Preference-Conditioned Necessities: Detachment and Practical Reasoning*

Sven Lauer   Cleo Condoravdi

This paper is about conditionalized modal statements whose antecedents concern a preferential attitude of an agent. The focus is on *anankastic conditionals* or, as they are better known in the philosophical literature, *hypothetical imperatives*. An example, due to Sæbø (2001), is the 'Harlem sentence' in (1).

(1)   If you want to go to Harlem, you have to take the A train.

Anankastic conditionals are interesting from a linguistic perspective, because the meanings of the constituent expressions interact in complex and subtle ways, and they hence have been taken to provide a compositionality challenge, but also because they have a surprisingly intricate pragmatics.

They are also interesting from a philosophical perspective, because they figure prominently in everyday instances of practical reasoning, but also because they are a class of conditionals that have been taken to provide a challenge to the validity of *modus ponens*.

We present a linguistically-motivated analysis of anankastic and related conditionals and use it to address challenges for semantic theories of natural language conditionals motivated by certain philosophical concerns about practical reasoning and the requirements of rationality.

1   Instrumental necessities and effective preferences

A sentence like (2), on its most plausible interpretation, reports on the addressee's *obligations*. It says that the addressee is legally and/or morally required to declare the donation as income.

(2)   You have to declare this donation as income.

The same is true of the sentence in (3), at least when encountered in isolation. Out of context we tend to read it as saying that the addressee has a (moral/legal/...) obligation to take the A train.

(3)   You have to take the A train.

But things change if we put the sentence in the right context. In particular, consider (4), where the same sentence is uttered in response to an assertion about a desire, goal or preference.

(4)   [Strangers on a subway platform.]

    A: I want to go to Harlem.
    B: You have to take the A train.

Intuitively, *B*'s utterance in (4) does not say anything about obligations at all, instead it provides a bit of factual information, *viz.*, that the A train goes to Harlem. But (4) still expresses a *necessity*. Another way to paraphrase what *B* is communicating to *A* is that taking the A train is necessary for going to Harlem in an optimal way.

In this paper, we discuss the semantics and pragmatics of this kind of use of modals, both within and outside of conditionals. We take *B*'s utterance in (4) to express an *instrumental necessity*, i.e., a necessity that holds if an agent realizes his ends in an optimal way.[1] We focus on the fact that modals like the one in (4) are well-suited for giving *advice* and that the information they convey frequently figures in *practical reasoning*, in particular instrumental reasoning. That is, if *A* indeed intends to go to Harlem, then this, together with information he gains from *B*'s utterance, may well lead him to form an intention to take the A train. However, this is not always the effect of an utterance of an instrumental necessity statement. The same kind of statement can actually *dissuade* the addressee from fulfilling his professed goal.

(5)   [*A* and *B* are planning a dinner party for a workshop. They discuss whether they should be having it at someone's home or at a public venue. *A* is living in a small one-bedroom apartment.]

    A: I want to have it at my place.
    B: Then you'll have to be able to accommodate 20 people in your living room.

How do *B*'s utterances manage to convey what they do? And how is this reading brought out if the sentence is uttered in response to an assertion that, on the face of it, expresses a certain desire? Answering these questions goes quite a long way towards understanding what is going on in the conditional cases.

---

[1] In the linguistics literature, this kind of necessity is usually called a *teleological necessity*, a term that we avoid here, as it may have unwanted connotations to a philosophical audience.

1.1 A Kratzerian take on modality

We start from the analysis of modals that is standard in linguistic semantics, that of Kratzer (1981). A major selling point of this analysis is that it allows us to treat modals as *monosemous*. **Must** uniformly expresses a necessity, as do **have to**, **should** and **ought**[2], while **may** uniformly expresses possibility. Accordingly, the lexical meanings of modals are very general. They depend on two contextually-set parameters, which give rise to the varied uses these modals intuitively have.

We describe a version of the theory here where the two parameters are an *accessibility relation R* and a world-dependent *ordering O*.[3] A sentence like (2) hence is represented as in (6). We refer to the sentence in the scope of the modal as the *prejacent* of the modal, following von Fintel and Iatridou (2008).

(6)　$\text{Must}_{R,O}$ (You declare this donation as income)

Modals are taken to be quantifiers over possible worlds whose domains are determined jointly by R and O. Relative to a world w, the accessibility relation R specifies a set R_w of worlds which preserve a set of facts of w, while the ordering O_w represents closeness to ideals in w such as legality, morality, desirability, stereotypicality, etc. On the assumption that there are worlds in R_w that are *closest* to the ideal,[4] picked out by *Best*, a necessity modal like **must** universally quantifies over them.

(7)　$w \in \llbracket \text{Must}_{R,O}(\phi) \rrbracket$ iff $\forall v \in Best(R_w, O_w) : v \in \llbracket \phi \rrbracket$

When (2) expresses a legal necessity, the set of worlds determined by R will all be like the world of evaluation with respect to certain facts (including the fact that the addressee received a donation), while the ordering is determined by the laws at the world of evaluation. Thus, (2) is true at a world w iff the laws at w are such that, among the worlds v where the relevant facts are true, all the best ones according to the laws of w are worlds where you declare your donation as income.

By varying the ordering provided by the context, a necessity statement can instead express a moral necessity, or even an epistemic one. In this paper, we focus on the range of construals which have been dubbed 'priority' construals by Portner (2009, p. 135): 'The idea behind the term "priority" is that such things as rules, desires, and goals all serve to identify some possibility as better than, or as having higher priority, than others.'

---

[2]**must** and **have to** on the one hand, and **should** and **ought** on the other, are not synonymous. A frequently expressed intuition is that the former are in some sense stronger than the latter. We set aside the issue of the difference between strong and weak necessity modals here, as it seems to be orthogonal to our present concerns (see von Fintel and Iatridou (2005, 2008) and Rubinstein (2012) for analyses that treat the distinction in a Kratzerian setting).

[3]R corresponds to the *modal base*, O to the *ordering source* in more common implementations of a Kratzerian analysis for modals.

[4]The so-called limit assumption (Lewis 1973).

1.2   Effective preferences

To fit the 'instrumental' use of the modal in (4), repeated here as (8), into the Kratzer framework, we need to determine what the values of its contextual parameters should be. As in the case of the legal construal of (2), we can assume that R preserves a set of pertinent facts (e.g., about the location of A and B, or which train goes where). A plausible initial hypothesis is that the ordering O, on these uses, is *bouletic*, i.e., it reflects how well a world satisfies A's desires.

(8)   [Strangers on a subway platform.]

   A: I want to go to Harlem.
   B: You have to / should take the A train.

This assumption sheds some light on what is going on in the dialogue in (8): B has just learned about a certain desire of A's, and he responds by providing information about what has to be the case if A's desires (including the desire B has just learned about) are to be fulfilled.

Conflicting desires and action choice   Although this is on the right track, we need to be a bit more specific about the kind of preferential attitude that is expressed by A's utterance and the one that underlies the ordering on instrumental uses. One reason is that not every kind of desire should be relevant for the interpretation of the modal and of **want**. There are various ways to see this. One is that (mere) desires can be in conflict.[5] A may, on the one hand, desire to go to Harlem, on the other, he may desire to go to his home in Manhattan. B's knowledge of A's desires is very partial, so if any old desire would enter into the interpretation of B's utterance, he could not possibly know that the sentence he utters is true. If A's private desire to go home is much stronger than his publicized desire to go to Harlem, the worlds that satisfy A's desires best are not worlds in which A takes the A train, but those in which he takes the train to Manhattan.

   What this example suggests is that B learns more from A's utterance than just that A has some desire to go to Harlem. B also learns, it seems, that A's desire is one that he intends to act on. Not every 1st-person **want** assertion that is uttered in seeking advice gives rise to such an inference, as (9) shows.

