

Imperatives as (non-)modals

Mark Jary

University of Roehampton

Mikhail Kissine

Université Libre de Bruxelles

1 Introduction

Imperatives constitute one of the greatest challenges for contemporary model-theoretic semantics. There are two related reasons for this. Firstly, imperatives are mostly (although, as we will see, not exclusively) used for the performance of directive speech acts, such as commands, requests, orders, pleas, and the like, i.e. for speech acts that do not aim at conveying information. Secondly, and partly because of this prototypical illocutionary function, imperatives do not seem to be open to truth-judgments, which raises doubts that they are the kind of objects that can be modelled in truth-conditional terms. Two main trends have emerged in the recent literature that seek to resolve this tension: one is to analyse imperatives as semantic objects distinct from what may be found in declaratives (Portner 2007; Mastop 2005), the other consists in assigning imperatives a declarative-like semantics, combining this with pragmatic machinery that blocks truth-judgments. We have criticized the first trend at length elsewhere (Jary and Kissine 2014, chapters 4 and 6). Here we would like

to focus on what is probably the strongest incarnation of the latter line of thought: Kaufmann's (2012) theory of imperatives as (performative) modals. In the next section, we will outline Kaufmann's theory in detail. In section 2 we will argue that, despite its sophistication, it fails to predict the unacceptability of judging an imperative as true or false. An important lesson that we draw from this discussion, in section 3, is that, in one way or another, a proper semantic treatment of imperatives has to do justice to their 'potentiality', i.e. to the fact that they don't claim anything about the current situation, while nevertheless being constrained by it. We will briefly consider, and reject, the way Giannakidou (2009; 2012) proposes to capture this kind of intuition. Section 4 opens the positive part of the paper. We provide a dynamic semantics for imperatives, which captures their inherent potentiality. We use the Discourse Representation Theory (DRT) framework (Kamp and Reyle 1993), as we believe it provides the most intuitive and transparent way to illustrate our claim, but the approach we advocate can be easily implemented in any dynamic framework.

Before proceeding, though, we should point out that we do not wish to claim that potentiality is all that there is to imperatives: with a few qualifications, imperatives are also inherently second-person oriented and are restricted to agentive interpretation (e.g. Zanuttini 2008; Jary and Kissine 2014, chapter 2). However, these features are orthogonal to the topic of this paper, viz. whether or not imperatives are modal. The resistance of imperatives to truth-judgments and the way in which potentiality could be handled formally, by contrast, are crucial if one wishes to distinguish imperatives from modals.

2 Kaufmann: imperatives as performative modals

2.2 Performative modals

Directive speech acts clearly lie on the performative side of Austin's (1975) constative/performative divide, just like the 'explicit' performative sentence of the type in (1):

(1) I order/command/beg etc. that p.

Jary (2007) argues that a good reason for thinking that explicit performatives like (1) are not assertions is that they do not require acceptance in order that the common ground (CG) be updated with their propositional content. In other words, while an assertion such as (2) can be denied and hence not update the common ground (if, for instance, the addressee (A, henceforth) says 'No you didn't: you ordered Smith'), the utterance of (3) automatically updates the common ground with its propositional content. That is to say, as long as the appropriate 'preparatory' conditions are met (i.e. the speaker (S, henceforth) has the requisite authority, etc.), the utterance of (3) results in the proposition that S orders A to clean the latrines automatically becoming part of the common ground: no acceptance by S is necessary, and nor is rejection possible.

(2) I ordered you to clean the latrines

(3) I hereby order you to clean the latrines

(4) Clean the latrines!

This feature of explicit performatives has led to them being described as 'self-verifying', but the common-ground perspective on communication invites us to think of them as incontestable additions to the CG. It is notable that the same type of update occurs when the order is given by means other than an explicit performative: with the same assumptions of felicity (and allowing the context to determine the type of directive force intended), an

utterance of (4) will also result in the proposition that S orders the hearer to clean the latrines automatically becoming part of the common ground.

Given that any felicitous performative utterance results in an incontestable update of the CG (to the effect that that act has been performed), a form which leads to incontestable updates of the CG might be an efficient way of carrying out performative utterances. All that is needed is to specify a form whose utterance would have the required incontestable update results. Utterances of such a form would not be open to truth judgments, because acceptance or rejection would not be an issue. Kaufmann (2012) seeks to pursue this line by arguing that imperatives are disguised modal declarative sentences. The core idea is thus that the imperative mood should be thought of as a necessity modal, very similar (though not identical) to deontic *must*. To see where this intuition comes from—and how it relates to the notion of an incontestable (and hence not-truth apt) use of a declarative—, consider the fact that, in most contexts, (5) would constitute a close alternative to (4).

(5) You must clean the latrines.

Moreover, when used this way, there are similarities between imperatives and deontic uses of *must* that do not hold between imperatives and other deontic modal sentences. The assertion that the hearer will not carry out the action described by the imperative or *must* sentence creates an infelicitous discourse that does not result with a *should* or *ought to* sentence:

(6) [#] Clean the latrines, but you're not going to.

(7) [#] You must clean the latrines, but you're not going to.

(8) You should/ought to clean the latrines, but you're not going to.

Ninan (2005) uses this difference between the deontic *must*, on the one hand, and *should* and *ought to*, on the other, to argue that deontic *must* has only a performative use, which is to say that it can only be used to perform a directive speech act. This is in contrast to *should* and *ought to*, which can be used either performatively or descriptively. In other words, we could

utter (9) either to advise the hearer to clean the latrines, or simply to specify his obligations. This is why, according to Ninan, *should* and *ought to* have past deontic uses, as in (10), whereas *must* has none. One cannot direct someone to bring about a past state of affairs; hence, only an epistemic reading is possible for (11).

(9) You should/ought to clean the latrines.

(10) You should/ought to have cleaned the latrines.

(11) You must have cleaned the latrines.

Clearly, the infelicitous nature of the discourse we observe in (6) and (7) is a result of the directive force that the first sentences of these utterances convey: other means of conveying directive force result in the same pattern.

(12) # Would you mind cleaning the latrines, please? But you're not going to.

The reason is obvious: it is irrational to direct someone to do something that you believe that they are not going to do. What makes the *must* case interesting, as Ninan points out, is that the pattern appears to hold even if the subject is third-person, as we see in (13).

(13) # Sam must go to confession, but he's not going to.

This suggests that the directive use of *must* might be primary, and that third-person cases such as (13) are interpreted as directives to the hearer to bring about the state of affairs described. However, there is also evidence that deontic *must* can be used without a performative interpretation. Ninan points out that (14) cannot be plausibly analysed as any kind of request directed at A or at the pope. Because, according to Ninan, the pragmatic unacceptability of (6) and (7), or of (13), is a hallmark of performativity, he goes on to say that if you find this sentence acceptable, then you must be giving it a descriptive interpretation, and you would also find (15) acceptable.

