is the empirical observation that this puzzling range of functions is not confined to a few extravagant Indo-European languages like English or German (a strong argument against ambiguity). Consequently, I consider it important that we do not throw away the more troublesome usages before we embark on the enterprise of assigning semantic value to imperatives. To my knowledge, none of the existing approaches to the semantics of imperatives gives priority to that. For a large part of the literature, the main goal lies in capturing the impossibility of imperatives to be used as assertions, and therefore, to make them differ from declaratives (cf. McGinn 1977 for stating this particularly emphatically). What is stressed is that imperatives cannot describe the world as it is. I want to accent that this only one side of the coin, and that somehow, even if not normally in form of descriptions, imperatives do give information after all (cf. Aloni 2004 for a guarded argumentation in that direction). In Section 3.3, I will present a couple of arguments why the non-declarative/non-descriptive side should not be stressed so exclusively as it has been recently (cf. Portner 2005, Mastop 2005, Veltman 2005, Franke 2005).

Consider a couple of examples from the literature displaying that knowledge of what imperatives do is presupposed when setting out to explore their semantics.[21]

> In natural language, the distinction between imperative mode and declarative mode is made by assuming that declarative sentences describe a state of the world, while imperative sentences convey an inten-

[21] A very telling example I cannot retrace at the moment is constituted by *imperative sets a norm (related to the addressee) wrt to the existence of the event the clausal proposition (virtually) refers to.*

> tion of the speaker that the addressee takes responsibility for changing the world in some particular way. We will study some simple logical languages where commands to change the world are interpreted literally as transitions that make things happen by effecting the desired change. (van Eijck (2000:41))

> As a first, intuitive approximation, we can say that imperatives represent actions which the addressee should take (cf. Portner 2005)[22]

> I will assume for the remainder of this chapter that we can identify such a thing as the 'imperative sentence type'. By this I mean a syntactically and/or semantically definable class of sentenes of which all members share an interpretation of being some kind of instigation from the speaker to the hearer to perform some action. (Mastop (2005:10))

Basing upon such an assumption, the task is to enrich one's model of the semantics pragmatics interface to encompass the particular function presupposed to underly imperatives. This differs crucially from the task of assigning adequate (static or dynamic) meaning to a linguistic expression and is therefore in opposition to the the ulitmately form biased individuation via clause-types I am advocating here. The position exemplified by the quotes allows (or rather: opts) for a far more specific and confined semantics than will be needed for my task.

I think that any serious attempt to explore the semantics of imperatives has to take into account the entire range of functions to be found. Assigning a semantics that does not cover part of the data has to be motivated carefully by arguments in favor of ambiguities. Without further justification, neither carving out the class of imperatives relying on a protoypical function a priori, nor excluding certain usages as being not truly imperatival a posteriori constitutes a viable option.

1.4 Understanding Clause Types

At this point, the natural question to ask is how the relation between a certain form type and a certain function type is mediated, thus, how the ordered pairs of a clause type system are encoded (cf. (16a)). This has to be distinguished strictly from the question in (16b).

(16) a. The `Problem of Clause Type Encoding` (PCTE)
How is the relation between a certain form type and a certain speech act type encoded?

b. The `Problem of ASsigning Types of Speech acts` (PASTA)
What determines the speech act type assigned to an utterance?

I will first focus only on (16a), and show at a later point how they are related.

[22]Despite this rather narrow view, his analysis captures a much wider range of FIP without refining what is taken to count as an imperative, cf. Section 3.2.2 for discussion.

I assume that the relation between form type and (prototypical) function as listed in a clause type system is mediated by the semantic value of the form type. Let us call this the `Mediating Semantics Hypothesis for Sentence Mood` and phrase it as follows:

(17) `Mediating Semantics Hypothesis for Sentence Mood` (MSHSM)
Assume that the system of clause types for some language L is the set of ordered pairs $CT_L \subseteq D \times T$ (again D the set of sentence level form types, T the set of speech act types; cf. (4)). Assume further that I is an interpretation function for L.
Then, for each $a_i \in CT_L, a_i =< d_i, t_i >, I(d_i)$ determines t_i.

At first glance, (17) looks similar to what Gazdar (1981) ascribes to Searle (1975) as the `Literal Meaning Hypothesis`, formulated as in (18).[23] Assume that there is a function $\$ \in T^C$, such that for each context c, \$ maps the linguistic object c_E uttered in c to a set of speech act types $t \in T$.[24]

(18) For each context c, $c_d \in D$ is the full (syntactic) structural description of the linguistic object c_E uttered in c.
There exists a function $\mathcal{F} \in T^D$ such that for all $c \in C$,
$\mathcal{F}(c_d) \in \{t : t \in \$(c)\}$.
If c_d contains a performative prefix, then $\mathcal{F}(c_d) = t'$ where t' is the speech act type named by the performative verb in the prefix. Otherwise:
$\mathcal{F}(c_d) =$ QUESTION, when c_d is interrogative
$\mathcal{F}(c_d) =$ REQUEST, when c_d is imperative
$\mathcal{F}(c_d) =$ ASSERTION, when c_d is declarative

Gazdar (1981:74f) argues convincingly that this runs into various kinds of problems. But note that MSHSM is in fact very different from the Literal Meaning Hypothesis. MSHSM is an answer to PCTE, the question in (16a), not to PASTA, the one in (16b). The Literal Meaning Hypothesis on the other hand could be seen as a strenghtening of MSHSM to provide an answer to PASTA (cf. (16b)). What I will in the end propose as an answer to the latter, the problem of which speech act type to assign to a concrete utterance, is more in the spirit of Hausser (1980)[25]:

(19) `the Speech act Assignment Hypothesis` (SAH)
The speech act type of an utterance c_E is determined by interplay of the

[23] Translated into my framework by substituting speech act type for illocuationary force.

[24] Note that the hypothesis is formulated so as not to exclude that one and the same utterance performs more than one speech act. This can of course be easily tightened to assigning a unique speech act to each utterance as assumed by most proposals considered in the rest of this book.

[25] *Syntactic mood does not determine the speech act. Rather, syntactic mood* participates *with all the other linguistic propertis of a given surface expression ϕ in delimiting the set of use-conditions of ϕ. Since there is no one to one relation between syntactic moods and speech acts, it would be a mistake to implement speech act properties in the semantic characterization of syntactic mood.* (Hausser (1980:))

semantic object $I(c_d)$ with properties of the utterance context c (to be described in terms of beliefs, desires, obligations, etc. of the participants to the conversation in c).

For the moment, we will only be concerned with the *problem of clause type encoding* (PCTE) as formulated in (16a) and its answer as given by the MSHSM. The former is closely related to what has been dubbed `modularitätsfrage` (*question of modularity*) by Grewendorf and Zaefferer (1991):[26]

(20) `Modularitätsfrage`:
Is sentence mood a semantic or a pragmatic phenomenon?

Although we have not yet said what 'determine' should mean (cf. Section 3.2 for that), it is quite easy to see that adopting the MSHSM amounts to a semantic solution to (20).

An alternative would have been a purely pragmatic view on the matter, as could most likely be seen in Montague (1974). He claims that, in semantics, sentence moods can be treated by substituting truth conditions by adequate other conditions: answerhood conditions for questions, and compliance conditions for imperatives. Similarly, Dummett (1973) conceives of all clause types as having the same Fregean sense,[27] but are supplied with a force (comparable to the speech act types I have been talking about) that is to be analysed in pragmatics (cf. McGinn 1977 for discussion).

Without arguing against the possibility of such an approach in detail, I want to give a couple of more or less standard arguments in favour of a semantic treatment of sentence mood.

First, phenomena that prove to be robust with respect to embedding are traditionally classified as part of the recursive component of meaning assignment encoded in semantics. Sentence mood distinctions as established for matrix sentences are typically paralleled in the realm of embedded sentences:[28]

(21) a. John knows that it rains.
b. John knows whether it rains.

Given the well-known resistance of imperatives against embedding (cf. Section 9), phenomena are harder to find for that particular type. Some instances seem to exist

[26] `Semantics` should here be understood not in the sense of Montague (1974) who sees it as completely independent of contextual notions, but rather in the sense of Cresswell's (1973:238) `semantic pragmatics`, namely as occupied with meaning as a function from context to senses. That is, the way in which context produces the sense is part of the meaning.

[27] Note that this is not Frege's point of view as he explicitly states in *Der Gedanke* that the sense of an imperative cannot be a `thought` as assumed to underly declarative sentences.

[28] Even if generally accepted, this criterion has not gone completely undisputed. Cf. Kamp (1978) for willingness to let pragmatics (certain implicatures) enter the recursive component of meaning assignment in favour of a pragmatic treatment of free choice effects with disjunction and free choice items.

after all. One case are quantifiers taking wide scope with respect to the imperative (cf. Section 9.1.1).

(22) a. Die meisten Anträge hat Hans nicht mal gelesen.
the most proposals has Hans not PRT read.PARTPERF
'For most proposals it is the case that John has not even read them.'

b. Die meisten Anträge lies erst gar nicht.
the most proposals read.IMPSG PRT PRT not
'Most proposals don't even read.'

Another case is constituted by languages that do embed imperatives after all. I.e. this seems to be the case for colloquial varieties of German:

(23) Hans hat dir doch schon gestern gesagt, geh da
Hans has you.Dat PRT already yesterday told go.IMP2 there
morgen hin!
tomorrow PRT
'Hans told you already yesterday to go there tomorrow.'

In general, under a purely pragmatic conception, sentence mood should never be expected to come into play at a sub-speech act level. Nevertheless, the phenomena found with conditional imperatives seem to contradict that (cf. Part III):

(24) Take a step to the left and you'll fall off the stairs.

The sentence form type of the first conjunct bears all characteristics of an imperative clause type. Yet, it does not seem to constitute an independent speech act, and the overall speech act type assigned to (24) is most likely THREAT or WARNING.

Second, we have to take into account that besides the most prototypical function indicated at the right hand side of the clause type, most form types can cover a variety of other functions (the *problem of functional inhomogeneity* (FIP)). A purely pragmatic solution would require that for each form type all the speech act types it can be used for are listed either along with the most prototypical one, or that a supertype could be given that would encompass all the other types.

Third, the meaning function in semantics is quite well-studied. If we can define a suitable architecture of the pragmatics-semantics interface that allows the semantic object to constrain the speech acts that can be performed by expressing it, we are spared defining an additional meaning assignment that would generate the list of clause types for a given language. The clause type systems we have been looking at so far paired formally distinguishable form types (the object named by x.ft has formal properties that distinguish it from y.ft) each with a different prototypical function (cf. (25)). But, so far, we do not exclude that languages might have clause type systems that contain pairs as in (26), either.