(9)   [*A* is on a strict diet to lose weight, which excludes any kind of sweets.]

   A: What should I do? I want to eat chocolate so badly!
   B: You should find some activity to occupy yourself, to take your mind off of it.

---

[5]The issue of conflicting desires has figured prominently in the recent linguistic literature on anankastic conditionals (von Fintel and Iatridou 2005, von Stechow, Krasikova and Penka 2006, Huitink 2008, Condoravdi and Lauer 2014). It was first introduced by von Fintel and Iatridou via the *Hoboken scenario*.

We want to be able to explain how a **want** assertion can prompt another agent to provide advice about how to realize the complement of the desire predicate (as in (8)), or on how to *avoid* realizing the desire (as in (9)), and why both are given with modal sentences.

B's utterance in (9) is intuitively about another, implicitly assumed, preference, namely *A*'s preference for sticking to the diet, which is furthermore assumed to be more important than his craving for chocolate. As a first approximation, we can say that the ordering for **should** in both (9) and (8) is constituted not by how well *all* desires of the agent are satisfied, but only by how well his *action-relevant* desires are satisfied.

Effective preferences An agent typically has a large number of preferential attitudes that shape his behavior: desires, appetites, inclinations, personal moral codes, and so on. If he is to decide between multiple actions, he has to *integrate* all these attitudes, and adjudicate conflicts between them. The outcome of this process are the 'action-relevant' preferences of the agent, for which we have coined the term *effective preferences* (Condoravdi and Lauer 2011, Condoravdi and Lauer 2012, Lauer 2013). We introduce some notation, which will come in handy later on. We write $ep_a(\phi)$ for '*a* has an effective preference for ϕ'. Similarly, we write $b_a(\phi)$ for '*a* believes that ϕ'.

Given their purpose as guides for action, such effective preferences have to obey a number of global constraints.[6] They have to be *consistent* with each other, they have to be realistic, i.e., the agent who has them should not believe that any of his effective preferences is unattainable from the start, and the agent should be aware that he has them (that is, we assume **introspection**: For all *a* and ϕ, $ep_a(\phi)$ implies $b_a(ep_a(\phi))$).

The notion of an effective preference is obviously similar to the notion of an *intention*. We do not identify the two notions, for two reasons. First, 'intention' is a rather complex and controversial concept, so we prefer to work with a more lightweight notion. Secondly, there may well be cases in which we want to talk about action-relevant preferences without assuming that they are full-blown intentions.[7]

The ordering of modals on the instrumental reading For the instrumental reading of the modal, we propose that the ordering O reflects how well worlds satisfy the relevant agent's effective preferences. We designate such orderings as O^{EP}, leaving the agent implicit to ease readability. In effect, this means that

---

[6]In the previously cited works and in Condoravdi and Lauer (2014), where we detail the compositional interpretation of ACs, we employ *preference structures* to model ranked preferences. This allows us to use a weak version of consistency (requiring only that preferences that are unranked be jointly satisfiable). In the present context, we avoid this complication, as it is not strictly necessary for what we want to do here. Consequently, an agent's effective preferences can be thought of as a set of propositions which are required to be jointly satisfiable and be compatible with what the agent believes to be the case.

[7]One potential example is instances of 'weakness of the will'—these might be characterized as cases where an agent intends one thing, but effectively prefers something incompatible with it.

B's utterance in (8) can be paraphrased as (10b), according to the semantics of the modals outlined in the previous subsection, which amounts to (10a).

(10)   a. $w \in [\![\text{Must}_{R,O^{\text{EP}}}(\text{you take the A train})]\!]$
          iff $\forall v \in Best(R_w, O_w^{\text{EP}}) : v \in [\![\text{you take the A train}]\!]$
       b. In all worlds (where the relevant circumstances obtain) that optimally satisfy your effective preferences, you take the A train.

Two readings for *want*   To capture the difference between (8) and (9), we assume that **want** is underspecified in a similar fashion as modals are: *a* **wants** ϕ can express that *a* has a mere desire for ϕ (or perhaps one of the other underlying preferential attitudes), but also that *a* has an effective preference for ϕ. We designate the latter as $ep_a(\phi)$.

A precedent for such an assumption about **want** in the linguistics literature is Levinson (2003), who distinguishes two senses of **want**, one of which he characterizes as 'the kind of desire accompanying intentional action' (p. 223).[8] In support of the thesis that **want** is underspecified, Levinson develops an argument made by Davis (1984) and observes that the two replies in (11) are not contradictory.

(11)   Do you want to play tennis?
       a. I want to, but I have to teach.
       b. No [= I don't want to], I have to teach.

We can easily imagine that the same agent gives the answers in (11a) and (11b), one shortly after the other, without having changed his mind and without contradicting himself. One way to make sense of this is to assume that **want to play tennis** in (11a) means 'having a (mere) desire to play tennis', while it means 'having an effective preference to play tennis' in (11b). Since the speaker has to teach, and his preference for not shirking his duties dominates his desire to play tennis, he effectively prefers teaching (and hence not to play). At the same time, he *does* have a desire to play tennis, though it is not effective in guiding his actions (at this particular time).

Another piece of evidence for an effective preference reading of **want** comes from examples like (12).

(12)   [Jane is spending a week at her sister Mary's place.]

       Jane: Oh, I am so stressed—a nice hot bath would be just the thing now!
       Mary: Well, do you want to take one? You are very welcome to use the tub in my bathroom.

If **want** only had a 'desire' reading, Mary's question would be moot. After all, given Jane's utterance, she already knows that Jane has a desire for a hot bath. We can understand what is going on in (12) if we construe **want** to be about

---

[8]As Levinson notes, similar distinctions have been frequently appealed to in the philosophical literature, e.g., by Anscombe (1957), Hare (1968), and Davidson (1978).

effective preferences instead. What Mary asks is whether Jane's desire is an effective preference. And, as in (11), we can easily imagine Jane declining the offer without contradicting herself.

Dialogic cases   With the distinction between 'effective preference'-**want** and 'mere desire'-**want** in place, let us return to (8) and (9). In the former, the contextual parameters of **want** and the modal are aligned—both are construed in terms of effective preferences. In the latter, **want** receives a 'mere desire'-construal, while the modal gets an 'effective preference'-construal.

To give a sense of how the two dialogues work pragmatically, let us pretend that A and B instead engage in the following artificial-sounding explicit paraphrases of (8) and (9).

(13)   [Strangers on a subway platform.]

    A: I have an effective preference for going to Harlem.
    B: (Then) you won't satisfy your effective preferences optimally unless you take the A train.

(14)   [*A* is on a strict diet to lose weight, which excludes any kind of sweets.]

    A: What should I do? I have a strong desire for chocolate!
    B: (Then) you won't fulfill your effective preferences [including the preference to stick to your diet] optimally unless you find some activity to take your mind off of it.

Taking A's assertion in (13) at face value, B knows that all worlds in which A's effective preferences are (optimally) satisfied are worlds in which A travels to Harlem. Presuming that A also effectively prefers to travel by train, and given his own knowledge about which trains go where, B hence also knows that in all such worlds A takes the A train.

By contrast, in (14), A's utterance does not say anything about his effective preferences, hence B can assume that A's effective preference for sticking to his diet is still in place. Therefore, B knows that in all worlds in which A's effective preferences are (optimally) satisfied, A sticks to his diet. If he further believes that the only or best way to achieve this is for A to find some activity to distract himself, he also knows that in all such worlds A will find such an activity.