(14) The pope must change his stance on contraception.

- (15) The pope must change his stance on contraception, but he is not going to.

As we noted above, Kaufmann wants to argue that imperatives are disguised *must* sentences (albeit, as we will soon see, with some unique presuppositional characteristics). What the data in (14) suggests is that *must* is not inherently performative, but achieves its directive force by pragmatic means. In other words, semantically speaking, performative modals have a bona fide truth-conditional content, of the same kind as their descriptive cognate. Since Kaufmann takes imperatives and performative modals to have the same semantic meaning, and since she takes performative modals to have truth-conditional content, she concludes that imperatives have the same declarative semantics. Her challenge is to explain how they nevertheless result in an incontestable update of the CG.

2.2 Kaufmann's theory

Kaufmann uses the standard Kratzer (1981; 1991) modality framework. Her core idea is that imperative mood contributes a necessity operator whose modal base is constituted by the CG¹, and whose ordering source is determined contextually, and—importantly— determines the kind of speech act that the imperative constitutes: if the imperative is uttered as a command, then the ordering source singles out among the worlds of the common ground those that best conform to what S commands; if the imperative is uttered as a wish, then the ordering source singles out among the worlds of the common ground those that best conform to what S wants. For the time being, let us limit the discussion to imperatives used as commands. The CG will be viewed as the set of possible worlds consistent with what is mutually accepted by the participants to the conversation (Stalnaker 1978; 2002).

¹ This does not apply to Kaufmann's treatment of advice (see Kaufmann 2012, 141–143), but we will leave these complications aside here.

Informally, in Kaufmann's view, the truth-conditions of a commanded imperative with the content p are:

(I) *Imperative(p), meant as a command is, true iff p is true in all the worlds of the CG that conform best to what S commands in the context of utterance.*

In order to distinguish utterances of imperatives from descriptive modal assertions, Kaufmann posits a number of presuppositions. The first, and probably most important, is the presupposition of *Epistemic Authority*. For any imperative to be felicitous, argues Kaufmann, S must have authority over the ordering source (we use the formulation given in Kaufmann and Kaufmann forthcoming):

(II) *For every proposition p , S believes that p is necessary with respect to the worlds singled out from the CG by the ordering source g iff p is necessary with respect to the worlds singled out from the CG by g .*

In other words, whenever S believes that a proposition is true in every possible world of the CG that has been singled out by the ordering source, this proposition is, in fact, true in every possible world of the CG singled out by that ordering source. By combining **(I)** with **(II)**, we get **(III)**:

(III) *S believes that imperative(p), meant as a command, is true iff, p is true in every possible world of the CG that conform best to what S commanded in the context of utterance.*

At this point, Kaufmann (2012, 152–154) invokes Gricean considerations of quality: all the participants in conversation may reasonably surmise that S will not say things she believes to be false. In relation to **(III)** this means that if A believes that S believes that imperative(p) is true, *eo ipso*, A believes that p is true in every possible world of the common ground that conforms best with what S commands:

(IV) *If S utters imperative(p), meant as a command, and A believes that S is sincere and cooperative, then A believes that p is true in every world of the CG that conforms best to what S commanded in the context of utterance.*

With **(IV)** Kaufmann's theory reaches a stage where the utterance of an imperative results in an unchallengeable update of the common ground. Unless the imperative is infelicitous because S's epistemic authority on the ordering source is violated, it is automatically taken as true.²

Finally, imperatives also come with the presupposition of *Epistemic Uncertainty*, according to Kaufmann (2012, 155–157): any felicitous imperative(*p*) triggers the presupposition that S believes that *p* is neither ruled in nor ruled out by the common ground. At this point, then, Kaufmann's theory predicts the following: if S utters imperative(*p*) and if S is sincere and her utterance felicitous, it becomes mutually accepted that *p* is true in all the worlds of the common ground singled out by some ordering source over which S has epistemic authority, and that S does not believe that *p* is true in every world of the common ground.

We can now consider how the ordering source is chosen, on Kaufmann's account, and how she ensures that it corresponds to a variety of directive force. An initial problem is that, unless the ordering source is restricted, (16) may mean something like (17) (cf. Kaufmann 2012, 157):

(16) Get up!

(17) Those alternatives that are *most plausible according to what I take to be the usual course of events* are such that you get up.

This is because, as Kaufmann points out, S has epistemic authority over what she considers to be the most plausible course of events; furthermore, even though S takes A's getting up as

² Kaufmann (2012, 84) also endorses the *Limit Assumption*, according to which, if the modal base — here the common ground—is not empty, the set of possible worlds singled out by the ordering source will not be empty either.

very plausible, she does not (necessarily) believe that it is necessary, with respect to the common ground, that A will get up. So, the interpretation in (16) respects the semantics of the imperative, as well as both presuppositions of *Epistemic Authority* over the ordering source and of *Epistemic Uncertainty* with respect to the content of the imperative. To circumvent such issues, Kaufmann (2012, 159–161) proposes that imperatives come with the presupposition that the propositional content constitutes one solution to some contextually salient decision problem, and that the ordering source is mutually believed to constitute the relevant criteria for resolving the this decision problem. As for good wishes, Kaufmann argues that if the content of the imperative is not a proposition whose truth is under A's control, then it does not constitute a solution to any decision problem. In such a case, the presupposition is cancelled, and the only restriction there is on the ordering source is that it is relative to S's preferences (2012, 160). For instance, (18) would mean, under this view, that in every possible world of the CG that conforms best to what S desires, A enjoys her meal.

(18) Enjoy your meal.

So, despite adopting a declarative-like semantics, Kaufmann's account seems to predict that imperatives are not used to assert: because they are unchallengeable additions to the CG, they do not put forth a proposition for acceptance. Moreover, her analysis predicts, by the same token, that imperatives are used performatively: whenever an imperative is interpreted as a command, S is taken to have performed the command in hand. In the next section, however, we will argue that this elegant theory is nevertheless flawed.

3 Is absence of truth-judgement really explained?

On Kaufmann's account, accepting an utterance of an imperative as felicitous entails accepting it as true. This is because imperatives come with a presupposition of *Epistemic*

Authority on the ordering source: an imperative(*p*) is felicitous and S believes that imperative(*p*) is true if, and only if, *p* is true in all the worlds of the common ground that are singled out by the ordering source. As a result, accepting an imperative as felicitous—again, presuming that S believes that the imperative is true—amounts to accepting that the imperative is true. This feature is exploited by Kaufmann (2012, 163–165) to explain the fact that imperatives cannot be judged as true or as false:

(19) S: Get up!

A: #That's true/ #that's false (you're lying).

The truth-judgments in (19) are infelicitous, argues Kaufmann, because they target the truth-value of a proposition whose truth is made common ground by S's epistemic authority on the imperative's ordering source. She claims that (20) is odd exactly for the same reasons as (19) (2012, 166): because it is reasonable to assume that S knows whether she is hungry or not, then, if S is sincere, it is odd to put the truth-value of S's utterance under discussion. Consequently, as long as her assertion is felicitous and she is sincere, it becomes common ground that she is hungry.