(25) CT_1 = <x.ft, F1>
CT_2 = <y.ft, F2>

(26) a. CT_1 = <x_1.ft , F1>

CT_2 = <x_2.ft, F2>

b. CT_1 = <x.ft, F1>
CT_2 = <x.ft, F2>

c. CT_1 = <x.ft, F>
CT_2 = <y.ft, F>

The pairs in (26a) should indicate that one surface form type is associated with two different structural disambiguations (x_1 and x_2) that are assigned different function types (looking like ambiguity).[29] In contrast to that, I use the schema in (26b) to indicate that one and the same form type is associated with two different function types (thus being reminiscent of polysemy). Last but not least, two different form types could also be associated with one and the same function type (cf. (26c)).[30] None of these possibilities is excluded as long as we take the listing of such pairs as primitive; a semantic encoding of clause type systems automatically excludes cases like (26b) (due to I being an interpretation function), allowing for both (26a) and (26c) though.

Fourth, a pragmatic solution seems to run into trouble if indirect speech acts are to be distinguished from direct usages. Any form of indirect speaking seems to consist in the exploitation of the literal meaning of a linguistic item to convey something different. Hence, it depends on the literal meaning being computed and understood - including the sentence mood and the speech act it 'would normally be used to perform under the given circumstances'. Compare (27a) and (27b):

(27) a. I am cold.
b. Am I cold?

While the declarative can quite naturally be understood as an incentive for the addressee to close the window (thus constituting a typical indirect speech act), its interrogative twin requires a bit more of context in order to fulfill that task. If sentence mood belonged into the realm of pragmatics, the status of other pragmatic processes overwriting it in a second step would be entirely unclear.

Fifth, McGinn (1977) points out that we have to distinguish between what he calls the force associated with an utterance and the sentence mood associated with a linguistic object. While the former can be entirely suspended in a non-intentional context (e.g. example sentences in a grammar book, testing a microphone), sentence mood stays unaffected. That is, a token can be understood as an imperative without being associated with any particular speech act type.

Sixth, relying on a purely pragmatic meaning for sentence mood, it seems that there is no way for it to be encoded compositionally in the syntax. Despite the formal marking of clause types, it is not entirely clear how this formal marking

[29] Note that this is somehow reminiscient of lexical or structural `ambiguity`, we cannot call it ambiguity at this point though, because that would mean to understand a clause type as a form meaning pair. So far, I have remained silent as to meaning, though.

[30] Note that as for function types we need not make any such distinctions, since we are only interested in the object as such, not in ways of naming it.

could be associated with the pragmatic meaning other than via association in a list that yet had to be introduced into the popular conception of natural language grammar.

Having thus motivated a semantic solution to PCTE as embodied in MSHSM, it is worth saying that the latter allows us to reconsider clause types (that is, our ordered pairs of form and function types) as a purely heuristic tool for the semantic analysis. This is of course desireable, given that the function type could only be indicated as a prototypical one. A plausible list of sentence types will tell us which linguistic objects an imperative semantics has to cover in a certain language. We will see that these notions differ slightly from language to language. The convergences between the languages that have been studied in more detail will be broad enough though to allow for an underspecified object as the encoding semantic device. Eventually, it will be far less underspecified than one might expect on the first glance, especially given QIP. But taking into account the small deviations, too, the MSHSM provides us with a reasonable picture for languages that have clause types that are almost like imperatives in other languages but maybe a bit more or a bit less specific (one example being interaction with tense and reference time, cf. Section 6.1.1).

Having thus decided to resort to semantics for the encoding, we can proceed to clarify how the semantic object denoted by the linguistic object expressed in an utterance U (the interpretation I of c_E) can determine the function the speaker of U wants U to fulfill (U's illocutionary role, or as I have chosen to say, U's speech act type).

Permitting Permissions

* slightly revised Ch.2, 25-05-05 *

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Abstract. The aim of this paper is to get rid of a nasty ambiguity between commands and permissions associated with imperatives (necessity/constraining of options vs. possibility/widening of options). I argue that a uniform semantics in terms of necessity together with certain assumptions about the context can account for the different effects on the pragmatic side. The difference is explained by employing either a speaker or a hearer centered ordering source, together with basic assumptions about speaker and hearer interests. *if you like*-phrases frequently found in permission imperatives are analysed as indicating a hearer centered ordering source and filtering out one of the presuppositions required for a permission usage. It is argued that *any* in imperatives constitutes only an apparent contradiction to a necessity semantics for imperatives.

1 The Janus face of imperatives

Studies in various areas of linguistics have noticed that across the languages of the world imperatives[1] come with a puzzling range of illocutionary potential (cf. Palmer 1986, Merin 1991, Rosengren 1992). Not only do they vary in expressing commands (the default interpretation for (1a)), warnings, wishes, requests, but they are also found to express permissions (1b) and permission-like concessives (1c):

(1) a. Read this!
b. (It starts at eight, but) come earlier if you like! (Hamblin 1987)
c. All right, don't come then! (If you think you are so clever.)

This cutting across necessity and possibility comes as a nasty surprise to anyone who assumes that the functional potential of linguistic forms is determined by their (semantic) meaning. Consequently, it has been taken as evidence that the semantics of imperatives has to be so underspecified that ultimately not much of interest can be said about it. The illocution expressed is to fall out from the context (cf. e.g. Rosengren 1992). Unfortunately, many approaches remain pretty underspecified themselves about how this is to happen, and

[1] I assume that *imperative* denotes a crosslinguistically identifiable sentence type (viz. a linguistic form).

Proceedings of the Ninth ESSLLI Student Session
Paul Egré and Laura Alonso i Alemany (editors)
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why, after all, commands or requests (all corresponding to necessity) seem to be associated with imperatives as a default.

I show first how both underlying semantics and effects on the state of a discourse are usually assumed to differ for commands vs. permissions. Having taken a closer look at imperative permissions, I argue that despite *prima facie* appearance a uniform semantics in terms of necessity can be given. In order to spell this out, I resort to the framework of graded modality as worked out in Kratzer (1991). Rather well-known pragmatic aspects consisting in the interplay of presuppositions about speaker and hearer wishes, shared knowledge and cooperativity (cf. Lewis 1979, van Rooy 1997) are then used to account for permission readings of imperatives. Aloni's (2004) treatment of choice offering imperatives is mentioned to show that free choice *any* does not falsify a uniform necessity semantics for imperatives. But it is also argued that her approach as it stands fails to account for the Janus face described here.

2 Permissions and commands

Leaving concessives (cf. 1c) aside for the moment, the command and permission usages of imperatives are similar to the so called *performative* usages of modal verbs (viz. when they do not merely inform about existing commands and permissions, but rather change the way the world is like in that respect). (1a) and (1b) can thus be paraphrased as (2a) and (2b) respectively:

(2) a. You must read this.

b. You may come earlier if you like.

Let's look at a slightly modified version of Lewis's (1979) implementation of commands and permissions as a language game between *master* and *slave* to see why this apparent ambiguity is so troublesome. We will consider the set of all those worlds[2] the participants in the conversation (jointly) cannot distinguish from their actual world w (the Stalnakerian *Common Ground*, CG). Furthermore, each world w determines a set of permissible worlds, p(w), that verify whatever is commanded in w by the master. The *permissibility sphere* PS (the set of worlds that verify whatever the participants to the communication mutually believe to be commanded by the master) is then gained by interesecting p(w) for all worlds w in CG.

As for the semantics of modal statements, (2a) denotes the proposition in (3a), (2b) denotes (3b).[3] It is easy to see that an ambiguity along these lines would be disturbing, since (3a) invokes logical entailment, while (3b) invokes compatibility.

(3) a. $\|\text{must } \phi \| = \{w \in W \mid \forall v \in p(w)\colon v \in \| \phi \|\}$

[2]Worlds are assumed to come with their full histories. Since the time index is not relevant to the questions considered, it is ignored for simplicity. If not specified otherwise, 'world' in the following is to be understood as 'world plus time of evaluation'.

[3]$\|\cdot\|$is the standard interpretation function, mapping expressions onto their intension in a model M with an assignment function g and a context variable c left implicit.

b. $\|\text{may } \phi \| = \{w \in W \mid \exists v \in p(w)\colon\ v \in \| \phi \|\}$

In order to keep descriptive and performative usages of modal verbs as similar as possible, both can be seen as assertions, the performative effect falling out from mutual assumptions (the master speaks truthfully, he is never mistaken about aspects of his own psyche, e.g. his current wishes, etc.) (cf. e.g. Kamp (1978); Merin (1992) and van Rooy (2000) for criticism). In the following I will resort to such an *assertoric treatment* of performativity, but nothing hinges on that.[4]

Irrespective of how the change in PS is brought about, it must involve two different operations: commanding ϕ intersects PS with ϕ, permitting ϕ adds to it some (but not all) ϕ -worlds.[5] Which worlds exactly are to be added constitutes Lewis' famous *problem about permission*. A to my mind satisfactory solution of determining the next best worlds with the help of a reprehensibility relation is given in van Rooy (2000).

Van Rooy rejects an assertoric treatment though. Relying on a dynamic framework, each sentence is associated with an update potential to a given state of information. Thus, *must* ϕ and *may* ϕ directly constitute functions on PS, the former restricting it to ϕ -worlds (just as a (successful) assertion of ϕ would restrict CG to ϕ -worlds), the latter enlarging PS so as to contain the least reprehensible ϕ -worlds.

At this point it has to be said clearly that a semantic analysis of imperatives in terms of these update functions leaves no hope for reconciling command and permission cases as given in (1). The fact that the one is used to restrain, the other to enlarge PS is an irreducible fact about their constituting a command vs. a permission. I therefore resort to a treatment relying on static truth-conditions. It is thus the propositions associated with (2b) and (2a) that cause them to determine the respective type of update described - as I take it correctly - by van Rooy.

Next, I argue that, despite the apparent ambiguity in modal force as found in (1a) vs. (1b,c), the imperative is associated with a uniform semantic object. The challenge is first to find an appropriate propositional content, and second, to explain why a uniform quantificational force should mostly result in constraining PS, but could sometimes also serve to enlarge it.

3 A closer look at imperative permissions

First, it should be noticed that, crosslinguistically, usages linked to obligation seem to constitute the default for imperatives (cf. Palmer 1986). It is only when modified by particles or when conditionalized (*if you like*) that they assume permission readings.