2   The semantics of anankastic conditionals

In a Kratzer-style framework, conditionalized modals traditionally receive a 'restrictor'-analysis (*cf.* also Lewis (1975)), according to which the purpose of the conditional antecedent is to further restrict the domain of quantification of the modal. In the interpretation of a sentence like **If** p**, should** q, the modal no longer quantifies over the O_w-best worlds in R_w, but rather over the O_w-best worlds in $R_w \cap [\![p]\!]$. Such an analysis is adequate for a conditional necessity

like (15), where the antecedent is not about the ideal that is involved in the interpretation of the modal.

(15)   If you had any income this year, you have to declare it.

But it is well-known that it does not yield the right result for sentences like (16)–(17) (Sæbø 1985, Sæbø 2001, von Fintel and Iatridou 2005, von Stechow et al. 2006, Huitink 2008, Condoravdi and Lauer 2014).

(16)   If you want to go to Harlem, you have to / should take the A train.

(17)   If you want to have the party at your place, you have to accommodate 20 people in your living room.

The problem, in a nutshell, is that on a restrictor analysis, the antecedent cannot influence the value of the ordering O, while this is exactly what is necessary to interpret sentences like (16)–(17).[9]

   We analyze such conditionals by assuming a separate conditional operator and giving the modal narrow scope with respect to it. We symbolically represent this operator as $\rightarrow$ (reserving $\supset$ for material implication) and take it to express a strict conditional, relative to a reflexive, transitive and symmetric accessibility relation R^K, modeling the knowledge of the speaker. This is a simplified version of the analysis in Condoravdi and Lauer (2014), but it preserves the features relevant to the present discussion.[10]

(18) $w \in [\![\phi \rightarrow \psi]\!]$ iff $\forall v \in R_w^K : v \in [\![\phi]\!] \supset v \in [\![\psi]\!]$

According to (18) then, the truth conditions of the Harlem sentence (16) can be paraphrased as in (19).

(19)   For all worlds v consistent with what the speaker knows in w in which **you want to go to Harlem** is true, **you should take the A train** is true in v, as well.

The anankastic construal of (16) arises if and only if both **want** in the antecedent and **should** in the consequent receive an 'effective preference' construal, resulting in the truth conditions in (20).

---

[9]The problem generalizes to any kind of conditional where the hypothetical assumption made with the antecedent is about facts that influence the value of the ordering parameter of the modal. Frank (1997) argues this for deontic and legal construals. The closest parallel to (16)–(17) in that case are sentences like (i) from von Fintel and Iatridou (2005).

(i)   If jaywalking is illegal here, that guy over there has to be punished.

[10]In Condoravdi and Lauer (2014), we present a version of this analysis which is equivalent to a variably-strict analysis of $\rightarrow$ and is also compatible with the restrictor view, by hypothesizing a covert (epistemic) modal scoping over the overt modal in the consequent. Such a 'double-modal' analysis is also considered by von Fintel and Iatridou (2005), but they argue that it is not sufficient to give the right analysis for the conditionals we are interested in here, because it does not deal correctly with conflicting preferences. In Condoravdi and Lauer (2014) we show that these problems are taken care of once one correctly construes the modal and **want** in the antecedent as being about effective preferences.

(20) a. $\forall v_1 \in R_w^K :$
   $v_1 \in [\![ep_{Ad}(\text{go to Harlem})]\!] \supset [\forall v_2 \in Best(R_{v_1}, O_{v_1}^{\text{EP}}) : v_2 \in [\![\text{take A train}]\!]]$
   b. All worlds v_1 consistent with what the speaker knows in w in which *Ad* effectively prefers to go to Harlem are such that all the $O_{v_1}^{\text{EP}}$-best worlds v_2 are such that *Ad* takes the A train in v_2.

Or, more informally:

(21) Given what the speaker knows, if *Ad* effectively prefers to go to Harlem, then *Ad*'s effective preferences will not be optimally realized unless *Ad* takes the A train.

From now on, we will use the abbreviation AC (for *Anankastic Conditional*) to refer to conditional sentences under this construal.

In the remainder of this section, we highlight two features of the analysis which will play a crucial role in the rest of this paper. Specifically, the truth conditions of ACs are weaker than one might intuitively expect, and ACs uniformly validate *modus ponens*.

2.1 Necessary weakness

In a context where a sentence like (16), repeated in (22a), is used to give advice, it can serve to provide the information that (22b) is true.

(22) a. If you want to go to Harlem, you should / have to take the A train.
   b. Taking the A train is a (necessary) means for going to Harlem.

On our analysis, however, (22a) does not entail (22b). Indeed, (22a) does not directly establish a connection between going to Harlem and taking the A train at all. Given that the modal in the consequent quantifies over worlds in which *all* effective preferences of the addressee are (optimally) realized, (22a) can be true if taking the A train has nothing to do with going to Harlem, but rather is necessary to fulfill another (known) preference of the addressee. In actual use, hearers will generally infer *some* relationship between the antecedent and the consequent, but it need not be that the necessity holds because the prejacent of the modal is necessary to realize the preference in the antecedent.

In this, our analysis is at variance with those of von Fintel and Iatridou (2005), von Stechow et al. (2006), and Finlay (2010). The analyses of these authors all take anankastic conditionals like (22a) to directly relate the proposition $[\![\text{you go to Harlem}]\!]$ with the proposition $[\![\text{you take the A train}]\!]$. Doing so inevitably makes the analysis non-compositional to a certain degree, unless **want** is taken to be semantically vacuous.[11] Ultimately, all these authors aim at truth conditions that make (22a) entail something like (22b).[12]

---

[11]von Fintel and Iatridou and, following them, von Stechow et al. hypothesize an anaphora-like relationship to achieve the connection between the complement of **want** and the prejacent of the modal.

[12]For Finlay, this falls out rather directly from the truth conditions he assigns to modals, while von Fintel and Iatridou and von Stechow et al. consider stipulating this as an additional condition,

In Condoravdi and Lauer (2014), we provide additional evidence that the weak truth conditions are empirically adequate, and that analyses predicting stronger truth conditions cannot account for the full range of interpretations available for preference-conditioned necessity statements. For example, it may be that, if the antecedent preference is realized, *another* preference requires that the prejacent hold, as in (23). In fact, conditionals with the same construal need not be about *pre*conditions at all, but can also be about *consequences* of realizing the preference in the antecedent, as in (24).[13]

(23)   If you want to travel there, you should get a flu vaccination.

(24)   If you want to go to Disneyworld, you should spent at least three days there.

At first blush, it may seem that, due to the weakness of the truth conditions, our semantics cannot account for the role these sentences play in giving advice on how to realize the preference in the antecedent. Why is it that an addressee who hears (22a) can form the intention to take the A train? We address this question in section 4, arguing that the practical reasoning that leads to such an intention arguably can be fed by a pragmatic strengthening of the truth-conditional content of ACs.

2.2   *Modus ponens*

The following intuitively appears to be a valid inference (it is a mere application of *modus ponens*), and on our analysis of ACs, it is valid, in virtue of the reflexivity of the R^K-relation used in the interpretation of the conditional.

(25)   a. You want to go to Harlem.
        b. If you want to go to Harlem, you should take the A train.

──

        c. You should take the A train.

Much of the rest of this paper, in one way or another, will be concerned with defending this property of our analysis. In section 3, we consider a range of possible counterexamples from a linguistic point of view, discussing cases where speakers judge both a preference-conditioned necessity statement and its antecedent true, but the modal consequent false. Then, in the following sections, we lay out our view of how ACs relate to practical reasoning (section 4), and having done so, address concerns about *modus ponens* stemming from philosophical considerations about what rationality requires of agents based on the attitudes they have (sections 5 and 6).

──

noting that the truth conditions they assign to the conditional do not ensure it.