(20) S: I'm hungry

A: #That's (not) true. / #What you're saying is (not) true.

However, Kaufmann (2012, 167–168) does allow the possibility of the rejection of utterances such as *I'm hungry*. She accepts that (21) is felicitous, but argues that, while A's answer discounts S's utterance as a lie, it leaves her epistemic privilege untouched.

(21) S: I'm hungry

A: That's not true. You are lying.

In other words, A does not reject the presupposition that S knows whether she is hungry or not, but makes it clear that he believes that S says something she knows to be false.

A number of objections can be made at this point. To begin with, not all rejections of *I'm hungry* leave S's epistemic privilege untouched. For instance, in the following exchange one of us had with his son, what is targeted is the accuracy of addressee's evaluation of his own state of hunger:

(22) S: I'm hungry

A: No, you're not. You had a full bowl of ice-cream fifteen minutes ago.

More importantly, Kaufmann's explanation of (21) raises the question of why is it impossible to discard a directive as a lie, leaving, in the same fashion, S's epistemic privilege untouched.

(23) S: Close the door!

A: #That's (not) true. You are lying.

Assuming that the ordering source in (23) is what S commands, A's disagreement would constitute an accusation to the effect that S does not believe that A closes the door in all worlds in the common ground that conform best to what she commands. Importantly, A would not be denying S's epistemic authority, but since S knows what she commands, her insincerity would mean that she knows that her utterance did not constitute a command to close the door. This is because to reject the sincerity of an imperative, on Kaufmann's account, amounts to rejecting that p is true in all worlds picked out by the ordering source. If this is the case, then it follows that S did not, in fact command that p , for the truth of p in all worlds picked out by the ordering source is a necessary condition for the imperative to constitute a command that p . An accusation of insincerity, in the case of an utterance of an imperative, should therefore, on Kaufmann's account, amount to challenge to the felicity of the command. This problem arises due to the theory's reliance on a Maxim of quality: any norm of truthfulness must be open to exploitation. This puts Kaufmann in a dilemma: either she must drop the Maxim of quality and leave A with no reason except that p is true in all

worlds picked up by the ordering source; or she must keep the Maxim and accept that an utterance of an imperative can be rejected as a lie, which flies in the face of empirical observation.

There is another way to argue that Kaufmann's theory wrongly predicts that one can challenge the felicity of a command by rejecting the imperative as false. In the following example given by Kaufmann (2012, 150) herself, A clearly rejects the felicity of S's order; as a result, A also rejects that in every possible world of the CG that conforms best with what S commands A goes home—for S didn't command anything in the first place.³

(24) S: Go home immediately!

A: Hey wait a minute, you are in no position to give me orders.

But, if so, it is unclear why a rebuttal like the one in (23) could not serve the same function. That is, A's challenge in (23) should be equivalent to a rejection like the one in (24). To see why, consider how, on Kaufmann's account, (24) could fail to be a felicitous directive speech act. Recall that, in her view, any imperative (that is not interpreted as a good wish) comes with the presupposition that its content is a solution to some decision problem and that the ordering source consists in relevant criteria to solve this problem. So, plausibly, rejecting an imperative as in (24) amounts to making clear that the ordering source cannot serve as a solution for any decision problem (what S may order is irrelevant to A's action planning, as S cannot order him anything). But, if in (23) S does not believe what she says, then—provided that she still has epistemic authority on what she commands—it follows that she does not believe that her utterance constituted a command that A is to go home immediately. Therefore, rejecting her utterance as false should just mean that A points out that S knows that her command is infelicitous. That is, A's challenge in (23) should be equivalent to a rejection like the one in (25).

³ Provided that Epistemic Uncertainty is preserved.

(25) S: Go home immediately.

A: You are not in the position to give me orders, and *you know it*.

Another possibility that Kaufmann's analysis allows is that S may be sincere, but mistaken about her epistemic authority. To see the consequences of such an error, it is useful to consider once again deontic *must*:

(5) You must clean the latrines. [repeated]

Recall that Kaufmann claims that such uses are semantically identical to imperatives. The difference between modal sentences and imperatives is that, because the latter come with the presupposition of epistemic authority on the ordering source (and with a restriction on the ordering source) they cannot be used descriptively: if the imperative is felicitous, it is true. Modals like *must*, by contrast, may be used descriptively. When they are, as for instance in (26), S is not taken to have epistemic authority on the ordering source.

(26) You must clean the latrines. That's what the sergeant said.

This is why, as we saw above, a descriptively used *must* can be combined with the assertion that content under its scope is false.

(27) You must clean the latrines. That's what the sergeant said, but I know that you won't.

(15) The pope must change his stance on contraception, but he is not going to.
[repeated]

Kaufman and Kaufman (2012) suggest that while 'responses like *That's (not) true!* are generally infelicitous with performative uses', when an utterance allows for both descriptive and performative interpretations 'such a response can retroactively disambiguate and "lock in" the descriptive interpretation'. This is what would happen in (28):

(28) A: You must empty the trash!

B: That's not true. The sergeant didn't tell me anything.

Equivalent and attested examples are relatively easy to come by:

(29) A: Jesus can save you...but you must believe it! All you have to do is accept him as your saviour and learn from his teachings...only that way will you be saved in the coming end...you must listen!..

B: Oh no I must not. Stop pushing rubbish down other people's reading space .

<http://www.politicalforum.com/religion/219052-jesus-can-save-you-but-you-must-believe.html>

In (28)-(29) A's rebuttal of the *must* sentence shows that S has no epistemic authority on the modal's domain, i.e. S does not know what is necessary given A's obligations.

But recall that, with imperatives, denying S's epistemic authority over the ordering source amounts to treating the imperative as infelicitous. In the exchange (19), the content of S's imperative is that in every possible world of the CG that conforms best to what S commands, A gets up. Now, imagine that S is sincere but, in fact, has no epistemic authority over the ordering source. This may be because S is not fully aware of the kind of directive speech acts that she is entitled to perform. For instance, it could be that, while she thinks that she can issue commands, she is actually in no position to do so. In such a case, it is possible that the imperative is false. There is no obvious reason why, on Kaufmann's account, in (19) A should not be able to reject the directive as infelicitous. So, again, Kaufmann's theory proves unable to explain the infelicity of responding *That's not true* to an imperative.

4 Potentiality

A reaction that seems natural to us, at this point, is the following. From a semantic point of view, imperatives cannot be assimilated to modals. Modals say something true or false about the actual world; what is necessary or possible given set of propositions. Imperatives can simply not be used to make claims about the state of the world.