[4]Alternatively, one could resort to Lewis' original idea of the *truthful master condition*. It guarantees that the permissibility sphere adjusts itself to the commands and permissions of the master. Since performativity is common to all usages of the imperative, this condition could well be associated with the imperative form.

[5]Following the tradition of deontic logic, Lewis assumes that permitting results in rendering permissible a class of actions the opposite of which had been commanded before. Thus, before permitting ϕ, all permissible worlds lie within $\neg\phi$.

Given this asymmetry, it comes as a natural move to somehow reduce all imperatives to expressions of necessity in semantics, resorting to the linguistic or communicative context for bringing about permission effects in pragmatics.

Frequently found conditionalization by *if you like* strongly suggests analysing apparent permissions as commands conditionalized on the addressee's wishes (cf. 4b). For cases of permission imperatives without such an antecedent we would then assume a covert *if you like* to be retrievable from the context.

(4) a. Come earlier if you like.

b. If you want to come earlier, (*given what your wishes are/given what my wishes are/...*) you must come earlier.

Despite its initial plausibility, this gives the wrong result (cf. Hamblin 1987). Even if the hearer wants to come earlier (and even if the speaker is aware of that), (1b) (repeated here as (4a)) does not create an obligaton for the hearer to come earlier; in contrast to that, (4b) would and is therefore no paraphrase of (1b/4a).

Under closer inspection, *if you like*-antecedents do not only fail as explanations for permission readings, but rather constitute a problem in their own right. (5) shows that they don't conditionalize permissions either. The permission granted by (5) is independent of the hearer's wish for it; viz. if the speaker found out that the hearer came earlier despite not wanting to (e.g. because the taxi driver hadn't respected the speed limit), the hearer cannot be blamed for having done so - the permission to come earlier is in force nevertheless.

(5) If you like, you may come earlier.

The uniform treatment of imperatives proposed in the following section will allow us to integrate the insights into conditionalized permissions into recent discussion about two types of conditional antecedents.

4 The Analysis

4.1 A uniform semantics for imperatives

As to the semantics of modalized propositions, I rely on the framework of graded modality in terms of possible worlds as spelled out in Kratzer (1981, 1991)[6]. Necessity and possibility are now defined with respect to two contextually given parameters: a modal base f (giving for each world a set of propositions describing which worlds should be taken into account) and an ordering source g. The latter also gives a set of propositions (an *ideal*, $g(w)$), and induces a partial order on the worlds in $\cap f(w)$ in terms of *closeness to that ideal*, (6)[7].We

[6]As was pointed out to me by an anonymous reviewer, the idea goes back to van Fraassen (1973:7): *whether an ought-statement is true depends on two factors: the set of alternative possibilities we are evaluating, and the scale of values by which we rate them.*. For further elaboration see also Lewis 1973.

[7]Note that this definition does not compare the number of propositions verified by a particular world but rather the set of propositions verified (vs. e.g. van Rooy's (2000) reprehensibility ordering). Therefore, the ordering obtained is only partial. This is crucial if my analysis is to be applied to larger ordering sources.

define $O(f, g, w)$ as the set of worlds in $\cap f(w)$ that are optimal with respect to $g(w)$.

(6) ordering source $\leq_{g(w)}$: $\forall v, z \in W : v \leq_{g(w)} z$ iff
$\{p : p \in g(w) \ \& \ z \in p\} \subseteq \{p : p \in g(w) \ \& \ v \in p\}$

(7) $O(f, g, w) = \{v \in \cap f(w) \mid \forall z \in \cap f(w)$: if $z \leq_{g(w)} v$ then $v \leq_{g(w)} z\}$

We will only be concerned with cases where we can safely assume that $\forall v \in \cap f(w)$ there exists $v \in O(f, g, w)$ such that $v \leq_{g(w)} u$ (*Limit Assumption*, Lewis (1973:19ff)). Under this assumption,necessity and possibility in Kratzer (1991) reduce to (8a) and (8b) (the contextually given parameters f (modal base) and g (ordering source) are indicated as superscripts to the interpretation function):

(8) a. $\|\Box p\|^{f,g}(w)$ iff $\forall v \in O(f, g, w)$: $v \in p$
b. $\|\diamond p\|^{f,g}(w)$ iff $\exists v \in O(f, g, w)$: $v \in p$

Let's relate this to imperatives. Abstracting away irrelevant details, I assume that imperatives contain an imperative operator IMP which is combined with a proposition having the addressee as its subject. I want to argue that IMP expresses necessity, but comes with certain restrictions on both modal base and ordering source.

In general, imperatives are about what the world is going to be like if wishes, desires and the like are taken into account. But speakers are realistic in so far as taking into consideration what the participants to the conversation jointly believe their actual situation to be like. I will therefore assume that the modal base for imperatives is grammatically specified to be what the participants to the conversation going on in world w jointly believe to be the case in w (call it f_{cg}). Therefore, $\cap f_{cg}(w)$ is CG for all w in CG.

What the imperative does then is order the worlds in CG according to some contextual parameter. In many cases, this is *speaker centered*, viz. g is constituted by what the speaker wishes or desires. At least, that is the normal case for commands and requests (cf. 9). On the other hand, if the bringing about of the action mentioned in the imperative is of no importance to the speaker, the ordering can also be induced by wishes, goals or desires of the hearer. Such *hearer centered* ordering sources seem to come into play with recommendations, advices or instructions (cf. 10).

(9) Read this! = *Given how the world can evolve, and given what I want, you must read this.*

(10) A: How can I draw a venn diagram with latex?
B: Use pstricks. = *Given how the world is and can evolve, and given your goal of drawing a venn diagram, you must use pstricks.*

So, in general, both speaker and hearer centered concepts are possible values for the ordering source g in imperatives.[8]

[8] If we want to rely on a completely assertoric treatment of imperatives (rather than explicitly forcing self-adjustment of the information state to the imperative's truth conditions), it might be necessary to assume a speaker epistemic embedding of such a hearer centered ordering source. Instead of *given what your wishes are* it might be necessary to use *given what I assume your wishes to be.* I'll leave that aside for further discussion though.

Taking into account these restrictions about what constitutes the modal base and what are possible ordering sources, the semantics for the imperative operator can now be given as in (11). It is an instance of Kratzerian necessity (cf. 8a) with the modal base specified to f_{cg} and g constituted by either the speaker's or the hearer's wishes, goals or desires. As shown in (12), this provides a straightforward analysis of commands.

(11) $\|\text{IMP}\|^{f,g} = \lambda p \lambda w.\forall v \in O(f_{cg}, g, w)\text{: } v \in p$

(12) $\|\text{Go home!}\|^{f,g} = \|\text{IMP go-home(addressee)}\|^{f,g}$, with g = *what the speaker wants.*
$(\lambda p \lambda w.\forall v \in O(f_{cg}, g, w)\text{: } v \in p)(\lambda \text{w.go-home}_w\text{(addressee)}) =$
$\lambda p \lambda w.\forall v \in O(f_{cg}, g, w)\text{: go-home}_v\text{(addressee)}$

The semantics derived in (12) says that the worlds that conform best to what the speaker wants are worlds in which the addressee goes home. This seems satisfactory for the command case.

4.2 Explaining permissions and concessions

It is much less obvious how (11) should cover the permission readings of imperatives. Shouldn't they semantically correspond to possibility as in (8b)? What I will argue now is that, when combined with the right presuppositions, necessity with respect to the hearer's wishes as an ordering source can indeed account for the permission readings.

'IMP ϕ' gets a permission reading only under the following circumstances (*presupposed* understood as "entailed by the CG"):

- it is presupposed that ϕ is among the wishes of the hearer[9]
- it is presupposed that the speaker is against the hearers realizing ϕ
- it is presupposed that the hearer wants to please the speaker

But then, the set of worlds that optimally fulfill the hearer's wishes is counterfactual. Since his wishes in the actual world are conflicting, something would have to be different for all of them to be realizable. (This is a classical scenario of practical inference, cf. Kratzer (1981:65)).) Most likely, the worlds the hearer would like best are among those where the speaker does not have any preference against ϕ. Doing ϕ would not conflict with obeying the speaker then, and the hearer could happily do both. Nevertheless, reality is not that nice.

The three presupposition describe CG as being partitioned the following way: The entire common ground lies within *the speaker is against the hearer's realizing* ϕ (thus, all ϕ worlds lie in the complement of *the speaker is pleased*[10]). Furthermore, the entire common ground has the hearer having the wishes *that* ϕ and *that the speaker is pleased.* Both ϕ and

[9] At that point confusion as to what the hearer wants lurks around the corner. We have to distinguish between *the hearer wants* ϕ (taken as a primitive here, cf. Heim (1992:194)) for a semantic analysis), from ϕ *is a necessity with respect to the hearer's wishes.*

[10] Throughout this discussion I take this to mean *pleased with the behaviour of the hearer.*

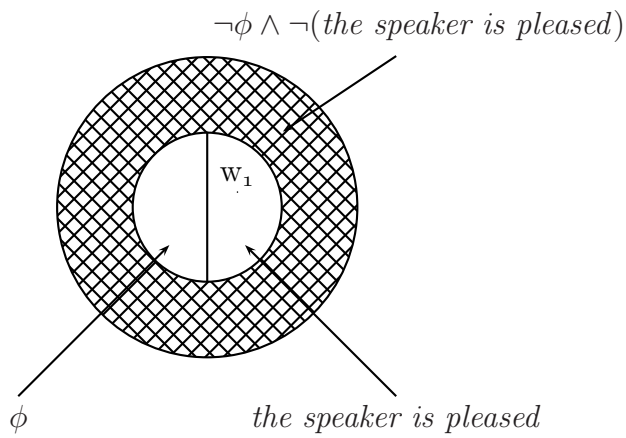

Figure 1.1: CG, ordered by g(w) = {ϕ, *the speaker is pleased*}.

that the speaker is pleased are non empty (though mutually exclusive). (Remember that ϕ is not empty because we assumed imperatives to be realistic; *the speaker is pleased* should not be empty because there wouldn't be much point in complying with his imperatives if it made him angry anyway.)

Now, ordering CG with respect to the wishes of the hearer means choosing g(w) = {ϕ, *the speaker is pleased*}. This results in the picture given in figure 1.1. It is easy to see that the set of worlds that come closest to the ideal of what the hearer wants in w (the union of the two white segments) does not decide ϕ. It has both worlds where the hearer follows his desire to ϕ and pays the price of offending the speaker, and likewise worlds in which he pays duty to the speaker's wishes and goes without ϕ. Therefore, neither ϕ nor $\neg\phi$ is a necessity with respect to CG ordered by the wishes of the hearer.