[13]Depending on how one defines *anankastic conditional*, (23) and (24) may or may not qualify as anankastic. However, on our analysis, the two sentences do not differ from (other) ACs in terms of their semantics.

3 Detachment via modus ponens

Various authors have questioned whether *modus ponens* should be valid for conditionals with priority modals in the consequent. Some original worries arose from the discussion of various paradoxes of classical deontic logic, such as Chisholm's paradox (Chisholm 1963).[14] But it has also been argued, already by Hare (1968) and Greenspan (1975), that *modus ponens* is not valid for the very kind of conditional we are interested here, i.e., preference-conditioned necessities, and in particular ACs. One kind of argument against such 'detachment' via *modus ponens* is the existence of *prima facie* counterexamples, involving situations where sentences of the form in (25a) and (25b) are taken to be true, but the corresponding sentence of the form in (25c) appears false.[15]

We will argue that, in these instances, this impression is due to an equivocation: The counterexamples involve different readings for the necessity modal in the conditional premise and in the conclusion. This position has been taken, at least for some cases, by Finlay (2010), Dowell (2012) and Silk (2014). Dowell and Silk only discuss cases where the equivocation is between an instrumental and a moral construal, and consequently, it is easy to appreciate (section 3.1). However, like Finlay, we think that there are cases where the equivocation is more subtle,[16] and hence a skeptic about *modus ponens* with ACs can remain doubtful about detachment in the general case (section 3.2). But we show that there is an independent factor influencing judgements regarding the validity of *modus ponens* arguments with modal sentences (section 3.3).

3.1 Moral vs. instrumental 'ought'

In the problematic cases for detachment that Dowell and Silk discuss, the modal in the conclusion appears to get a moral construal. For example, Dowell presents the instance of *modus ponens* in (26) (her **MURDER** example; Silk's main example is of the same kind):

(26) a. You want to murder messily.
      b. If you want to murder messily, you ought to use a chainsaw.

---

      c. You ought to murder with a chainsaw.

---

[14]For a recent linguistic take on Chisholm's paradox see Arregui (2010).

[15]We discuss a different kind of argument against detachment in section 6.

[16]Finlay, in his defense of a Kratzer-like contextualist analysis of modals, discusses a range of different construals that can be appealed to in order to explain apparent failures of detachment. He uses the familiar distinction between an 'objective' and a 'subjective' **ought**, but argues that we must distinguish more than just two construals—that, in order to explain some apparent failures of detachment, we need objective and subjective 'rational' **ought**s, objective and subjective 'moral' **ought**s, and objective and subjective 'instrumental' **ought**s. A Kratzer-style analysis, by design, can easily accommodate such a 'proliferation' of contextually-determined senses of **ought** without appeal to ambiguity. In section 3.2, we discuss an equivocation that is particularly relevant for ACs, between the instrumental and a 'rationality requires' sense of modals. The latter one is perhaps closest to Finlay's 'subjective rational **ought**.'

There is a strong intuition that (26c) is false, even if you in fact have a desire to murder messily (i.e., (26a) is true) and the best way to realize this desire involves a chainsaw (i.e., (26b) is true). If so, *modus ponens* fails in this case. Dowell, however, thinks that this conclusion would be mistaken, and so does Silk. The judgements of truth for the conditional premise and of falsity for the conclusion rest on construing **ought** instrumentally in (26b), but morally in (26c). But, of course, to judge validity, the contextual parameters of the modals must be kept constant.[17]

If **ought** can be construed as instrumental throughout, the conclusion (26c) is unproblematically true and (26) is valid. If, instead, **ought** is construed morally throughout, (26c) is false, but then so is (26b). As Dowell notes, if the moral construal is made explicit, the conditional is no longer judged to be true. Consider (27):

(27) If you want to murder messily, then, morally, you ought to use a chainsaw.

The same goes for an explicitly moral construal of the conditional premise and conclusion of (25), as in (28).[18]

(28) a. You want to go to Harlem.
b. If you want to go to Harlem, then, morally, you should take the A train.

c. Morally, you should take the A train.

That is, on a constant moral construal, the arguments, though valid, are simply not sound. There remains the question, of course, why we are so tempted to equivocate, and read the conclusion in the **MURDER** case morally, even when the premise is read instrumentally.

3.2 Instrumental vs. rationality-related 'ought'

Silk succinctly summarizes the gist of the defense of detachment given above (Silk 2014, p. 9):

> We should not expect to derive conclusions about what we ought to do considering what is moral from premises about what we ought to do considering our goals—that is, unless we add the dubious assumption that we morally ought to do whatever will realize our goals.

We agree with this assessment, but it will not suffice to assuage the worries of the detractors of detachment. Here is why: While it is obviously true that we

---

[17]Note that in (26), the prejacent of the modal changes between conditional premise and conclusion. If the prejacent is kept constant, with the conclusion being **You ought to use a chainsaw**, it is much easier to keep the construal of the modal constant and thus avoid equivocation.

[18]Both sentences could, of course, be true in appropriate circumstances. But they are not innocently true just in virtue of the fact that the A train is the best means of going to Harlem.

will not (without further premises) learn anything about what is moral from what is required to fulfill our goals, we arguably can, at least sometimes, learn something about what *is rational to do* from what is required to fulfill our goals. And this fact can be used to create other possible counterexamples to *modus ponens* which cannot be deflected as easily.

As a consequence, a skeptic may grant that it is important to distinguish moral from instrumental **ought**, and accept that the appearance of the failure of *modus ponens* in cases like **MURDER** is due to an equivocation, yet remain doubtful about detachment in general. Such a skeptic can construct cases in which detachment of the original Harlem sentence appears to fail.[19] Suppose, for example, that speaker and addressee have just learned that a dangerous virus has been set free in Harlem. Consequently, there are many reasons to stay away from there: the danger of getting infected, the fact that Harlem will likely be quarantined shortly, the mass panic that is likely to ensue once the public learns about the virus, etc.

In that case, (25b) remains true: The A train is still the best means to go to Harlem (assuming there is no quarantine in place yet). But even if (25a) is also true, i.e., you want to go to Harlem, (25c) is bad advice: You should *not* take the A train and go to Harlem, you should stay where you are (or even get as far away from Harlem as possible). Hence, we may be tempted to call (25c) *false* in this scenario.

We think that in this case too there is an equivocation at play, but it is a rather more subtle one. In (29) and (30), we paraphrase the two readings of the conditional premise and of the conclusion that we think are involved.

(29)   If you want to go to Harlem, you should take the A train.

   a. *Instrumental reading*
      ≈ If you want to go to Harlem, you won't satisfy your effective preferences optimally unless you take the A train.
   b. *'Rationality requires' reading*
      ≈ If you want to go to Harlem, you won't be acting rationally unless you take the A train.

(30)   You should take the A train.

   a. *Instrumental reading*
      ≈ You won't satisfy your effective preferences optimally unless you take the A train.
   b. *'Rationality requires' reading*
      ≈ You won't be acting rationally unless you take the A train.

If the speaker and addressee know about the virus, (30b) is arguably false, but (30a) remains true as long as the addressee's effective preferences include going to Harlem. The apparent failure of *modus ponens*, we claim, is again due

---

[19]We are grateful to Brendan Balcerak Jackson for impersonating such a skeptic for us. His case involved an irrational preference based on a false unjustified belief. The virus scenario that we present here is simpler in that the preference itself—whatever its motivation—is irrational.

to an equivocation between (29a), the instrumental reading of the conditional premise, and (30b), the 'rationality requires' reading of the conclusion.