Yet, imperative use does appear to be restricted by the way the world is. It has been noted by a number of authors that utterances of the imperative are constrained by a need for the proposition expressed not to be ruled in or out by a background information set. In other words, the imperative appears to be limited to presenting potentialities (Davies 1986, e.g. ; Wilson and Sperber 1988; Kissine 2013, chapters 2 and 4; Jary and Kissine 2014, chapter 2).

This is most evident in predetermined cases, such as these from Wilson & Sperber (1988):

(30) [A child sent to apologise to someone, as she approaches his door:]

Please, be out.

(31) [A mother whose notoriously badly behaved child has been sent to apologize to someone, as the child arrives home:] Please, don't have made things worse.

Although the state of affairs is decided, S is ignorant of it, and hence the state of affairs described by the utterance is compatible with what she knows. The potentiality restriction means that counterfactual uses of the imperative are not possible. So, one cannot, for example, use (32) as an alternative to (33).

(32) Don't have done that!

(33) If only you hadn't done that!

To insist: that the content of an imperative has to be potential does not mean that, at the utterance time, the truth-value of this content is not objectively settled. What it means is that the truth-value of this content has to remain unsettled with respect to a relevant set of information, a relevant contextual background. For instance, Dominicy and Franken (2002) observe that the following imperative may be uttered by an archaeologist, who is about to unwrap a mummy, and for whose theory the date of birth of the mummified king is crucial.

(34) Please, be born before 4000 BC!

The reason why (34) is felicitous is that, as far as the relevant background is concerned (the information the archaeologist and his audience have at the utterance time), it is unknown whether or not the mummified king was born before 4000 BC (even though, it is, of course, objectively settled). This why uttering (34) would be infelicitous once the mummy has been properly dated.

On this view, the imperative presents as potential a state of affairs in which A performs some action, but does not assert that this state of affairs is potential. Directive force could then be argued to result from pragmatic considerations: the hearer seeks to identify the point of a non-assertoric utterance which presents him as the agent of an action, and a reasonable hypothesis is that the utterance is offered as a reason for him to take that action. As for the precise nature of the directive act, it would be determined by similar pragmatic considerations to those that, on the view that directive force is encoded by the imperative, must be brought to distinguish, say, orders from advice.

The challenge is to capture, in formal terms, potentiality (and, in particular, the distinction between presenting a state of affairs as potential and asserting that a particular state of affairs is potential), while allowing a uniform semantic interpretation of declarative and imperative clauses. Imperatives are not the only form to exhibit potentiality. Subjunctive clauses, in many languages, have the property of denoting states of affairs that are neither ruled in nor

ruled out by the CG (this is why subjunctive is often said to be a ‘non-assertoric’ mood (e.g. Bybee, Perkins, and Pagliuca 1994, 212–237). For instance, in French, main-clause (present tense) subjunctive can only express contents whose truth-value is undetermined, that is, only potential contents. The utterance of (35) would be infelicitous if it is known that Jean leaves the city anyway or that he will not leave the city (see Schlenker 2005; Kissine 2013, 47, 52).

(35) Que Jean quitte la ville!

That Jean leave-SBJV.3SG.PR the city!

(= Let Jean leave the city)

Giannakidou (2009; 2012) claims that Greek subjunctive particle *na*, as well as the imperative mood, are ‘non-veridical’. Because what she means by ‘non-veridical’ is synonymous to our use of ‘potential’, it is instructive to have brief look at her formalisation. Informally, a propositional operator ϕ is said to be *veridical* iff $\phi(p)$ entails or presupposes that p is true according to some relevant information state M ; ϕ is *anti-veridical* iff $\phi(p)$ entails that p is false according to some relevant information state M . Accordingly, ϕ is said to be *non-veridical* iff $\phi(p)$ does not entail nor presuppose that p is true or false according to some relevant information state M (Giannakidou 2009, 1889). So, far it thus seems that imperatives are non-veridical indeed. The problem, however, is to define this notion formally without getting back to a modal account. And, in fact, we part company with Giannakidou (2012) when she formalizes non-veridicality in Kratzerian terms. On her account, a non-veridical operator, such as the subjunctive, should be seen as a universal epistemic modal with a non-veridical modal base. A modal base W is non-veridical relative to p iff it contains at least one $\neg p$ world. Because $\phi(p)$ is said to be a necessity operator with a modal base that is non-veridical relative to p , an ordering source g is needed. As a result, $\phi(p)$ is true iff p is true in every possible world of the modal base that conform best to g . Let f be an epistemic conversational background, which selects the CG as a modal base:

(36) $\cap f(w) = \lambda w'.w'$ is compatible with what is mutually accepted in w

Given an ordering source g , here is what the semantics of a non-veridical operator looks like (Giannakidou 2012):

(37) For any possible world w , a conversational background f and an ordering source g :

$\llbracket \varphi \rrbracket_{w,f,g} = \lambda p. \forall w' \in \text{Best}_{g(w)}(\cap f(w)): p(w') = 1$, where $\text{Best}_{g(w)}(\text{CG})$ selects from CG the most ideal worlds given $g(w)$

While we are very sympathetic to the idea of non-veridicality, we have several worries about applying such an account to imperatives. To begin with, it is unclear what the ordering source should be. One solution would be to treat it in the same way as Kaufmann; but then the account would be open to the objections raised in the previous section.

A related problem is that the semantics in (37) predicts that an imperative sentence can be assigned a truth-value. To these objections, Giannakidou could respond that in her view the imperative introduces an illocutionary operator (generated under Mood^0), which ensures that imperatives cannot be used assertorically, and hence that their truth-value cannot be challenged (cf. Giannakidou 2009). However, it is unclear how this solution—which seems quite ad hoc to us as far as imperatives go, at least—should be implemented. Furthermore, we have argued elsewhere that there are strong methodological and theoretical reasons for not equating imperative mood and illocutionary force (Kissine 2012; Kissine 2013, chapters 2 and 5; Jary and Kissine 2014). Here, let us just say that we are looking for an account that extends to cases where the imperative is used without directive force.

The first class of such cases is constituted by good wishes as in (18):

(18) Enjoy your meal.[repeated]

To be sure, it may be argued that in English the use of imperatives in good wishes is not very productive and close to idiomatic (Davies 1986, 51). However, there are languages where casting good wishes in imperative is much more productive. For instance, Georgian has an optative mood, specialised for the expression of third-person wishes (with non-stative verbs); however, for second-person good wishes, it is the imperative that is used instead (Boeder 2010, 626). A second class of non-directive uses of the imperative mood is constituted by ‘imperative-like conditional’ (ILC) constructions such as the following:

(38) Come down with the flu and you’ll be in bed for weeks.