'IMP ϕ' with g = *what the hearer wants* is therefore easy to falsify (by (11) we get the proposition in (13)):

(13) $\|\text{IMP } \phi \|^{f,g} = \{w \in W \mid \forall v \in O(f_{cg}, g, w)\colon\ v \in \| \phi \|^{f,g}\}$

Our world w is not within that set (and therefore, given the nature of f_{cg} and the presuppositions assumed, no world in CG is). For a counterexample, pick $w_1 \in$ speaker-wishes and $\neg\phi$. Every world that is better than w_1 according to the ideal g(w) (= {ϕ , *speaker is pleased*}) would have to make true at least the same and possibly more of g(w) than w_1 does. Since there is no world in $\cap f_{cg}(w)$ that would make true the same and more propositions of g(w) than w_1 does and $w_1 \in \neg\phi$, ϕ is not a necessity in w with respect to f_{cg} and g = *what the hearer wants*.

Therefore, as it stands, an update with IMP ϕ would lead to inconsistency. Since speaker and hearer tend to be cooperative (cf. Lewis 1979), the hearer tries to accommodate. The problem so far is that *the speaker is pleased* implies $\neg\phi$. In principle, this allows for two possible strategies of making IMP ϕ true with respect to w, $\cap f_{cg}$(w) and the hearer's wishes g(w). The hearer could either assume that the speaker has given up his preference for $\neg\phi$ or he could give up his wish to please the speaker.

The first strategy seems to be the unmarked one, and it makes the right predictions for the ordinary imperative-as-a-permission case. Giving up the presupposition that the speaker is against the hearer's realizing ϕ means to enlarge the common ground by adding (the closest) ϕ-worlds that verify *the speaker is pleased* (contraction via ϕ and *the speaker is pleased*). Thus making both propositions in g(w) true, they consitute the g(w)-best subset of $\cap f_{cg}(w)$. It is easy to see that the imperative as calculated in (13) then comes out as true.

The second strategy gets applied in the more marked cases of concessive imperatives (cf. 1c). In a way, they seem to express more the speaker's giving up on the hearer than his giving a real permission. In this case, *the speaker is pleased* is omitted from the ordering source.[11,12]

Since the first strategy is the usual accommodation (allowing for cooperative conversation to continue), the second one has to be marked by prosodic clues. Note that particles (German *doch*, *eben*) or modifiers (*if you like*, *go ahead*,...) don't distinguish between the two strategies of accommodation. They only help to single out the correct (hearer buletic) ordering source.

Accounting for permission readings by employing a hearer oriented ordering source also explains the puzzling effect of *if you like*. As argued in section 3, it does not cause the permission granted by the speaker to depend on the hearer's having the wish. In that sense it is akin to (15a) in the contrast translated from Hare (1971:248). In (14a) the obligation is understood to truly depend on the hearer having the wish or not, while (15a) gives a means how to realize the wish mentioned in the antecedent. This comes out more clearly by the latter, but not the former implying the sort of (pseudo-)contraposition given in the b-clauses.[13]

(14) a. If you want sugar in your soup, you should get tested for diabetes.

b. $\not\rightsquigarrow$ If you don't get tested for diabetes, you don't get sugar in your soup.

[11] To be absolutely precise one should distinguish between just omitting the proposition from the ordering source (in a way the speaker saying: "just disregard your wish to please me"), or an accommodation that would indeed involve contraction of CG by *the hearer doesn't want to offend the speaker*, thereby adding the closest worlds where he does not care about offending the speaker or not.

[12] This has an interesting parallel in the behaviour of the German modal *sollen* which normally expresses necessity (cf. 1a). But when occuring in verb-first sentences it invariably gives rise to precisely this type of concessive reading (cf. 1b; see Önnerfors 1997):

(1) a. Er soll sich die Grippe holen!
he shall REFL the flu catch.INF

He shall catch the flu! (order/curse)

b. Soll er sich doch die Grippe holen!
shall he REFL PRT the flu catch.INF

Ok then, so he may just as well catch the flu! (given that he doesn't listen to me)

[13] Since thereby describing the inner proposition of the consequent as a necessary means to achieve the goal mentioned in the antecedent, the b-sentences are called *anankastic conditionals*, cf. von Wright (1963).

(15) a. If you want sugar in your coffee, you should call the water.

b. $\rightsquigarrow$ If you don't call the waiter, you don't get sugar in your coffee.

The standard treatment for conditionals (Kratzer 1991) hypothetically adds the proposition in the *if*-clause to the modal base f of an overt modal in the matrix clause (or alternatively of a covert operator of epistemic necessity). This makes correct predictions for (14a). In order to account for cases like (15a), Sæbø (2002) has proposed to assume that instead of restricting the modal base, the antecedent can also serve to both indicate and modify the ordering source (g is set to *what the hearer wishes* and is modified by (hypothetically) adding the complement of *want*, namely *you have sugar in your coffee*).[14]

This is of course exactly the effect wanted for imperatives to convey permissions. First, the wishes of the hearer are made salient as the ordering source. Second, given that *if*-clauses filter presuppositions (cf. Geurts 1999), *if you like*-modifiers take care of the first presupposition (namely that the hearer wants ϕ). It doesn't come as a surprise then that in many languages such a reduced antecedent (ϕ is most naturally left out) is used to facilitate permission readings.

5 *Any* encouraging further research

At first glance, the behaviour of imperatives with respect to *any* seems to stand in the way of the proposed semantic reduction. Imperatives pattern with possibility modals in licensing free-choice *any*, whereas necessity modals don't (cf. Aloni 2002):

(16) a. You may/#must pick any flower.

b. Pick any flower!

Interestingly enough, the only proposal worked out for sentences like (16b), Aloni (2004), relies on a uniform necessity based semantics for imperatives as well. It differs though in assuming sensitivity to a set of alternatives computed in addition to the traditional denotation. A trivial set of alternatives amounts to necessity with respect to the background A_w (somewhat vaguely set to *the desires of (one of) the participants to the conversation*).

(17) $\|\text{IMP } \phi\| = \{\text{w} \mid \forall\alpha \in \text{ALT}(\phi){:}\exists\text{w'} \in A_w{:}\text{w'} \in \alpha \ \&\ \forall\text{w'} \in A_w{:}\exists\alpha \in \text{ALT}(\phi){:}\text{w'} \in \alpha\}$

Existential operators give rise to non-trivial alternatives. Aloni relies on Kadmon and Landman's (1993) analysis of *any* in terms of a special indefinite[15] introducing a free variable that can then be bound by either an existential or a generic quantifier. The set of alternatives introduced by the complement of IMP in (16b) is {*you pick flower*$_1$*, you pick flower*$_2$*, ...* }. The situation described by the imperative is then characterised by (i) each alternative (= each choice of a flower to pick) being permissible, and (ii) one flower

[14] Cf. von Fintel and Iatridou (2004) and Huitink (2005) for discussion of the interaction with other goals of the hearer.

[15] It induces *widening* of its domain of quantification according to some contextually specified dimension and requires that this should lead to a *stronger* statement than quantification over the original domain would have.

being picked at each of the permissible worlds. This is indeed the most straightforward interpretation for (16b). But instead of a permission to pick a/every flower one chooses to, it is rather a command to pick one flower, while leaving the decision about the flower involved entirely to the addressee. This differs from the possibility modal which lacks the requirement that some flower has to be picked in any case. Therefore, *any* does not provide conclusive evidence for imperatives semantically expressing possibility.

Nevertheless, Aloni's (2004) elegant treatment fails to capture a second type of *any*-imperatives. If the verb carries a presupposition (as e.g. *confiscate* presupposes *finding*), *any* doesn't induce free choice for the addressee. (18) most naturally expresses an obligation to confiscate all the guns the addressee might find.[16]

(18) Confiscate any gun!

We may thus conclude that *any* in imperatives still lacks a satisfactory analysis. Nevertheless, I believe to have shown that it is not the necessity part of the imperative semantics that creates the problems. If anything, it is the still poorly understood semantics of *any*.

6 Conclusions

I have argued that the apparent ambiguity between necessity and possibility readings for imperatives is best treated by assuming a uniform semantics in terms of necessity. Given that a context meets certain well-circumscribed conditions, it can still amount to a permission pragmatically. Two possible strategies of accommodation give rise to permission readings vs. permission-like concessive readings. Avoidance of a crosslinguistically widespread ambiguity, reduction of the marked option 'possibility' to the default 'necessity', and the integration of *if you like*-modifiers speak in favor of the proposed analysis. It has been pointed out that a satisfactory understanding for *any* in imperatives is still lacking. *Any* does not provide conclusive evidence for semantic possibility in imperatives though.

[16] Attempting to analyse this within the framework of Kadmon and Landman (1993) most likely commits one to assume that the indefinite is bound by a generic operator, cf. (i). As desired, this gives us a trivial alternative set and the imperative boils down to necessity with respect to the background. Nevertheless, the generic quantification within the scope of the imperative seems spurious. Furthermore, it is completely unclear why ordinary indefinites as in (ii) can only get an existential reading.

(i) IMP [[GEN_x [gun(x) & find(addressee,x)] → [confiscate(addressee,x)]]

(ii) Confiscate a gun!

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Conditionalized Imperatives

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1. Imperatives as Clause-Types

Before talking about conditionalized imperatives, I want to ensure a common understanding of 'imperative', namely as a **clause type** in the sense of Sadock and Zwicky (1985). That means that for a given language $\mathcal{L}$, **imperative** will be taken to denote one of $\mathcal{L}$'s form types at sentence level, namely the one tokens of which are prototypically used for REQUESTs or COMMANDs. As such they are paralleled by declaratives (used for ASSERTIONs), interrogatives (for information-seeking QUESTIONs) and for some languages also exclamatives and perhaps more.

A natural choice for explaining this clause type system is to assume that it is encoded semantically, in the sense that the semantic object assigned to a particular sentence level form determines its prototypical usage. The actual speech act performed by uttering a token of that type is then determined by the interaction of the semantic object expressed with the context of utterance. Imperatives are well-known to pose problems for a semantic treatment because they lack a straightforward link to both the anchor of static and dynamic semantics, namely the concepts of truth/falsity and of information growth. In that, they differ from interrogatives that have been linked quite successfully to both via the concept of answerhood. On the other hand, the speech act types associated with imperatives vary too widely in order to associate them in a straightforward way with a speech act (understood as a semantic element) or an alternative update type (as it can be proposed in a dynamic framework, cf. eg. Zarnic (2002), Mastop (2005)).