The Harlem sentence, on its typical advice use, has the instrumental reading. If it is the conditional premise in a *modus ponens* argument, constant construal of the contextual parameters will yield (30a) as the conclusion. This is unproblematic because (30a) makes a very innocent claim. It says that, in order to fulfill your (actual) effective preferences, you need to take the A train. But this is in fact true even in the virus scenario. If you maintain your dangerous effective preference for going to Harlem, then, indeed, satisfying your effective preferences will require you to take the A train. But this statement does not provide you with a reason to act, and it certainly does not say that acting in accordance to these preferences is rational.

This is worth emphasizing: On our analysis, instrumental **ought**s simply say what is necessary for optimally satisfying an agent's goals. They do not say that it would be *good* to act on these goals, or that it would be *rational* to satisfy them, or anything like that. Of course, on occasion, the information conveyed by such instrumental necessity statements may, together with other premises, lead to a conclusion about what is rational to do, but this is independent from the semantic content of these sentences.

However, a similar question arises as before: Why do we feel compelled to give the conclusion a 'rationality requires' construal in cases like the virus scenario?

3.3 Technical vs. linguistic detachment

Although we have argued that putative counterexamples to *modus ponens* do not arise on any constant construal, there is a nagging worry that detachment is not as intuitively robust as would be expected from a semantic analysis that uniformly validates *modus ponens*. In order to address this worry, let us distinguish two notions of detachment. One is *technical detachment* and is the usual logical notion. The other is *linguistic detachment* and has to do with speakers' willingness to assert, or assent to, an utterance corresponding to the modal conclusion, given that they have asserted, or assented to, both the conditional premise and its antecedent. Whether the former holds depends simply on the semantics one's theory assigns to conditionals and modals. The latter, however, may well be governed by additional factors that play a role in language use.

On the technical understanding of detachment, the question is: Does the truth-conditional content of the premises ensure the truth of the conclusion? As we have seen, the question can be meaningfully answered only on a constant construal of the contextual parameters. On the Kratzer-based view that we adopt, conditionalized and naked modals have the same range of construals. In a conditional like the Harlem sentence, the ordering O is (partially) determined by the antecedent, in a dialogic example like (4), it is determined by context alone. On the linguistic understanding, the question is: Is one always licensed to go from asserting the premises to asserting the conclusion? In debating the

validity of detachment, it is important to avoid confusing one of these questions with the other.[20]

The residual worries about detachment in the cases we have discussed here arise because the linguistic question receives a *negative* answer. In both the **MURDER** case and the virus scenario, it is intuitively odd to assert the conclusion, even after one has just asserted the two premises. This observation is not inconsistent with the claim that the failure of linguistic detachment is due to an equivocation, and hence does not indicate a failure of technical detachment. What the defender of technical detachment has to establish, though, is that a constant construal of the modals is prevented (or at least strongly discouraged) in actual use when linguistic detachment fails.[21]

There is independent linguistic evidence that this is in fact the case. A strong tendency to interpret a modal in the conclusion of a *modus ponens* argument with a construal that differs from the one in the conditional premise exists also for uses of modals which have nothing to do with instrumental necessities. Consider, for instance, legal necessities in the context of an unjust law.

Suppose there is a law that says that if you (over)hear your neighbor criticizing the government, you have to report him to the secret police. Suppose further that the secret police is authorized to harass and severely punish dissenters, and that it is well-known that they do. Now consider the following instances of *modus ponens*, given as discourses, because we want to judge actual utterances. We can force a constant construal of the modals by specifying the force the modality in both premise and conclusion. In this case, technical and linguistic detachment do not diverge, and the following argument is judged valid.

(31)   Legally, if you overhear you neighbor criticizing the government, you have to report him to the secret police. And you just overheard your neighbor Jim criticizing the government. So, legally, you have to report Jim to the secret police.

However, if the construal of the modal in the conclusion is left implicit, the naked modal utterance is read as endorsing the necessity and giving advice, rather than just stating what the law requires.

(32)   Legally, if you overhear you neighbor criticizing the government, you have to report him to the secret police. And you just overheard your neighbor Jim criticizing the government. So you have to report Jim to the secret police.

In other words, the speaker does not just seem to state the obvious legal conclusion, but indicates that you should abide by it. In so doing, the speaker need not endorse the law as just—he might simply assume that, in view of what

---

[20]Stephen Finlay (p.c.) suggests that such a confusion is why Silk (2014) takes himself to be disagreeing with the position of Finlay (2010): Silk is addressing the technical question, while Finlay had in mind the linguistic one.

[21]We thank Stephen Finlay for pressing us on this issue.

is best for you, you should obey the unjust law (because, say, you risk severe punishment if you don't). The same contrast is present in dialogic versions of the argument:

(33) *A*: I know that, legally, I have to report my neighbor if I overhear him criticizing the government. I just heard Jim go on a lengthy tirade about what the government is doing wrong.
       B: (Then,) legally, you have to report him.

(34) *A*: [As in (33)].
       B: (Then) you have to report him.

The evidence provided by (32) and (34) could be taken in two ways. Either, there is a strong tendency to read the unconditional, unspecified necessity in the conclusion in a different way from the premise, or, alternatively, the contextually-determined construal is kept constant, but the discourse gives rise to an additional pragmatic implication that the speaker advises compliance with the law.

At present, we don't know which option is correct and we don't have an explanation for why either one might be the case.[22] Clearly, however, there is an independent factor that can distort judgements of the validity of *modus ponens*. We conjecture that the same factor is responsible for the residual worries about detachment in the cases discussed in sections 3.1 and 3.2.[23]

We conclude that there is no compelling linguistic evidence against a semantic analysis of conditionals that validates *modus ponens*. We have argued that on a constant moral or instrumental construal either the conditional premise and the conclusion are both true, or both false. That still leaves open the question whether the same is true for the 'rationality requires' construal. We will address this issue in section 6. First we discuss how the instrumental reading figures in practical reasoning (section 4), and how general constraints on rationality relate to conditional sentences (section 5).

4   Practical reasoning without detachment

A popular view is to construe practical reasoning as reasoning about what an agent ought to do. One way to cash this out is to model such reasoning as a type of inference that concludes in a normative modal statement. On

---

[22]One might think that what we see in these examples is just a strong tendency to interpret naked modals with an all-things-considered (ATC) construal, which could lead to the impression of speaker endorsement. Even if ATC construals are generally available for modals, and the tendency exists, the need for a *shift* in construal in (32) and (34), or in the cases involving ACs, still needs to be explained. Certainly, naked modals *can* receive other construals—as shown, for example, by the original dialogic version of the Harlem sentence in (4). So the question remains why the strong contextual evidence for a non-ATC construal (e.g., the explicit use of a legal construal in the conditional premise) is disregarded in the cases at hand.

[23]Also, weak and strong modals alike give rise to the same effect (note the use of a strong necessity modal in (32)/(34) and of weak ones in the examples from the previous sections), making it unlikely that it is due to a conventional meaning component of particular modals.

this conception then, practical reasoning is inextricably normative. Another conception of practical reasoning is that of Harman (1988) and Bratman (1987) and more recently Broome (1999, 2001, 2002, 2004) . This view emphasizes that practical reasoning is a dynamic process which updates an agent's cognitive state, and which results in an attitude, such as an intention. On this conception, we can consider reasoning both from a normative perspective—describing the way agents *ought to* update or revise their cognitive states—or from a descriptive one—describing the way agents in fact *do* update or revise their cognitive states when reasoning about their ends, or describing the updates that agents can (doxastically) expect each other to perform.

In this section, we are taking such a descriptive perspective in order to spell out how ACs can be used to give advice. We distinguish two ways one might conceive of this, given the semantics of ACs that we have proposed, and argue that one is superior to the other. In section 5, we consider the normative perspective on practical reasoning.