Some scholars have denied that the first clause in constructions like (38) is really imperative (Clark 1993; Han 2000, 188–197; Russell 2007). However, a consensus is emerging that cases like (38) do contain imperatives (Iatridou 2009; Jary and Kissine 2014, chapter 3). To mention only one very compelling reason, such constructions are found in languages with a clear morphological imperative, as for instance, French or Spanish:⁴

(39) Sachez être juste et ils se
can-IMP.2PL. be-INF fair and they PR.REFL
 débarrasseront de vous.
get.rid-IND.FUT.SIMPLE.3PL of you
 (= Be fair and they’ll get rid of you)

(40) Sé ladron, y todo te saldrá
be-IMP.2SG thief and all you turn-out.FUT.3SG
 bien.
well

⁴ Kaufmann is immune to this objection, as she does not build directive force within the imperative semantics. However, her own account of ‘conditional imperatives’ in terms of modal subordination (cf. Kaufmann 2012, 212) faces serious objections (von Fintel and Iatridou 2012; Jary and Kissine 2014, chapter 4).

(= Be a thief and everything will turn out fine.) (from Grande Alija
1997)

5 Imperatives in DRT

The challenge posed by the semantics of imperatives remains one of capturing the fact that they do not seem to be true or false in the actual circumstance of evaluation without lapsing into a modal theory, where the imperative would boil down to some kind of necessity operator. The intuitive idea is thus that, somehow, imperatives shift the perspective from what is actually the case to something that could be the case, but without introducing a claim about what is possible or necessary. Asher and Lascarides (2003a) propose to think of imperatives as shifting the possible world parameter of interpretation, viz. that the imperative causes the discourse be evaluated at some other possible world. The problem with this approach is, first that it is doubtful that an imperative sentence causes the shift of the possible world parameter relative to the whole discourse, and, second, that how this shift should be constrained remains a moot point (Kaufmann 2012; Jary and Kissine 2014, chapter 4).

We have decided to capitalize on another ‘mobile’⁵ parameter of truth-conditional interpretation: value assignment to variables. In order to implement a non-modal semantics of imperatives, we will rely on a minimal enrichment of the most standard version of DRT (Kamp and Reyle 1993). The first reason for this choice is that the intuition about the potentiality of imperative is best captured from a dynamic perspective; the second is that, in DRT, dynamic relations are precisely ensured by value-assignment functions.

For simplicity sake, we will adopt a highly naïve Davidsonian semantics of imperative verbs. We will assume that each verb comes with at least an individual variable, introduced by the

⁵ Cf. Belnap et al. (2001, 145–149).

verbal subject, and an event variable. This conception is, of course, far too crude. However, our objective here is to formalize the potentiality of imperative clauses, and as will become obvious in a moment, nothing in our account hinges on the details of verbal semantics, so long as each verb introduces at least one eventuality variable. In this paper, we will also ignore all the temporal and aspectual issues, as, again, they are not important for our main objective.

The basic terms of traditional versions of DRT are Discourse Representation Structures (DRSs), which consist of a universe of individual discourse referents and a set of conditions. Because we treat events as (unrepeatable) particulars, individual discourse referents may denote individuals and objects (1.1.1) as well as events (1.1.2). Furthermore, in order to be able to account for the impossibility of judging imperatives true or false), we follow Geurts (1998) in introducing propositional discourse referents within the basic terms of DRS (1.2).

1. DRS terms

$$1.1 \quad R_i = R_E \cup R_O$$

$$1.1.1 \quad R_O = \{x, y, z, \dots x', x'' \dots\}$$

$$1.1.2 \quad R_E = \{e, e' \dots\}$$

$$1.2 \quad R_p = \{p, q, \dots p', p'' \dots\}$$

The major innovation we bring in the syntax of DRSs is the inclusion, in 2.3, of !K within the set of possible conditions, the exclamation mark standing for the imperative, and in fact, any potential, mood. The definition of the truth-predicate in 2.7 will be needed in order to account for truth-judgments (and the lack thereof).

2. Syntax of DRSs

2.1 A DRS K is a pair $\langle U_K, \text{Con}_K \rangle$ of a universe of discourse referents

$U_K \subseteq R_i \cup R_p$ and of a set of conditions Con_K ;

- 2.2 If $\alpha_1, \dots, \alpha_n \in R_i$, and P is a n -place predicate, then $P(\alpha_1, \dots, \alpha_n)$ is a condition;
- 2.3 If K and K' are DRSs, then $\neg K$, $!K$, $K \Rightarrow K'$, $K \vee K'$ and $N(K)$ are conditions;
- 2.4 If $\alpha \in R_i$ and $\beta \in R_i$, then $\alpha = \beta$ is a condition;
- 2.5 If K and K' are DRSs, then $K(\forall)K'$ is a condition;
- 2.6 If $\alpha \in R_p$ and K is a DRS, then $\alpha = K$ is a condition.
- 2.7 If $\alpha \in R_p$, then $\text{True}(\alpha)$ and $N(\alpha)$ are conditions.

The explicit objective of DRT is to model the incremental construction of discourse. A DRS may thus be thought of as an information slate, akin to the CG, updated with new information. For this reason, an essential component of the theory is its capacity to merge DRSs.

3. Merge of DRSs

$$K \oplus K' = \langle U_K \cup U_{K'}, \text{Con}_K \cup \text{Con}_{K'} \rangle$$

4. Semantics of DRSs

The model, described in 4.1 is standard, with events conceived as (unrepeatable) particulars (4.1.1).

4.1 Model $M = \langle D, I, W, R \rangle$, where

- 4.1.1 D is the set of particulars, viz. of individuals, objects and events;
- 4.1.2 I is the interpretation function that maps pairs of possible worlds and predicates onto n -tuples of particulars;
- 4.1.3 W is the set of possible worlds;
- 4.1.4 R is the accessibility relation on possible worlds, such that

$$R(W) \in \text{Pow}(W)$$

Essential to the semantic interpretation of DRSs is the embedding function—which does the job of value assignments in traditional static models. We will follow Geurts (1998) — see 4.2 and 4.3 — in order to allow straightforward interpretations of propositional terms.