This unclear and most likely non-propositional status is of course most problematic when it comes to (compositional) integration of imperatives into larger compounds, something which is very rare indeed. For example, very few languages allow for imperatives to occurr in indirect speech (cf. Schwager (2005b) for discussion).

One of the very few complex sentence types in which (cross-linguistically) imperatives occur quite naturally are conditionals:

(1) a. If you see something, say something!

b. Whenever you want a beer, check the fridge first!

A previous version of the paper has been presented at the 6th Szklarska Poręba workshop the audience and organizers of which I want to thank. For helpful discussion and comments I am grateful in particular to Ede Zimmermann and Adrian Brasoveanu; I also want to thank Nicholas Asher, Tim Fernando, Michael Franke, James Higginbotham, Utpal Lahiri, Rick Nouwen, Hong Zhou, and three anonymous reviewers. For help with the English data, I am indebted to Peter Sells, Tony Veale, and Carl Vogel. Of course, the usual disclaimer applies.

I call these **conditionalized imperatives** (CIs), and will in the following try to shed some light on how the imperative and the conditionalization are to interact.

CIs would of course be unproblematic for any theory of imperatives if they were confined to conditionals that encode a relation between consequent and antecedent at speech act level (in the sense of **relevance** or **factual conditionals**). Therefore, I will first show that CIs occur as truly hypothetical conditionals as well. Next, I will argue that an analysis in terms of **hypothetical speech acts** (HSA) does not seem to capture all there is about CIs. I then proceed to propose a **modal operator analysis** (MOP) for imperatives which assimilates imperatives to performative usages of modal verbs.[1] It will be shown that MOP accounts naturally for the various subtypes of the (problematic) class of hypothetical imperatives (interaction with quantificational adverbials, epistemic and non-epistemic conditionals) and the absence of counterfactual CIs.

2. The Conditional Landscape

Iatridou (1991) distinguishes three major types of conditionals: **relevance**, **factual** and **hypothetical conditionals**. I will first show that CIs can be found within all three of them. In the remainder of the paper I will then focus exclusively on hypothetical conditionals.

2.1. Relevance Conditionals

Relevance conditionals[2] do not express that there is a relation in terms of truth or probabilities between antecedent and consequent. Rather, the antecedent filters out one of the conditions (typically relevance) under which the speech act arising from an utterance of the consequent in the given context would be appropriate. This reading is lost if we insert *then* or *only* (or in general, if prosodic integration is forced):

(2) a. If you are thirsty, (#then) there is beer in the fridge.

b. #Only if you are thirsty, there is beer in the fridge.

Some CIs are clearly relevance conditionals, consider (3a), which loses its most natural reading if modified by *then* or *only* (under prosodic integration).

(3) a. If I may be honest, better call Andreas as soon as possible.

b. #If I may be honest, then better call Andreas as soon as possible.

c. #Only if I may be honest, call Andreas as soon as possible.

This is not surprising; imperatives can of course be used to perform speech acts, and thus come with appropriateness conditions that can need filtering.

[1] The analysis has been developed and motivated independently from CIs in Schwager (2005b).

[2] They are sometimes also called **biscuit conditionals** or **speech act conditionals**.

2.2. *Factual (or Premise) Conditionals*

Again, the relation between antecedent and consequent is not one in terms of truth or probability. Here, the antecedent is presupposed to be true (or presupposed to be believed by the addressee) and specifies the motivation for performing the speech act corresponding to the consequent. In these cases, *then* is acceptable, but modification with *only* is disallowed.

(4) a. If you like him so much, why don't you help him then?

b. *Only if you like him so much, why don't you help him (then)?

Again, it is not surprising that, alongside interrogatives, imperatives occur as consequents of factual conditionals:

(5) a. If you like him so much, then go ahead and help him!

b. *Only if you like him so much, then go ahead and help him!

2.3. *Hypothetical Conditionals*

The only class of conditionals whose manifestation as CIs might be surprising are hypothetical conditionals. These are usually taken to express that the truth (or the probability) of the consequent depends on the truth (or the probability) of the antecedent. The antecedent (at least with indicative conditionals) is presented as something the truth of which is not known to the speaker.

In (2) and (4) we have seen that hypotheticality is enforced by inserting *then* or *only*. Moreover, only hypothetical conditionals allow for binding from the consequent into the antecedent:

(6) a. If you really like it$_i$, a donkey$_j$ will be grateful. ^{ok}i = j

b. If I may tell you something about its health$_i$, let a donkey$_j$ rest every now and then. $^{\#}$i = j

c. If you have it$_i$, why don't you keep a donkey$_j$ in your garden? $^{\#}$i = j

The examples in (7) allow for binding and prosodic integration, which warrants that CIs can clearly constitute hypothetical conditionals.

(7) a. If it$_i$ is tired, let a donkey$_j$ rest.

b. Call a doctor only if you are sick.

Hypothetical CIs are the only class that is truly interesting for the semantics of imperatives, in that the correlation between antecedent and consequent seems to exist at sub-speech act level and hence forces us to ask how *if*-clause and imperative are to interact. Propositional as well as non-propositional analyses rely on the fact that both parts are propositional. For propositional analyses (in terms of material implication, strict implication or variably strict implication) this is quite obvious, but also probabilistic accounts relate probabilities of antecedent and consequent *propositions* (cf. Ramsey (1929), recently Kaufmann (2005)). We may therefore conclude that standard treatments do not automatically carry over to CIs.

3. Hypothetical Speech Act Analysis

A common way to think of hypothetical CIs is to think of them as imperatives depending on whether a certain condition holds (Segerberg 1990, Zarnic 2002, Asher and Lascarides 2003, Mastop 2005). I have lumped such approaches together under the label of **hypothetical speech act analysis** (HSA).[3] Taking *!* to turn a proposition ψ of the form *you do P* into whatever semantic object corresponds to an imperative, we can represent HSA schematically as in (8):

(8) $\phi \rightarrowtail !\psi$.

According to (8), the effect corresponding to the imperative only has an impact at a point of evaluation where the antecedent is true (or constitutes a successful update). Depending on the interpretation of $\rightarrowtail$, we can distinguish between analyses that leave the information state unchanged in case the antecedent is not true at the point of evaluation (cf. Segerberg (1990); Zarnic (2002)'s first version) and those that amount to a disjunctive update if the information state does not decide the antecedent (keeping both worlds where ϕ is true and ψ is commanded and worlds where ϕ is not true and both ψ and $\neg\psi$ remain permitted; cf. Zarnic (2002)).[4]

What all of these analyses have in common is that they treat the imperative effect as dependent on the antecedent, consequently, the complex sentence is not an imperative. On the one hand, this is in contrast to the insight gained in syntax that the clause type of hypothetical conditionals is determined by the clause type of the matrix clause (cf. Bhatt and Pancheva (2001)). On the other hand, even if ultimately the predictions depend on how exactly $\rightarrowtail$ and *!* are to be made precise, the following phenomena appear problematic for HSA. So far, they have not been addressed explicitly within HSA, and as far as I can tell, they suggest different scopal relations or simply a tighter interaction between antecedent and consequent.

Intuitively, hypothetical conditionals themselves are a pretty inhomogenous class, consider the paradigm in (9). Both (9a) and (9b) are naturally understood to talk about a particular situation, (9c) talks about all relevant situations.

(9) a. If it starts raining, take the bus.

b. It it is raining, take the bus.

c. If it rains, always take the bus.

The HSA proposed so far (implicitly) focused on cases like (9b). Covering all cases is not straight-forward. At least for quantificational adverbials like (9c), it is easy to see that a naive extension of HSA makes unwanted predictions with respect to

[3]This should not mean that they assume that depending on the antecedent, a speech act is fulfilled or not, in the sense that e.g. falsifying the antecedent would exempt the speaker from having made any (relevant) action. The theories I have been looking at in more detail are all concerned with a hypothetical imperative effect, independently of what speach act is to be assigned to the complex sentence.

[4]Asher and Lascarides (2003) achieve a similar effect: $\neg\phi$-worlds are kept, ϕ worlds are changed to ψ-worlds, leaving us with an information state that verifies $\neg\phi \vee \psi$. Cf. Schwager (2005b) for a critique of the unconstrained change to ψ-worlds and the ultimately purely epistemic impact.

the scopal interactions. This becomes visible with quantificational adverbials such as *never*.[5] The preferred reading for (10a) makes it come out similar to (10b): the imperative has to take scope over the negation and expresses a rule holding in general, not just for a particular occasion; consequently, what we want is something along the lines of (11a). HSA allows us to predict (11b) or maybe (11c) - the former is a possible reading different from (10b), (11c) is unavailable.[6]

(10) a. If your boss comes in never stare at him!

b. Whenever your boss comes in don't stare at him!

(11) a. $!\neg(\exists t)$[your boss comes in at t][you stare at him at t]

b. your boss comes in at $t \rightarrowtail !\neg(\exists t')[t' \subseteq t]$[you stare at him at t']

c. $^{*}\neg(\exists t)$[your boss comes in at t & !(you stare at him at t)]

HSA fails to predict the correct interaction with adverbially quantified CIs.

Consider Hare (1971)'s contrast between anankastic and other conditionals as given in (12).

(12) a. If you want sugar in your coffee, you should call the waiter!

b. If you want sugar in your soup, you should get tested for diabetes!

Whereas (12a) expresses that calling the waiter is a means to achieve your goal, (12b) expresses that the addressee's wish is a symptom for a certain necessity. CIs exactly replicate the contrast.

(13) a. If you want sugar in your coffee, call the waiter!

b. If you want sugar in your soup, get tested for diabetes!

Again, I doubt that a uniform treatment in terms of (8) can capture the difference between the two dependencies.

Moreover, CIs replicate a difference in the possibility of binding from the consequent into the antecedent that has been observed to distinguish different classes of hypothetical conditionals. In Section 5, the distinction will be used to argue for a distinction between epistemic and non-epistemic instances of CIs.

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[5]The argument only holds for approaches that focus on the non-epistemic nature of the imperative (cf. Zarnic (2002), Portner (2005), Mastop (2005)). Asher and Lascarides (2003) does not run into the problem since it forces the information state into one where all worlds are such that at no moment the boss comes in you stare at him, which is indeed what we want. I'm indebted to one of my reviewers for pointing this out.