Harman, Bratman and Broome take the relevant attitudes to be belief and intention. We shall frame the discussion in terms of beliefs and effective preferences (at least Broome's notion of intention is, we believe, very close to our notion of effective preference). A simple case of instrumental reasoning can then be described as follows:

(35) a. Agent a has an effective preference for p.
  b. a is indifferent about q.
  c. a learns that q is a necessary means for p.
  d. a believes that q is realizable.
  ⤳
  e. a forms an effective preference for q.

We can abbreviate descriptions like (35) by introducing some symbolic notation.[24] In the following, $B_a \vDash \phi$ represents that a's belief state supports ϕ, while $EP_a \vDash \phi$ represents that ϕ is one of a's effective preferences. $\blacklozenge_r\, q$ represents that q is realizable.

(36) a. $EP_a \vDash p$ existing preference
  b. $EP_a \nvDash q$ indifference
   $EP_a \nvDash \neg q$
  c. $B_a \vDash NecMeans(q,p)$ new belief
  d. $B_a \vDash \blacklozenge_r\, q$ belief
  ⤳
  e. $EP_a \vDash q$ new preference

The schema in (36) appears to straightforwardly capture cases of instrumental reasoning—but how does it relate to ACs? (36) contains nothing that directly corresponds to the semantically determined content of ACs that we have proposed, raising two questions:

---

[24]The form of these reasoning schemata is inspired by Broome's (2002). It is intended only as a compact representation, not as a logical formalism.

Question 1: Does (36), or something like it, capture the practical reasoning that is triggered by ACs?

Question 2: How, exactly, is the content of an AC related to the contents of the attitudes involved in practical reasoning?

4.1 Practical reasoning with and without detachment

We characterize and compare two possible views about how ACs relate to practical reasoning. They each provide opposite answers to the two questions. Throughout, we will assume that the semantic content of ACs is what we proposed in section 2, i.e., that the content concerns what is necessarily true in the worlds which optimally satisfy an agent's effective preferences.

View 1: Modus ponens plus descent   The starting point of the first view is the observation that ACs support detachment. It then takes the practical reasoning triggered by ACs as simply *being* reasoning in terms of *modus ponens*. This is an obvious move, given that the content of the conditional relates to the satisfaction of action-relevant preferences. An agent has a certain preference (say, for going to Harlem), then he learns that an AC that involves this preference in the antecedent (say, the Harlem sentence) is true, he puts these two things together and detaches the consequent of the AC. Then he forms a preference for what he just inferred he should do. And, of course, in the dialogic case of (4), the detached conclusion is the content of B's utterance, and therefore, what A learns directly.

On this view, instrumental reasoning with ACs either just *is* detachment via modus ponens, or this detachment is a first step in such reasoning. We can represent the latter option in the reasoning schemes in (38) and (39):[25]

(37)   a. $ep_a(p)$
     b. $ep_a(p) \rightarrow \text{SHOULD}_{\text{instr}}(q)$

     —————————————————— modus ponens

     c. $\text{SHOULD}_{\text{instr}}(q)$

(38)   a. $EP_a \vDash p$ existing preference
     b. $B_a \vDash ep_a(p)$ introspection
     c. $B_a \vDash ep_a(p) \rightarrow \text{SHOULD}_{\text{instr}}(q)$ new belief (AC)
     ⤳
     d. $B_a \vDash \text{SHOULD}_{\text{instr}}(q)$ new belief (via modus ponens)

(39)   a. $B_a \vDash \text{SHOULD}_{\text{instr}}(q)$ existing belief
     ⤳
     b. $EP_a \vDash q$ new preference (descent)

---

[25]In the schematic representation, we write $\text{SHOULD}_{\text{instr}}$ for a modal under an instrumental construal.

The step in (39) involves forming a preference for something the agent believes is necessary to best fulfill his present preferences—we may dub this 'preferential descent'.

Something like this conception of practical reasoning seems to be what Silk (2014) has in mind when he writes (p. 10): 'What is important for present purposes is that [*modus ponens* arguments with ACs] are valid arguments that yield lemmas that may be used in larger pieces of practical reasoning.'

This view answers the two questions above as follows. (38) involves the content of the AC very directly—the AC specifies the content of one of the attitudes involved in the practical reasoning (**Question 2**). Moreover, the reasoning triggered by learning that an AC is true is quite different from the reasoning described in (36). Instead of combining a preference and a belief to derive another preference, in (38), two beliefs are combined to yield a belief in SHOULD(q), which in turn gives rise to a preference for q. Therefore, this view gives a negative answer to **Question 1**: The practical reasoning triggered by ACs is not captured by the schema in (36).

View 2: Pragmatic strengthening plus instrumental reasoning   The second view, by contrast, preserves the main idea behind (36), i.e., that an existing preference and a new belief lead to a new preference. But how does an agent acquire the belief in (36c) by observing the utterance of an AC? One option is to assume that the semantic content of the AC either is equivalent to or entails *NecMeans*(q,p).

But, as we pointed out in section 2, our account does not deliver this—**If want p, should q** is neither equivalent to, nor does it entail, *NecMeans*(q,p). So it appears that our account is incompatible with viewing the practical reasoning triggered by advice-giving ACs as essentially instrumental reasoning. However, this impression depends on the idea that the semantic truth conditions of the AC directly provide the content of one of the attitudes involved in the reasoning. But of course, this is not necessary. If the context is right, the utterance of an AC may give the agent reason for having the belief in the stronger (36c) by means of pragmatic strengthening.

The pragmatic inference in question can be seen as a kind of sense-making inference. The addressee may ask himself why it would be the case that the AC is true: Why, if he has a certain preference, all worlds in which he optimally fulfills his preferences will be such that a certain q is true? One plausible answer—in the Harlem case, but not in others —is that q is a necessary precondition for fulfilling the preference (together with his other preferences). One particular kind of necessary precondition is necessary means. That is, if the complement of **want** and the prejacent of the modal have the right content, and the context is right, we get the following (potential) pragmatic inference:

(40)   If want p, must q.
        potentially implicates: *NecMeans*(q,p)

For the strengthening to go through, what needs to be in place, minimally, is

certain beliefs about the causal structure of the world as well as particular facts about it.[26] For instance, for the Harlem case, given the circumstances, that going to Harlem requires a change of location, that some action is required to bring about this change of location, that there is a public transportation system designed to bring people from A to B, that there likely is *some* train that brings you to Harlem, etc.

If the addressee observes the utterance of an AC in such a context, and takes the speaker to be trustworthy, this utterance will hence defeasibly give the addressee reason to have the belief in (36c). In fact, for the instrumental reasoning to go through, something weaker than *NecMeans* is sufficient, namely that q is merely a necessary condition for p, which we symbolize as $NecCond(q, p)$.[27]

(41)   **Instrumental Reasoning Schema (IRS)**

    a. $EP_a \vDash p$ existing preference

    b. $EP_a \nvDash q$ indifference

        $EP_a \nvDash \neg q$

    c. $B_a \vDash NecCond(q, p)$ new belief

    d. $B_a \vDash \blacklozenge_r q$

    ⤳

    e. $EP_a \vDash q$ new preference

If the IRS is what captures the practical reasoning trigerred by ACs, there is no need to detach the consequent. While we maintain that detachment is universally valid with ACs, we deny that it plays any role in the instrumental reasoning that may lead the addressee to form the preference for making the prejacent true. What is relevant for instrumental reasoning is that the agent acquires (through observing the utterance of the AC) a belief in a pragmatically-strengthened version of the conditional itself, rather than in its consequent. We now argue in favor of this second view.

4.2   Varieties of advice: you should, you shouldn't, you can't

One thing that sets the two views apart is that View 1 predicts that the outcome of practical reasoning is always the same if the addressee of an AC has the hypothesized preference. Since detachment is always valid, the addressee can always arrive at the belief in (39a). And if the step from (39a) to (39b) is a sensible one to make in the Harlem case, it is hard to see why it would not be a sensible one to make in another.