- 4.2 A **0-order embedding function** f is a partial function from individual referent markers onto particulars of D ;
- 4.3 A **n -order embedding function** is the union between a 0-order embedding function and a partial function that maps propositional referent markers onto pairs $\langle w, f \rangle$, where $w \in W$ and f is a $n-1$ -order embedding function;
- 4.4 An embedding function g **extends** f with respect to K , $f[K]g$ iff $\text{Dom}(g) = \text{Dom}(f) \cup U_K$ and $g \supseteq f$;
- 4.5 Given an embedding function f , a model M , a possible world w and a DRS K , f verifies K , $M \models^{f, w} K$, iff f **verifies** all the conditions of Con_K relative to w ;
- 4.6 Given a condition $\gamma \in \text{Con}_K$ and $\Gamma \subseteq F^0 \cup F^n$, where F^0 is the set of 0-order embedding functions and F^n is the set of n -order embedding functions, then, for any $f \in \Gamma$:
- 4.6.1 if $\gamma = P(\alpha_1, \dots, \alpha_n)$, such that $\alpha_1, \dots, \alpha_n \in R_i$, then, $M \models^{f, w} \gamma$ iff $\langle f(\alpha_1) \dots f(\alpha_n) \rangle \in I(P)(w)$;
- 4.6.2 if $\gamma = (\alpha = \beta)$, and $\alpha, \beta \in R_i$, then, $M \models^{f, w} \gamma$ iff $f(\alpha) = f(\beta)$;
- 4.6.3 if $\gamma = (\alpha = \beta)$, and $\alpha \in R_p$ and $\beta = K'$, then $M \models^{f, w} \gamma$ iff, for every w' and every g , $\langle w', g \rangle \in f(\alpha)$ iff $M \models^{g, w'} K'$;
- 4.6.4 if $\gamma = \neg K$, then $M \models^{f, w} \gamma$ iff $\nexists g$ such that $f[K]g$, $g \in \Gamma$ and $M \models^{g, w} K$;
- 4.6.5 if $\gamma = !K$, then $M \models^{f, w} \gamma$ iff
- there is a $g \supseteq f$, such that $f[K]g$, $g \in \Gamma$ and $M \models^{g, w} K$;
 - there is a discourse referent $e \in U_K$, such that $e \in R_E$;

- and for all $h \supseteq f$, such that $h \in \Gamma$ and $h \not\supseteq g$, $h(e)$ is undefined;
- 4.6.6 if $\gamma = K \Rightarrow K'$, then $M \models^{f,w} \gamma$ iff for all g such that $g \in \Gamma$, $f[K]g$, and $M \models^{g,w} K$, there is an h , such that $h \in \Gamma$ and $g[K']h$ and $M \models^{h,w} K'$;
- 4.6.7 if $\gamma = K \vee K'$, then $M \models^{f,w} \gamma$ iff there is a g such that $g \in \Gamma$ and $f[K]g$, and $M \models^{g,w} K$ or $M \models^{g,w} K'$;
- 4.6.8 if $\gamma = K(\forall \alpha)K'$ and $\alpha \in R_i$, iff for all g , such that $g \in \Gamma$ and $f[K]g$, and, for all $d \in D$, $g(\alpha) = d$ and $M \models^{g,w} K$, for all h , such that $h \in \Gamma$ and $g[K']h$, $M \models^{h,w} K'$;
- 4.6.9 if $\gamma = N(\alpha)$, $\alpha \in R_p$ then $M \models^{f,w} \gamma$ iff for all $g \supseteq f$, such that $g \in \Gamma$, and every $w' \in R(W)$, $\langle w, h \rangle \in f(\alpha)$;
- 4.6.10 if $\gamma = \text{True}(\alpha)$, and $\alpha \in R_p$, then $M \models^{f,w} \gamma$ iff for every $g \supseteq f$, and every h , such that $\langle w, h \rangle \in f(\alpha)$, and $g, h \in \Gamma$, $g \supseteq h$.

4.7 A DRS K is **true** with respect to a possible world w and an embedding function $f \in \Gamma \subseteq F^0 \cup F^n$ iff for every $g \supseteq f$, such that $g \in \Gamma$, $M \models^{g,w} K$

First, a DRS K under the scope of the imperative operator may be verified by f only if f is strictly extendable relative to K . This means that the content of the imperative can neither already be part of the main DRS, nor ruled out by it. Note, however, that 4.6.5 does not say that the content of an imperative sentence cannot be true or false. The idea rather is that an imperative sentence cannot be used to update the CG represented by the main DRS, because its content cannot be true under the same value assignments as the rest of the discourse (unless any further discourse update presupposes the truth of this content).

Take (41) a, as an illustration.

(41) a. There is a red file in the closet. Take it.

b. $[x, y, z: \text{red-file}(x), \text{closet}(y), \text{addressee}(z) ![e: \text{takes}(z, x, e)]]$

Informally, what the DRS in (41)b shows is that any further assertion should presuppose that there is a red file in the closet, but not that the addressee takes it. By definition, once the function that verifies the first, declarative sentence has been extended to another function that verifies the imperative sentence, the truth of all subsequent non-imperative clauses will presuppose the truth of the imperative one. For this reason, the event variable introduced by the imperative verb remains under the scope of the imperative (!). In this way, the discourse may be further updated with declaratives, without requiring that the imperative be true by the same token. This is exactly what happens in (42).

(42) a. There is a red file in the closet. Take it. The map is in there.

b. $[x, y, z, x': \text{red-file}(x), \text{closet}(y), \text{addressee}(z), \text{map}(x'), \text{contained-in}(x', x), ![e: \text{takes}(z, x, e)]]$

The information that the map is in the red file can be true or false independently of whether A takes it or not, because every assignment function that extends from the first (declarative) to the second (imperative) sentence cannot be extended to subsequent declaratives. However, an embedding function may extend from the first to the third sentence, both being declaratives. Accordingly, both declaratives can be true (or false), while the fact that A takes the red file remains unsettled.

Compare now (42) with (43). Here, under the most natural interpretation, the third, declarative sentence can be verified only if the imperative is too. This is what is captured by (43)b.

(43) a. There is a red file in the closet. Take it. You'll find the map in there.

b. $[x, y, z, x': \text{red-file}(x), \text{closet}(y), \text{addressee}(z), \text{map}(x'), ![e, e': \text{takes}(z, x, e), \text{find-in}(z, x', x, e')],]$

Note that the discourse referent introduced by *the map* is still accommodated at the uppermost level. This new discourse referent cannot be bound, and as argued, for instance, by Geurts (1999, 57), pragmatic principles favour accommodation at the highest level. That is, the assignment of values to the variables introduced by the first sentence can be extended to that introduced by *the map* without necessarily assigning value to the event variable introduced by the VP⁶ in the third sentence. Accommodating the latter within the main DRS would imply that both declarative sentences could be true without the imperative being verified. Although not impossible, such an interpretation is hardly salient.⁷

Contrast now the semantics of imperative clauses with that of negation given in 4.6.4. According to this definition, whenever a DRS contains a negated DRS as a condition, no embedding function can verify the main DRS and the negated DRS at the same time. This captures the idea that the material under the scope of negation is ruled out of the CG. By contrast, when a DRS contains an imperative as a condition, no embedding function can extend both to this imperative and to other declaratives; this, however, doesn't mean that no embedding function can verify both the main DRS and the imperative. Compare (41) with (44).

- (44) a. I opened the closet. There is no file in there.
 b. $[y, z, e: \text{closet}(y), \text{speaker}(z), \text{opened}(z, y, e) \neg[x: \text{file}(x), \text{contained-in}(x, y)]]$

In (44)b, the negated DRS cannot be verified at the same time as the conditions in the main DRS without getting a contradiction. In (41)b, by contrast, this can be the case, but not by an embedding function that could verify other conditions in the main DRS.

⁶ For ease of exposition, we will treat *will find* as a single verbal unit.