[6]We might consider turning (11b) into the right reading by adding a covert *always*. I'm indebted to Ede Zimmermann for drawing my attention to non-distributive predicates that clearly show that this is not the right way to go.

(1) a. If your boss comes in, never wink less than three times.

b. $always_t$ [y. b. comes in at t] $![\neg(\exists t')[t' \subseteq t]$[there are less than 3 winking events in t']]

Intuitively, (1a) is satisfiable, but (1b) is a contradiction: for no interval of more than three winking events is it the case that every subinterval also contains three winking events.

(14) a. If you want him$_i$ to say nice things about your work, treat every professor$_i$ with courtesy.

b. *If he$_i$ is already there, give every speaker$_i$ his badge.

Most of the contrasts mentioned above have been analyzed drawing on a particular impact of modality present in the matrix clause of the conditional. In the next section, I will propose an analysis for imperatives that assimilates it to modal verbs and allows for an alternative construal of CIs.

4. Imperatives, Modal Operators, and Conditionals

4.1. Imperatives as Modal Operators (MOP)

4.1.1. Descriptive and Performative Modal Verbs

Imperatives prove problematic for semantics for two reasons: they lack an obvious connection to truth values (cf. 15), yet at the same time, their effects are too manifold to associate them directly with a particular speech act (e.g. by letting them constrain the set of deontically accessible worlds), cf. (16):

(15) A: Close the door!
B: #That's true.

(16) a. Get well soon! WISH

b. Take a cookie if you want. PERMISSION

c. Close that door immediately! ORDER

d. From Shibuya, take the Inokashira line to Komaba Todaimae. ADVICE

I want to suggest comparison with modal verbs as a natural starting point. They allow for **descriptive** usages, on which they describe the way the world is with respect to certain obligations, needs, etc. (e.g. 17b). On the other hand, we find modal verbs in context where they seem to themselves bring about the corresponding modal facts (called **performative** usages; e.g. (17a)).

(17) a. You may pay for this. (*supervisor to student in the cafeteria*)

b. You may use a credit card. (They accept all major types.)

I follow Kamp (1978) and Schulz (2003) in assuming that descriptive and performative modal verbs share the same (propositional) semantics. The difference will be argued to fall out from a particular setting of contextual parameters.

Now, I want to argue that imperatives are like performative usages of modal verbs; that is, the same semantic object underlies (18a) and (18b).

(18) a. You must close the door immediately!

b. Close the door immediately!

I assume that imperatives contain a modal operator semantically like *must* which comes with presuppositions that constrain it to contexts in which a modal verb like *must* would be used performatively.

For the semantics of the modal operator, I follow the standard possible worlds semantics as laid out in Kratzer (1991).[7] Modal verbs express necessity or possibility of a proposition with respect to two parameters, namely a modal base f and an ordering source g. Both are functions from worlds into sets of propositions (**conversational backgrounds**).[8] The former assigns each world w a set of worlds to be taken into consideration, and the latter assigns each world w a set of propositions that are used to induce an ordering relation on a set of possible worlds.

(19) preorder $\leq_{g(w)}$:
$v \leq_{g(w)} z$ iff $\{p \in g(w) \mid z \in p\} \subseteq \{p \in g(w) \mid v \in p\}$

We can now define the set of worlds in the background given by f that are optimal according to the ordering source g at w.[9]

(20) $O(f, g, w) = \{v \in \cap f(w) \mid \forall z \in \cap f(w)$: if $z \leq_{g(w)} v$ then $v \leq_{g(w)} z\}$

The semantics of the modal verbs *must* and *may* can now be given as in (21).[10]

(21) a. $[\![$ must $]\!]^{c,s} = \lambda f \lambda g \lambda p \lambda w.(\forall w' \in O(f, g, w))[p(w')]$
b. $[\![$ may $]\!]^{c,s} = \lambda f \lambda g \lambda p \lambda w.(\exists w' \in O(f, g, w))[p(w')]$

The various 'readings' for modal verbs (e.g. epistemic, deontic, buletic, ...) depend on the particular interpretation of modal base and ordering source. Now, the performative effect arises only if the parameters involved are such that the speaker is known to have perfect knowledge about them. Consequently, he utters a necessity proposition he cannot be mistaken about. Moreover, the ordering source has to be constituted by some kind of preferences. Then, roughly, if nothing speaks against his utterance constituting a speech act that makes the expressed necessity (or possibility) proposition true (e.g. that he is giving a COMMAND (to be defined as rendering something obligatory which was not obligatory before)), his speech act is taken as such.

4.1.2. Integrating Imperatives

If we set aside for a moment permission imperatives, we can generalize the contribution of an imperative to saying that among all the ways the speech situation

[7] Based on Lewis (1973) and Kratzer (1978); cf. van Fraassen (1973) for similar ideas.

[8] I slightly deviate from the original account in that modal base and ordering source are represented by free variables in the object language ('pronouns', interpreted via assignment s). They constitute arguments of the modal operator (cf. von Stechow (2004), von Fintel and Iatridou (2005)).

[9] The formula is simplified relying on Lewis (1973) *Limit Assumption* which grants that there is no infinite approximation to $g(w)$, that is, the set of optimal worlds is well-defined.

[10] Interpretation proceeds via a standard interpretation function $[\![\cdot]\!]^{c,s}$, which assigns each expression its meaning at a context c (specifying a triple of speaker c_S, utterance time c_T, and utterance world c_W) w.r.t. an assignment s.

could evolve those are best (according to some contextually given ideal) that make the complement proposition true. This accounts naturally for WISHES that order with respect to *what the speaker wants*, COMMANDS (w.r.t. *what the speaker commands*), ADVICE (w.r.t. *the hearer's preferences*), etc.

To spell it out, I assume that imperatives contain a modal operator OP_{Imp}, which is interpreted as a slightly more restricted version of *must*. Normally, it expresses necessity with respect to the Common Ground as the modal base (consequently, the modal base is fixed lexically and f is the empty conversational background e (for any world w, $e(w) = \emptyset$). Only in the case of ADVICE do we assume that f adduces additional information.[11] Furthermore, we need a contextually given set of preferences as an ordering source g. (I use cg^c for the function that maps any world to the set of propositions that are mutual joint belief in c and thus describe the Common Ground in c; $\Cup$ is pointwise union of two conversational backgrounds.)[12]

(22) $[\![OP_{Imp}]\!]^{c,s} = \lambda f \lambda g \lambda p \lambda w.(\forall w' \in O(cg^c \Cup f, g, w))[p(w')]$

According to (22) an imperative ϕ! could in principle express any proposition that ϕ is necessary in those worlds that are held possible by speaker and addressee that come closest to some contextually given ideal. In order to constrain this to the usages we actually find, we postulate an additional presuppositional meaning component.

In order to exclude a descriptive usage, we constrain the interpretation of the free variables f and g by the following three requirements:

First, we require that the speaker is an authority on all parameters involved. This is spelt out in terms of exhaustive knowledge à la Groenendijk and Stokhof (1984) (cf. Zimmermann (2000); $Bel_{c_S}(w)$ is the set of worlds compatible with what the speaker believes in w.)

(23) The speaker c_S is an authority on a conversational background f in c iff $f \in AUTH(c_S)(c)$, where $AUTH(c_S)(c) = \{f : W \rightarrow \mathcal{POW}(\mathcal{POW}(W)) \mid (\forall w \in CG^c)(\forall p)[p \in f(w) \leftrightarrow (\forall w' \in Bel_{c_S}(w))[p \in f(w')]]\}$.

Of course, cg^c is in $AUTH(c_S)(c)$ for any context c (the empty conversational background e likewise), so we only need to require that g and an eventual non-empty f (for ADVICE) are in $AUTH(c_S)(c)$.

[11] Consider a scenario as in (1):

(1) A: How do I get to Shibuya?
B: Take the Inokashira Line.

This might have a reading where indeed both speaker and hearer have perfect knowledge about (the relevant part of) transportation in Tokyo, and the information given consists only in what kind of preferences to apply (e.g. if saving money or saving time is more important). But it is a lot more natural in a scenario where speaker and hearer agree on what the common preferences are, and the speaker is thus giving information as to what option meets them best. Consequently, he is bringing in additional facts that restrict CG^c. Again, in order for the imperative to be acceptable, the speaker has to be an authority over these facts.

[12] For each c, cg^c is a function from W to $\mathcal{POW}(\mathcal{POW}(W))$, s.t. for all w in CG^c: $\bigcap cg^c(w) = CG^c$.

For all f, f', functions $W \rightarrow \mathcal{POW}(\mathcal{POW}(W))$, and $w \in W$: $(f \Cup f')(w) \leftrightarrow (f(w) \cup f'(w))$.

Second, we require that the ordering source is preference related, in order to rule out ordering sources like *what the speaker takes to be most plausible*, etc.

Third, the speaker has to affirm the ordering source in c as a good maxim for acting in the given scenario.[13]

The proposition expressed by an imperative ϕ! thus amounts to saying that *the worlds in CG that are best according to some contextually given preference are ϕ-worlds*, where the speaker has perfect knowldge of these preferences and considers them a good guideline for acting in the give scenario.

As it stands, the theory does not explain PERMISSION-readings (cf. 16b). Giving a permission with an imperative requires overt modification (modal particles, reduced *if you like*-antecedents). Consequently, I think an analysis should treat them as somehow marked. In Schwager (2005c) I have proposed to derive them indirectly via pragmatic reasoning from *According to your wish to do ϕ and not do anything I don't allow you, it's best that you do ϕ.*[14]

4.2. Conditionals

Conditionals can now be analyzed by letting *if*-clauses constrain the modal base of a modal operator to those worlds that make the antecedent true (cf. Lewis (1973), Kratzer (1978)). They are thus analyzed as in (24).

(24) $[\![\text{ [If } \phi\text{, [MOP f g] } \psi \text{] }]\!]^{c,s} = [\![\text{ [[MOP f}^{+}\text{ g] } \psi \text{] }]\!]^{c,s}$,
where $f^{+} = \lambda w.f(w) \cup \{[\![\phi]\!]^{c,s}\}$.

Conditionals that lack an overt modal operator are assumed to host a covert *must* of epistemic necessity.

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[13] It is not clear to me, how this requirement can be made precise. It is needed to account for the deontic variant of Moore's paradox (cf. Frank (1996)). Take *g = the preferences of my tourist guide*; without the requirement of speaker affirmation, (1a) should be just as good as (1b).