By contrast, View 2 does not make this prediction. For one thing, the context may not be of the right kind to allow for the requisite pragmatic strengthening of the semantic content to $NecCond(q, p)$. Secondly, the practical reasoning described by the IRS relies on assumptions about the agent's cognitive state,

---

[26]See Fernando (2005) for a proposal on how to characterize the *NecMeans* relation.

[27]Broome (2009, p. 64) also adopts this weaker condition, together with a clause saying that *a* believes *q* will obtain only if the agent intends/effectively prefers it: 'Given this clause, there turns out to be no need in the formula for [*a*] to believe [*q*] to be an actual means to [*p*], rather than simply a necessary condition for [*p*].'

like the assumption that the agent does not have a preference against the means q.

In the rest of this section, we provide evidence that the second view has it right. ACs do not always support this instrumental reasoning, and frequently are not used in order to give advice on how to achieve the goal mentioned in the antecedent. The cases where they do not are readily explained on View 2, but remain mysterious on View 1.

To begin with, consider the following conditional version of (5) from section 1:

(42)   [A and B are planning a dinner party after a workshop. They discuss whether they should be having it at someone's home or at a public venue. A is living in a small one-bedroom apartment, and does not know yet how many people can make it to the party.]

     B: If you want to have the party at your place, you have to accommodate 20 people in your living room.

In a different context, the conditional in (42) can be used to give advice on how to realize the goal of having the party at A's place, *e.g.*, how many people to make space for in the living room. In that case, it would be but a small variant of the Harlem example. But, in the described context, a different use is more plausible. Given the size of A's apartment, it is plausible for B to assume that A might have an effective preference against accommodating so many people. In informing A how many people he would have to accommodate, B may be trying to get A to give up his (possible) preference for having the party at his place.

View 2 can effortlessly account for both types of uses. Pragmatic strengthening of the AC yields (43).

(43)   *NecCond*(accommodate 20, party at A's)

In cases where (42) is used to give advice how to fulfill A's hypothesized goal, the reasoning is just an instance of the IRS.

(44)   a. $EP_A \vDash$ party at A's   existing preference
          b. $EP_A \nvDash$ accommodate 20   indifference
            $EP_A \nvDash \neg$accommodate 20
          c. $B_A \vDash NecCond$(accommodate 20, party at A's)   new belief
          $\rightsquigarrow$
          d. $EP_A \vDash$ accommodate 20   new preference

But things are different if A has an effective preference against accommodating so many people in his tiny living room. In that case, forming the belief that (43) is true will not lead to an effective preference for accommodating 20 people without further ado. Instead, A is now facing a conflict in his effective preferences. Given the newly-acquired belief, he has to decide which preference is more important, the result of which may well be that he gives up his preference

for having the party at his place.[28]

(45)　a. $EP_A \vDash$ party at A's　　　　　　　　　　existing preference
　　　b. $EP_A \vDash \neg$accommodate 20　　　　　　　existing preference
　　　c. $B_A \vDash NecCond$(accommodate 20, party at A's)　　　new belief
　　　⤳
　　　d. $EP_A \nvDash$ party at A's place　　　　　rescission of preference

And this may well have been B's goal in making his utterance in (42). There is, of course, another possibility: A may give up his preference against accommodating so many people at his place. We find such uses of ACs, as well:

(46)　A : I don't want to bother putting logical symbols in the paper.
　　　B : But, if you want your paper to be accepted, there has to be formal section.
　　　A : Hm, you are right. I guess I have to ask someone for help with the typesetting.

In other cases, ACs can be used to dissuade the addressee from having a certain preference, not because it is in conflict with another, but because the preference is in fact unrealizable, as in (47), modeled after an example of von Stechow et al. (2006).

(47)　If you want to become president, you have to be a natural born citizen.

If the addressee is a naturalized citizen, (47), after pragmatic strengthening, will trigger the following reasoning:

(48)　a. $EP_A \vDash$ president　　　　　　　　　　existing preference
　　　b. $B_A \vDash \neg$natural-born　　　　　　　　existing belief
　　　c. $B_A \vDash NecCond$(natural-born, president)　　　new belief
　　　⤳
　　　d. $EP_A \nvDash$ president　　　　　　　　　rescission of preference

The upshot of this section is that ACs can be used for purposes other than to give advice on how to achieve the preference mentioned in the antecedent. As shown above, they can also be used as advice to give up that preference altogether, either because it conflicts with another or because a necessary precondition cannot be met; or they can be used as advice to give up a preference that is in conflict with it.

　　If the associated practical reasoning were reasoning in terms of detachment (as View 1 has it), we would need a way to block *modus ponens* on such uses. In fact, the cases discussed in this section are structurally similar to cases that have been discussed in the philosophical literature, where they have been taken to constitute evidence against a 'narrow-scope' analysis of conditionalized modals which validates *modus ponens*. With the conception of the relationship between

---

[28]In that case, he may well maintain his psychological desire to have the party at his place—he just has decided that this desire can no longer be an effective preference, i.e., it no longer influences his action choices.

conditionals and practical reasoning as in View 2, *modus ponens* is no longer problematic, since instrumental reasoning will simply not get off the ground in the problematic cases. In fact, *modus ponens* is completely immaterial to what goes on in practical reasoning.

5 Preference-conditioned necessities and requirements of rationality

In section 4, the schemas we used to illustrate practical reasoning with ACs were construed *descriptively*, as describing a process that actually happens, or that agents can (doxastically) expect each other to go through. This was sufficient for discussing how ACs can be used to give advice, and why an agent who happens to have the attitude described in the antecedent of an AC might form an effective preference for the prejacent of the modal in the consequent, or reject an existing preference.

5.1 Requirements of rationality

For other purposes, the same kind of schema can be given other, equally valid construals. In particular, it can be taken to specify a *requirement*, such as a requirement of rationality. We indicate such a construal by the subscript 'req' on $\leadsto$.

(49)   a. $EP_a \vDash p$
       b. $B_a \vDash NecCond(q, p)$
       c. $B_a \vDash \blacklozenge_r q$
       $\leadsto_{\text{req}}$
       d. $EP_a \vDash q$

'$P_1, P_2, \ldots \leadsto_{\text{req}} C$' is intended to be read as 'An agent who has the attitudes $P_1, P_2, \ldots$ but fails to have C is not (fully) rational'. Hence, such schemas represent claims about structural requirements on cognitive states—they specify what a cognitive state has to be like in order for the agent whose state it is to count as rational. This notion of a requirement is relational in nature: The attitudes $P_1, P_2, \ldots$ require the attitude C. Clearly, such $\leadsto_{\text{req}}$-statements do not support detachment: From the fact that an agent has the attitudes $P_1, P_2, \ldots$, we cannot conclude that he also has the attitude C. Nor can we conclude that he *ought* to have C—for it might well be that he ought not to have one of $P_1, P_2, \ldots$ in the first place.

Such requirements are normative in the weak sense in which they set up a standard against which an agent (or more precisely his cognitive state) can be assessed, and found in compliance with or not. They may be taken to be normative in a stronger sense, as well, if one assumes that rationality is something that an agent *ought* to strive for, in a normative sense. The construal of $\leadsto_{\text{req}}$ given above is akin to that of Broome, who, in earlier work (Broome

1999, Broome 2001, Broome 2002), took these requirements to have normative force in the stronger sense, and hence called them 'normative requirements'. More recently (Broome 2007, Broome 2008), he has opted to refer to them simply as 'requirements of rationality' in order to be able to engage with the question whether these requirements indeed have normative force. We will simply talk about 'requirements' in what follows, remaining uncommitted as to whether these requirements have normative force.