⁷ Most probably the relationships between imperatives and declaratives in sequences like (42) and (43) could be captured in more fine detail by incorporating our semantics of imperatives within a dynamic theory enriched with rhetorical relations (such as *Elaboration* and *Narration*), of the sort put forth by Asher and Lascarides (2003b).

It is important to realise that DRSs merge is taken here as a representation of the state of the common ground. A DRS stands under the scope of ! represents a piece of information that cannot be integrated within or rejected from the common ground. Now, the common ground is inherently dynamic, and a proposition that is potential relative to the common ground at some moment may become non-potential — because it has been accepted or challenged — at another. It is a crucial test for a formal theory of imperatives to predict such phenomena. Take (45)a:

- (45) a. S: Take the garbage bin out. A: I already did.
b. $[x, y, z, \underline{e}': S(x), A(y), \text{garbage-bin}(z), \text{take-out}(x, y, e') ![e: \text{take-out}(e)]]$

A's response challenges the potentiality of S's imperative; as his response introduces an event discourse referent which cannot be linked with that under the scope of the imperative (see (45)b). In other words, either A's assertion has to be rejected or the content of S's utterance should be integrated within the CG. If S follows up by repeating here imperative *Take the garbage bin out*, it would be assumed that she intends to reject A's assertion as false.

A different line of explanation is required for (46):

- (46) S: Take the garbage bin out. A: OK, I will.

In contrast to (45), here it seems that A's response doesn't have the effect of rendering the content of the imperative non-potential. Rather, it seems that the effect of A's answer is to make it mutually accepted that, provided some normalcy conditions hold the content of the imperative sentence will be made true. At the utterance time, however, it cannot be accepted as true, nor rejected as false, that A took the garbage out. Nevertheless, A's answer does not seem to denote a potentiality, for it doesn't exhibit the same resistance to truth-judgments as the imperative:

- (47) S: Take the garbage bin out. A: OK, I will. S': That's true, he will do it.

There is debate as to whether *will* should be considered as a modal, but all parties assume that contents of assertions about the future are located under the scope of a necessity modal (e.g. Copley 2009; Del Prete 2014; Kissine 2008; in press; Klecha 2014). It makes sense, therefore, to model A's answer in (46) as involving a modal restricted to possible worlds where everything goes as expected; see (48)a. As modals operate on propositions, the propositional variable under the scope of *will* has to be assigned a value. The most likely candidate is the content of the imperative; this pragmatic accommodation is modelled in (48)b:

- (48) a. $[x, y, \underline{p}: \text{addressee}(x), \text{garbage-bin}(y), ![e: \text{takes-out}(x, y, e)], \text{will}(\underline{p})]$
- b. $[x, y, p: \text{addressee}(x), \text{garbage-bin}(y), ![e: \text{takes-out}(x, y, e)], \text{will}(p), p=[e: \text{takes-out}(x, y, e)]]$

What (48)b says is that the proposition under the scope of *will* is true under the same embedding functions and at the same possible worlds as the content of the imperative sentence. Assuming that *will* is an instance of \mathbf{N} , the definition in 4.6.9 entails that *will*(*p*) will be verified by *f* at *w* iff for every possible world *w'* in the domain of *will*, and every $g \supseteq f \in \Gamma$, the DRS $[e: \text{open}(x, y, e)]$ is verified by *g* at *w'*. Accordingly, what is targeted by the truth-judgment in (47) is not the content under the scope of *will*, but rather the truth of *will*(*p*) at *w*. This is consistent with the general agreement that future-oriented propositions don't have a truth-value at utterance time (e.g. Thomason 1984; Belnap, Perloff, and Xu 2001; 2003; MacFarlane 2008; Stojanovic 2014).

Assuming that *can* is the dual of \mathbf{N} , a similar analysis applies to (49)a.

- (49) a. A: Open the door. B: I can do it.
- b. $[x, y, \underline{p}: \text{addressee}(x), \text{door}(y), ![e: \text{open}(x, y, e)], \text{CAN}(\underline{p})]$

- c. $[x, y, p: \text{addressee}(x), \text{door}(y), ![e: \text{open}(x, y, e)], \text{CAN}(p), p=[e: \text{open}(x, y, e)]]$

Another potentially challenging case consists in sequences involving quantification, such as (50)a.

- (50) a. Every student will pick an apple. [Addressing one of the students:] Pick an apple.
- b. $[x', y': [x: \text{student}(x)](\forall x)[e, y: \text{apple}(y), \text{pick}(x, y, e)], \text{addressee}(x'), \text{apple}(y'), ![e': \text{pick}(x', y', e')]]]$

The definition in 4.6.8 only requires that whenever an assignment function that maps x on any individual that satisfies the predicate *student* is extended by another assignment function h relative to the DRS $[e, y: \text{apple}(y), \text{pick}(x, y, e)]$, h verifies this DRS. This is compatible with h being a function that doesn't verify anything else in the main DRS, as required for embedding the imperative *Pick an apple*.

As we have stressed throughout this paper, an important test for the adequacy of the formal account is whether it predicts, correctly, that imperatives cannot be judged true or as false. Let us start by modelling truth-judgments with declaratives. The DRS in (51)b models the dialogue (51)a, in which A is judging S's assertion true.

- (51) a. S: The file is in the closet. A: That's true.
- b. $[p, y, x, e: \text{closet}(y), \text{file}(x), \text{contained-in}(x, y), \text{True}(p), p=[y, x, e: \text{closet}(y), \text{file}(x), \text{contained-in}(x, y)]]]$

Informally, what (51)b says is that A said that a proposition is true, and this proposition is identical to what S said. Look first at 4.6.3. Embedding functions map propositional markers on pairs of embedding functions and possible worlds. So, for a propositional marker p to be equivalent to the DRS K given the embedding function f , it is required that for every $\langle w, g \rangle$

that f maps p on, K be true at w under g (and vice-versa). That is, p is true under the same assignment of values and at the same possible worlds as K . Now consider the definition of the truth-predicate in 4.6.10. What it means, informally, is that the condition $\text{True}(p)$ is verified under f at w , iff f maps p on a set of embedding function/possible worlds pairs which is such that every assignment of values g , such that $\langle w, g \rangle \in f(p)$, can be extended by any extension of f (truth is monotonic).

Consider now what would be the DRS resulting from A's answer in (52)a.