(1) a. (According to my tourist guide) Go to Kyoto! #But I don't think you should do it.

b. #(According to my tourist guide) you should go to Kyoto. But I don't think you should really do it.

In (1b) *should* has a preference for the speaker centered (and thus affirmed ordering source) underlying the second sentence as well, thus causing a contradiction. But this can be overcome by explicitly adding the different conversational background as constituted by the tourist guide. In contrast to that, the restriction to a speaker affirmed ordering source cannot be overridden for the imperative. Note, that we can't directly require the ordering source to be fixed to the speaker's preferences: this would fall short of cases where the interests clearly lie on the side of the hearer, as in advices. Requiring that the speaker thinks the hearer's wishes are a justified maxim for acting makes the right predictions though:

(2) If you want to go to Harlem, take the A train. (It meets all your requirements of not spending too much, not losing too much time, etc. #Yet I don't think that these are the right criteria.)

[14] Alternatively, one could assimilate PERMISSION-imperatives to a certain case of ADVICE-imperatives with *for example*. In Schwager (2005a), these have led me to argue that the necessity operator found in imperatives is complex and consists in exhaustified possibility (cf. Schwager (2005a)), a complication otherwise irrelevant for the present task.

Given the semantics for imperatives we have developed in Section 4.1.2, CIs can be treated fully parallel to conditionals with modal verbs. OP_{Imp} is the modal operator in (25b), just as *must* is in (25a).

(25) a. If you see Jessica at the conference dinner, you must say hi.

b. If you see Jessica at the conference dinner, say hi!

Accordingly, CIs come out as complex imperatives. I call this particular analysis for CIs obtained from assuming that the imperative is a modal operator MOP$_{CI}$. (25b) is interpreted in (26) to be true at a world w if the addressee says hi at the preferred worlds in CG^c where the addressee sees Jessica at the conference dinner.

(26) $[\![$ [if [you see Jessica at the c.d.][OP_{Imp} f g [you say hi]]] $]\!]^{c,s}$ =
$\lambda w.(\forall w' \in O(cg^c \Cup \lambda w.\{$you see Jessica at the c.d.$\}, g, w))$
[you say hi(w')]

Hence, an utterance of (25b) in the given context constrains the Common Ground by leaving in only worlds where the speaker has the respective preferences (e.g. worlds w, s.t. $g(w)$ = $\{$whenever you meet a colleague I like under appropriate circumstances for greeting, you say hi$\}$. This rules out worlds in which Jessica is not a colleague I like or greeting is inappropriate at conference dinners.)

Turning CIs into complex imperatives differs crucially from all kinds of hypothetical speech act analyses. Consequently, it is time to take a look at the prediction it makes with respect to the potential problems individuated for HSA.

First, assimilating imperatives to modals makes many analyses proposed recently for anankastic conditionals carry over immediately to CIs (e.g. Sæbø (2002), Huitink (2005)).[15] Quantificational adverbials can be integrated easily if we allow for the imperative operator to take widest scope and follow Lewis (1975) in letting the *if*-clause restrict the quantificational adverbial. (10a) (repeated as (27a)) is correctly predicted to be equivalent to (10b).

(27) a. If your boss comes in, never stare at him.

b. $[\![$ OP_{Imp} f g [never [if your boss comes in][you stare at him]] $]\!]^{c,s}$ =
$\lambda w.(\forall w' \in O(cg^c \Cup f, g, w))[\neg(\exists t)$[your boss comes in at t in w' &
you stare at him at t in w']],
where g = *what the speaker commands*, f empty

HSA and MOP$_{CI}$ differ on a further prediction: According to MOP$_{CI}$, deliberately falsifying the antecedent should also be a means of complying with a CI, something not predicted to be genuinely acceptable under HSA. An anonymous referee has suggested this as as evidence against MOP$_{CI}$. I do not think that this is correct. For some examples it is completely natural to leave it to the addressee to either block the antecedent or satisfy the consequent, cf. (28).[16]

[15]The most recent analysis of von Fintel and Iatridou (2005) assumes a nested construal. If the nearness modality they are employing can be made compatible with my analysis, it requires the extension in Section 5. But one should pay attention to the fact that, in contrast to the nested cases considered so far, anankastic conditionals do not block binding relations; cf. e.g. (14a).

[16]Piwek (2001) expresses a similar view in a planning-based framework for imperatives. He argues that avoiding the antecedent is a strategy only if the consequent conflicts with further com-

(28) a. (I'd rather you wouldn't talk about it at all, but) if you tell Cecile about it, don't mention I was in Frankfurt last week.

b. If you get a bad mark, don't ever come back here!

c. Don't risk your life when driving. If you are tired, stop and have a nap.

The intuitive asymmetry between the two options should maybe be connected to the tendency of the antecedent to be topical.

5. Nested Modality

So far, we have assumed that an overt modal operator in the consequent would always act as the conditional operator. But Kratzer's framework acknowledges also an alternative construal under which the overt modality is treated as a fact in the world that depends on the antecedent. In that case, the role of the conditional operator is left to a covert element of epistemic necessity. von Fintel and Iatridou (2005) discuss the following example:

(29) a. If jaywalking is illegal in this town, that guy over there **has to** be punished.

b. $\Box\ f_{circ}$ [jaywalking is illegal] $g_{cS-wishes}$ [that guy over there is punished]

c. $\Box\ f_{epi}$ [jaywalking is illegal] [$\Box_{law}$ that guy over there is punished]

The construal in (29b) is the one we have been considering so far. Here, *has to*, perhaps interpreted in terms of circumstantial modality, plays the role of the conditional operator. This reading is true in a scenario where the speaker does not know if jaywalking is illegal, but if it is, he disapproves of it, and thinks that the guy he is pointing at (some hard-core lobbyist of the automobile industry) is responsible and thus deserves punishment. The construal in (29c) makes use of the alternative we have just introduced. Again the speaker does not know if jaywalking is illegal, but in case it is, this would mean that the law is such that it requires punishment for the guy he is pointing at and who is obviously jaywalking.

At this point we have to ask ourselves if CIs ever constitute cases of nested modality. That is, do we find a distinction between CIs that rely on overall preferences and CIs that rely on preferences that come out depending on the antecedent? At first glance, a nested reading might be unexpected, since imperatives cannot normally be embedded under modal operators.[17] Nevertheless, I will show that some CIs appear to involve nested modality. The MOP-analysis for imperatives extends

mitments of the addressee. Thus switching from mere (dis-)obedience to reasons for action seems promising, also with respect to the discussion in Dummett (1964). I think that the addressee centered view should be replaced by one in terms of mutual joint belief though. This comes natural in my analysis for imperatives.

[17]Cases like German (1) might seem to contradict that.

(1) Ruf ihn vielleicht mal an.
call.IMP him maybe Q-PARTICLE up
'Maybe, you better call him.'

naturally to these cases if we allow to interpret imperatives with respect to a subset of the Common Ground that has been made salient in the context. But before we start investigating CIs, it might be useful to take a look at general evidence for nested construals.

5.1. CIs and epistemicity

Covert modal operators giving rise to nested modality as in (29c) are generally assumed to encode epistemic necessity. Consequently, we obtain epistemic conditionals. These draw on an uncertainty as to what is the case (and thus could in principle be known), in contrast to for example metaphysical conditionals that draw on uncertainty as to how the world is to evolve which (at least, under a non-deterministic view) cannot yet be known (cf. Kaufmann (2005)). CIs occur naturally with both types of antecedents, the antecedent proposition can be decided (30a), or still open (30b).

(30) a. If the airport shuttle has already left, take the train.

b. If you miss the airport shuttle, take the train.

Moreover, elements of epistemic modality are generally known to impose limits on outscoping by other quantifiers (cf. von Fintel and Iatridou (2003)).[18] In particular, epistemic conditionals seem to disallow cataphoric binding into the *if*-clause (cf. Zhou (2005)); (31a) expresses a general rule and allows for binding, whereas (31b) checks whether a particular constellation holds at utterance time or not. The latter is an instance of an epistemic conditional, and binding is unacceptable. In (32), the binding contrast is replicated for CIs.

(31) a. If you say nice things about his$_i$ work, you will find every professor$_i$ willing to talk to you.

b. *If he$_i$ is already here, every senator$_i$ will help you.

(32) a. If you want him$_i$ to say nice things about your work, treat every professor$_i$ with courtesy.

b. If you find him$_i$ interested in your work, ask every professor$_i$ to write a letter of recommendation for you.

c. *If he$_i$ is already here, give every speaker$_i$ his badge.

So it seems that we might expect the CI to (33) to allow for a reading analogous to the nested construal which was preferred for (29b). But this is not born out. (33) does not allow for the (in that case rather trivial) reading which says that in case jaywalking is illegal, according to the law, it is necessary that you don't jaywalk.

Here we find an imperative modified with what usually functions as an adverb of epistemic possibility (*vielleicht*), to give a very guarded advice. Nevertheless, I do not think that this is case of an operator of epistemic possibility outscoping an imperative. Given that in such cases *vielleicht* cannot be stressed or put into the sentence initial position, classic tests (cf. Thurmair (1989)) suggest to treat it as a modal particle in such cases.

[18] But see data in Aloni (2001), also Tancredi (2005) for a *caveat*.

(33) If jaywalking is illegal, don't do it.

But this is really a side-effect of the restrictions on the modality expressed by OP_{Imp} (cf. Section 4.1.2). Even if (33) does not express that necessity with respect to the law depends on the antecedent, the preferred reading for (33) can only be obtained from a nested construal. Compare the two possibilities given in (34):[19]

(34) a. $\lambda w.(\forall w' \in O(cg^c \Cup \lambda$w.{jaywalking is illegal},$g, w))$
[you don't jaywalk in w']

b. $\lambda w.(\forall w' \in Bel_{c_S}(w) \cap$ jaywalking is illegal)
[$(\forall w'' \in O(cg^c, g, w'))$[you don't jaywalk in w'']]

A plausible scenario for (33) is the following: it is unknown to the addressee if the speaker wants her to obey the law; consequently, we find two types of worlds w', w'' in CG^c that differ with respect to what the speaker wants (= g): $g(w')$ = { you obey w''s law }, $g(w'')$ = { } (meaning, 'I don't care about the law'). In such a scenario, both construals (34a) and (34b) correctly rule out w'' worlds at which the speaker does not have the relevant preference. But in addition, (34a) rules out w'-worlds at which jaywalking is not illegal: here, a preference for law-obedience does not come out as a preference against jaywalking, hence (34a) is false.