- (52) a. S: There is a red file in the closet. Take it. A: # That's true.
- b. $[x, y, z, x', p: \text{red-file}(x), \text{closet}(y), \text{addressee}(z), ![e: \text{takes}(z, x, e)], \text{True}(p), p = [e: \text{takes}(z, x, e)]]$

As we just saw, the condition ' $\text{True}(p)$ ' is verified by the embedding function f at a possible world w iff every assignment function g , such that $\langle w, g \rangle \in f(p)$, can be extended by any extension of f . Now, what does it take for the condition $p = [e: \text{takes}(z, x, e)]$ to be verified by that same embedding function f ? According to 4.6.3, it must be the case that f maps p to those, and only those possible worlds/embedding function pairs under which the DRS $[e: \text{takes}(z, e)]$ is verified. But remember that, according to our definition of imperatives, given in 4.6.5, if an embedding function verifies the DRS under the scope of the imperative in $![e: \text{takes}(z, x, e)]$, then it *cannot* be extended by any extension of f . Therefore, if $p = [e: \text{takes}(z, x, e)]$ and $![e: \text{takes}(z, x, e)]$ are both verified by f , then $f(p)$ necessarily contains a pair $\langle w, g \rangle$, where g cannot be extended by any extension of f (but only by those that verify $[e: \text{takes}(z, x, e)]$). This is incompatible with what is needed for ' $\text{True}(p)$ ' to be verified by f . Therefore, our account correctly predicts that any attempt to judge an imperative as true would result in a non-interpretable DRS, such as (52)b. We leave it as an exercise for the interested reader to show that the same prediction is correctly born out for (53):

- (53) a. S: There is a red file in the closet. Take it. A: # That's not true.

To conclude our discussion of truth-judgments, observe that our analysis straightforwardly explains why judgments relative to the directive speech act performed by the imperative are felicitous. Because the performance of a speech act is clearly something that is mutually obvious to all the participants of the conversation, the fact that it has been performed automatically becomes common ground. In DRT, this can be represented by adding an event to the main DRS. Let us represent the fact S ordered A to bring about the truth of p as a four-place relationship between S, A, p and an event. It is this event that can stand as the target of comments on the speech act performed, as in the following example.

- (54) a. S: There is a red file in the closet. Take it. A: That's ridiculous.
 b. $[x, y, z, x', p, e': \text{red-file}(x), \text{closet}(y), \text{addressee}(z), \text{speaker}(x') \text{ !}[e: \text{takes}(z, x, e)], \text{order}(x', z, p, e'), p = [e: \text{takes}(z, x, e)], \text{ridiculous}(e')]$

Before concluding, let us sketch how our account could deal with the imperative in ILCs, such as (55), whose syntactic subject, we suggest, could be modelled as a generic pronoun *Gen*.

- (55) a. Catch a cold and you'll be off work for weeks.
 b. $[x: \text{Gen}(x), \text{ !}[e, e': \text{catch-a-cold}(x, e), \text{off-work-for-weeks}(x, e')]]]$

In DRT conjunction corresponds to the merge of two DRSs (cf. the definition 3). Accordingly, the most natural interpretation of a discourse string like (55)a would be (55)b. Compare (55) with its conditional paraphrase in (56).

- (56) a. If you catch a cold, you'll be off work for weeks.
 b. $[x: \text{Gen}(x), [e: \text{catch-a-cold}(x, e)] \Rightarrow [e': \text{off-work-for-weeks}(x, e')]]]$

In our account, what (55)b represents is that, given an embedding function f which verifies the main DRS, there is a g that extends f relative to 'catch-a-cold(x, e)' and also verifies 'off-

work-for-weeks(x, e'). According to the definition of conditionals in 4.6.6, any function that verifies extends f relative to 'catch-a-cold(x, e)' can also be extended as to verify 'off-work-for-weeks(x, e')'. So, it follows that (55) entails (56), but that the reverse does not hold.

That ILCs entail, but are not equivalent to, their conditional paraphrases is a welcome result, as not all conditionals can be rephrased as ILCs:

- (57) a. If miss your train, there is a waiting room on platform 1.
 b. [?]Miss the train, and there is a waiting room on platform 1.

(from Clark, 1993)

Unlike main-clause imperatives, non-directive ILCs may be targeted by truth-judgments, as in (58).

- (58) a. S: Catch a cold, and you'll be off work for weeks. A: That's true.

It makes sense to suppose that what the truth-judgement targets is, in fact, the consequential relationship entailed by the ILCs. And our account predicts that such truth-judgments are felicitous. Consider (59).

- (59) a. S: If you catch a cold, you'll be off work for weeks. A: That's true.
 b. $[x, p: Gen(x), [e: catch-a-cold(x, e)] \Rightarrow [e': off-work-for-weeks(x, e')],$
 $True(p), p = [e: catch-a-cold(x, e)] \Rightarrow [e': off-work-for-weeks(x, e')]$

The condition $p = [e: catch-a-cold(x, e)] \Rightarrow [e': off-work-for-weeks(x, e')]$ is verified by f iff for every g and w , such that $\langle w, g \rangle \in f(p)$, g verifies $[e: catch-a-cold(x, e)] \Rightarrow [e': off-work-for-weeks(x, e')]$ at w , viz. iff for all $h \supseteq g$, such that h verifies $[e: catch-a-cold(x, e)]$, there is a $j \supseteq h$, such that j verifies $[e': off-work-for-weeks(x, e')]$. The condition 'True(p)' is verified by f at w iff for $\langle w, g \rangle \in f(p)$, g can be extended by any extension of f .

One question that we will leave untouched here is why exactly in ILCs the declarative clause is not incorporated within the main DRS. One reason is probably pragmatic, as the resulting interpretation of, for instance, (55) would be that it is true you will off work in bed for weeks, whether or not catch a cold. Another possible reason is that ILCs appear to be single intonational units. Finally, in examples like (55) could be instances of left-subordinating *and* (Culicover and Jackendoff 1997; cf. Russell 2007; Kaufmann 2012, 237–241).

What our account does explain are the sequential constraints on ILCs. Because the first clause of (60)a is declarative, it will be incorporated within the main DRS. The subsequent imperative then cannot receive a consequential interpretation.

- (60) a. [?] You'll be off work for weeks and catch a cold.
b. $[x, e: Gen(x), off-work-for-weeks(x, e), ![e': catch-a-cold(x, e')]]$

6 Conclusion

Imperatives have much in common with modals. The temptation to reduce the former to the latter is all the more understandable as modals are easily implemented within truth-conditional, model-theoretic semantic analyses, while such an account still remains a challenge for imperatives. One of the main reasons for this is the fact that imperatives are unamenable to truth judgments. Accordingly, any modal theory of imperatives must explain this resistance. We have discussed in detail what is, to our mind, the most successful attempt of this kind, Kaufmann (2012). We showed that, despite its sophistication and elegance, this theory still fails to explain adequately the relationship between truth-judgments and imperatives. We argued next that the reason why imperatives cannot be judged true or false is that their content is inherently potential. In the formal rendering of this intuition, we showed

that, unlike modals, imperatives do not amount to a claim about the truth of its contents relative to some possible world or another. Instead, from a dynamic point of view, they are modelled as requiring an assignment value function different from that required for the interpretation of propositions which belong to the common ground. This captures the distinction between claiming that p is potential and presenting p as a potentiality: the job of imperatives, we claim, is to do the latter.

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