At this point we see clear evidence that we need to allow for the nested reading. Consequently, we have to show that the alternative narrow scope construal obtained from MOP is needed as well. Intuitively, we have good evidence for that from paradigms like (30). And we can also show that for some CIs the nested construal makes the wrong predictions. Consider second best imperatives:

(35) Don't get lost! But if you do, call me.

A natural scenario for (35) is one where the ordering source g is constituted by the preference of the speaker. Then, from the first imperative we learn that the speaker wants the addressee not to get lost (that is, $(\forall w \in CG^c)$ [$(\lambda w'.c_A$ doesn't get lost in $w') \in g(w)$]). CG^c contains four types of worlds with respect to the future events of the addressee getting lost (l) and calling (c), namely ($\omega_1 \subseteq \{\neg l, c\}, \omega_2 \subseteq \{\neg l, \neg c\}, \omega_3 \subseteq \{l, c\}, \omega_4 \subseteq \{l, \neg c\}$). Each of these types is distinguished according to the speaker's preferences, which can still fall into three classes $g(\omega') = \{\neg l, \neg l \vee c\}, g(\omega'') = \{\neg l\}, g(\omega''') = \{\neg l, c\}$. Again, the two construals come out as in (36).

(36) a. $\lambda w.(\forall w' \in O(cg^c \Cup \lambda$w.{you get lost},$g, w))$ [you call me in w']

b. $\lambda w.(\forall w' \in Bel_{c_S}(w) \cap$ you get lost) [$(\forall w'' \in O(CG, g, w'))$[you call me in w'']]

[19] It is highly controversial which kind of epistemic modality should be employed in indicative conditionals; in order to let them convey information, I choose speaker-epistemic modality (instead of e.g. mutual joint belief, the CG^c-modality). This is sometimes challenged because sentences like (29b) are not felt to make claims about what the speaker believes, but rather about what the world is like. But speaker epistemic modality is often 'invisible' in discourse:

(1) A: I believe it's raining.
B: #No, you don't./No, it's not.

This time, (36a) does not make the right predictions: the antecedent restricts the attention to a subset (those compatible with the speaker's knowledge) of types ω_3, ω_4 and rules out all those worlds w_i that do not verify $O(cg^c, g, w_i) \subseteq c$. This rules out ω_3, ω_4 worlds that are type ω' or ω'' with respect to the preferences. Consequently, it requires an unconditional preference for calling on a subset of the worlds in CG^c. In contrast to that, (36b) predicts correctly that we end up with $CG^c \supseteq \lambda w.g(w) \subseteq \{\neg l, \neg l \vee c\}$. .[20] Consequently, we have good reason to retain the MOP$_{CI}$-construal made available from MOP.

At this point we might want to think a bit about the nature of the nested construals. If epistemic CIs result from embedding under an epistemic modal, it is highly surprising that imperatives cannot in general be embedded under modal operators of epistemic necessity. To resolve this puzzle, let's take a look at a different phenomenon, namely **modal subordination**. I will argue that imperatives - like modal verbs - can to a certain extent be subject to modal subordination, and that the 'nested' reading of CIs is to be obtained in a similar fashion (its analysis thus coming close to certain types of HSA). Consider the German and English data in (37) and (38).[21]

(37) <u>Vielleicht</u> bringt ja Maria *einen Wein*$_i$ mit. Dann <u>stell</u> *ihn*$_i$
perhaps brings PRT Maria a wine along. then put.IMP it
einstweilen in den Kühlschrank.
in-the-meantime in the fridge

'Mary might bring some wine$_i$ with her. In that case, put it in the fridge in the meantime.'

(38) Ede might make lasagne$_i$ tonight. $^{???}/^{ok}$(In that case) try it$_i$, he's an excellent cook.

The proposal for CIs is thus to use OP_{Imp} as the modal operator whenever the parameters with respect to which it is evaluated (the preferences) are independent of the antecedent. But for the other cases (that is, the epistemic ones), instead

[20]Technically, that solution could be modelled under the nested modality reading if the restriction to worlds in which the addressee gets lost was copied into the restriction of the second modal (OP_{Imp}, in that case). (E.g. along the lines of Frank (1996), who denies that non-epistemic modals can ever function as conditional operators.) I do not see much motivation for such a move though. We cannot really argue in terms of uniformity, since the two construals are set apart by the copying mechanism, which in addition seems quite *ad hoc*. Moreover, I don't think that the binding contrast could be predicted from interaction with the copying mechanism.

[21]It might look suspicious that the presence of an anaphoric element (*dann/in that case*) is strongly preferred; but then, this seems to constitute a general preference to be observed with non-epistemic modals (cf. 1a). In contrast to that, epistemic modals do not require anaphoric elements (cf. 1c).

(1) a. Mary might buy a lottery ticket$_i$. Bill is such a careful guy, $^{\#}$he should keep it$_i$.

b. Mary might buy a lottery ticket$_i$. In that case, since Bill is such a careful guy, he should keep it$_i$.

c. You should buy a lottery ticket$_i$. You are such a lucky guy, it$_i$ might be worth millions.

of a nested construal of modalities, I would like to propose that imperatives can sometimes get evaluated on a subset of the Common Ground. This can be either individuated by a preceding *if*-clause or be introduced by a preceding clause that expresses epistemic possibility (that is, draws attention to a subset of CG^c). The remainder of the paper gives a rough sketch of imperatives as evaluated with respect to subsets of the Common Ground.

5.2. Imperatives ϕ! with discourse referents for backgrounds

So far, we have treated all conditionals as forming a single proposition. In order to capture the similarity to the modal subordination data, I will now assume that an alternative construal first introduces a set of worlds to be considered (a propositional discourse referent), and then evaluates the imperative with respect to that set of worlds. Crucially, the requirement that the imperative always takes the Common Ground as a background is loosened to the requirement that its background be a subset of the Common Ground.

To spell this out, I resort to DRT with propositional discourse referents and discourse referents for ordering sources along the lines of Geurts (1999). Here, modal operators are generally assumed to presuppose a background b (an indexed proposition, which is a set of pairs <world,assignment>), and an ordering source g (as before, a world dependent set of propositions), and relate them to another propositional discourse referent. Now, the requirements spelled out in Section 4.1.2 are translated as restrictions on the presuppositional discourse referents $\underline{b}$ and $\underline{g}$.[22] So, b has to be a subset of the Common Ground ($b \subseteq$ CG), g has to be preference-related (pref-rel(g)) and affirmed by the speaker (aff(c_S,g)), and the speaker has to count as an authority on g ($\in AUTH(c_S)$). The DRS built from an imperative *(you)* P! can now be given as in (39). The discourse referents for background (b) and ordering source g have to be anchored to suitable elements salient in the discourse, and a new referent q is introduced for the worlds in the background at which the addressee satisfies the imperative.

(39) [$\underline{b}$, q, $\underline{g}$: q = b + [: P(c_A)], OPT(b,g) $\Box$ q, b $\subseteq$ CG, pref-rel(g), g $\in$ $AUTH(c_S)$]

At least after uttering the *if*-clause, a discourse referent p that verifies the antecedent is salient and accessible. If it is a subset of the Common Ground, b (the imperative's background) can be set to p. Necessity of the consequent is asserted only with respect to the g-best worlds within p; these are called OPT(p, g) and are computed as follows:[23]

[22] I follow Geurts (1999) in underlining presuppositional discourse referents: they are either anchored to a previously introduced, accessible discourse referent or, if they possess enough descriptive content, can be accommodated.

[23] As it stands, the treatment of the ordering source is unsatisfactory since it is not part of the object (DRT-)language but happens in the model (cf. Frank (1996), Geurts (1999)). Moreover, to translate the MOP$_{CI}$-construal for conditionals (cf. (24)), we need a slightly more complex variant of OPT.

(40) g-optimal worlds: [[OPT(p,g)]]$\langle w, f\rangle$ =
$\{\langle w', g\rangle \in f(p) \mid \neg(\exists\langle w'', h\rangle \in f(p))\ [w'' \leq_{f(g)(w)} w' \ \&\ w' \not\leq_{f(g)(w)} w'']\}$

A nice, independent prediction is obtained if we assume that counterfactual conditionals arise from making salient a propositional discourse referent p which is not a subset of CG, and interpreting the consequent with respect to p. Since imperatives have been required to be evaluated with respect to a subset of CG, it falls out immediately that counterfactual conditionals constitute impossible antecedents for imperatives.

(41) *If your mother were stricter, brush your teeth more often!

Likewise, negation can sometimes render salient its (positive) complement proposition, enabling sequences as in (42a), cf. Geurts (1999). But again, the respective discourse referent is not part of the CG anymore when it comes to evaluating the second sentence. Consequently, an imperative as in (42b) is ruled out correctly.

(42) a. I don't have a microwave oven. I wouldn't know what to do with it.
b. I don't have a microwave oven. #Don't use it!

6. Conclusion

Imperatives have been shown to occur freely in all types of conditionals; in particular, the consequent of hypothetical conditionals can take the form of an imperative. They show similar effects as overt modal verbs do. I take this to constitute additional evidence for the independently motivated hypothesis that imperatives contain modal operators. The standard construal of *if*-clauses constraining the restrictor of some (overt) modal operator carries over to CIs.

Imperatives have been shown to occur in epistemic conditionals, and, somewhat surprisingly, it has been argued that we can find instances of modal subordination with imperatives. These two issues have been taken together in order to argue that, as long as this is explicitly indicated, imperatives can sometimes be evaluated on a proper subset of the Common Ground. This fits well with the fact that CIs are never counterfactual.

The possibility to evaluate imperatives on a subset of CG gets us closer to the hypothetical speach act analysis (HSA) than initially expected. But the modal operator analysis (MOP) captures this not as an *ad hoc*-solution for CIs but in complete analogy to (i) evaluating unrestricted imperatives on the unrestricted CG or (ii) evaluating imperatives with respect to subsets of CG made salient in some other way (e.g. via modal subordination). Moreover, I have given evidence that the alternative construal of treating the imperative as the conditional operator (obtained exclusively from MOP) should also be retained (to account for overall preferences, for the binding contrasts, and maybe for anankastic conditionals).

Technically, the analysis in terms of discourse referents for the parameters of modal operators has been sketched in a DRT language. So far, the treatment of ordering sources is not yet satisfactory though. Further insights into the nature

of CIs may also be gained from detailed comparison with *if*-clauses in connection with interrogatives (cf. e.g. Isaacs (2005)) and explicit performatives.

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