The construal given above is perhaps the weakest possible 'requirement' construal of $\leadsto$, according to which (49) makes a very weak claim that seems, intuitively, hard to deny. It would seem that, if an agent indeed has all the attitudes in (49a-c), but fails to have the attitude in (49d), he cannot be fully rational. It may be argued, however, that what (49) says, in this very weak construal, is not useful for explaining the things philosophers who are interested in practical reasoning (or moral philosophy) are interested in. Indeed, this is what various detractors of such analyses of requirements of rationality have alleged (Schroeder 2004, Kolodny 2005). For example, one particular feature of the construal explicated above is that it ultimately treats the arguments of $\leadsto_{req}$ symmetrically—to conform with the requirement $P_1, P_2, \ldots \leadsto_{req} C$, an agent is free to either have (or to adopt) C or to not have (or to give up) one or several of $P_1, P_2, \ldots$. Both Schroeder and Kolodny criticize this feature, articulating the intuition that, at least in certain cases, the attitudes should be treated asymmetrically. This could be accommodated by adopting another construal of $\leadsto_{req}$.

What Broome, Schroeder, Kolodny and others disagree about, we might say, is how $\leadsto_{req}$ should be construed so that schemas like (49) say something true and useful for the purposes of the philosophical projects they are engaged in. This is an issue that has nothing to do with natural language, and hence we shall have nothing to say about it. We bring it up here, though, because the issue has become intermixed with a quite different one, concerning the semantics of conditional sentences in English. Part of our goal is to clearly distinguish the two issues and raise the question whether and to what extent they should be considered to be connected.

5.2 Requirements of rationality and conditional sentences

The conception of requirements of rationality as global constraints on cognitive states has come to be known as the 'wide-scoping' view. This term is due to a particular way of capturing what these requirements say in a logical representation, which in turn has led to the idea that natural language conditionals have a corresponding 'wide-scope' construal. In this section, we lay out the steps that lead to such a conclusion, and then critically evaluate them.

Step 1. Even though (49) expresses a relation between *attitudes*, we can derive from it a claim about propositions. For example, we could say that the propositions in (50a), taken together, require the proposition in (50b).

24

(50) a. *a* effectively prefers *p*
      a believes *q* is a necessary condition for *p*
      a believes that *q* is realizable
   b. *a* effectively prefers *q*

Using the notation introduced in section 2, we can also summarize this as:

(51) Rationality requires, of any agent *a*, that the following is not the case:
$ep_a(p)$ and
$b_a(NecCond(q,p))$ and
$b_a(\blacklozenge_r q)$ and
$\neg ep_a(q)$

Or, more succintly, with $\mathbb{O}$ a modal operator that is true iff its prejacent is something that rationality requires:

(52) $\mathbb{O}(\neg([ep_a(p) \wedge b_a(NecCond(q,p)) \wedge b_a(\blacklozenge_r q)] \wedge \neg ep_a(q)))$

Which is of course equivalent to (53).

(53) $\mathbb{O}([ep_a(p) \wedge b_a(NecCond(q,p)) \wedge b_a(\blacklozenge_r q)] \supset ep_a(q))$

Step 2: Assume that what (49) captures can be expressed by an English conditional of the form in (54).

(54) If an agent intends *p* and believes *q* to be necessary for *p* and believes that he has influence over *q*, then he ought to intend that *q*.

Step 3: If (54) captures what (49) says (which, as an overarching principle of rationality, is always true of any agent *a*), then the conditional must not support detachment, for otherwise an agent could make it so that he ought to intend *q* merely by deciding to have the antecedent attitudes (the problem of 'bootstrapping'). So the surface structure of (54), where the modal **ought** takes scope just over the consequent, must be at odds with the logical structure of the conditional. The correct semantic analysis must assign to (54) a logical structure parallel to (53), where **ought** outscopes the conditional operator. In this case, detachment is blocked, because a conditional embedded under $\mathbb{O}$ need not support detachment (depending on the precise semantics for $\mathbb{O}$).

If we make Step 1 and Step 2—that is, if the English conditional in (54) expresses a generally applicable constraint of rationality and (53) correctly captures its content, then Step 3 is inescapable. But there is good reason to be skeptical of Step 3, because none of the existing proposals that prevent detachment by hypothesizing a wide-scope interpretation is linguistically plausible. In particular, it is unclear how the wide-scope interpretation can be derived compositionally in a way that allows for a uniform analysis of conditional sentences more generally. In a recent appraisal, Silk (2014) considers ways in which

an analysis along the lines of (53) can be brought in line with linguistic analyses of conditionals, and argues that they are unsatisfactory.

So, in the rest of this section, we take a critical look at Steps 1 and 2 and conclude that, if properly construed, they don't fit together as well as it initially appears.

5.2.1   Examining Step 1—Reasoning and meta-reasoning

Step 1 is a natural move to make if we want to develop a logic of the requirements of rationality, and we use as a model some kind of propositional modal logic.[29] It is crucial, then, to keep in mind the status formulas like (53) have in such a system. They do not specify the content of any attitude that the agent has (or needs to have) when engaging in practical reasoning. Instead, they represent claims *about* these attitudes, and which ones can be jointly held by a rational agent, just like the original schema in (49) did. We should hence not use such statements as 'premises' in practical reasoning. If we were to do so, this would amount to the claim that practical (instrumental) reasoning consists in reasoning about how to satisfy the requirements of rationality. But this is not instrumental reasoning, it is, at best, reasoning about instrumental reasoning. Consider the following putative such reasoning schema, taken from Broome (2002), but given here in our notation.

(55)   a. $EP_a \vDash$ buy a boat
          $\rightsquigarrow_{\text{req}}$
        b. $B_a \vDash ep_a(\text{buy a boat})$
        c. $B_a \vDash ep_a(\text{buy a boat}) \rightsquigarrow_{\text{req}} ep_a(\text{borrow money})$
          $\rightsquigarrow_{\text{req}}$
        d. $EP_a \vDash$ borrow money

Note the occurrence of $\rightsquigarrow_{\text{req}}$ within the content of one of the attitudes of the agent in (55c). Broome explains what is wrong with (55), taken as a description of instrumental reasoning:

> '[I]t should be obvious that [(55)] is malformed. We already have in [Broome's version of (49)] an accurate description of correct intention reasoning in the special case we are considering. To say that your intention of buying a boat normatively requires you to intend to borrow money (in the circumstances that you believe this is a necessary means of buying a boat), is merely to say that the reasoning in [(49)] is correct. It is a remark that belongs to metareasoning, not to reasoning. But in [(55)] it is injected into the reasoning itself through the belief [(55c)]. That is why [(55)] is a mess; it is a muddle of reasoning and metareasoning.'

---

[29]This is most natural if we construe these requirements as *static*, as Broome does, i.e., as requiring or forbidding that a cognitive state has certain properties. It is less plausible if we take a more *process-oriented* view of such requirements, according to which they specify how a cognitive state ought to evolve—this appears to be what Kolodny (2005) advocates.

If we make Step 1, and transform our claim about cognitive states into a claim about propositions about cognitive states, it is important to keep in mind that the resulting logic will not be the logic *employed by* agents engaged in practical reasoning—it is a logic for reasoning *about* such agents.

5.2.2 Examining Step 2

If the English sentence in (54) can express what (49) says, then, like the formula in (53), it does not feature as a premise in practical reasoning, but rather it is a meta-statement *about* practical reasoning. The question is: Can natural language conditionals express such meta-statements?

It is not obvious that they can. While, at first blush, (54) and similar principles seem to say something that is necessarily true in virtue of what it means to be rational, a moment's reflection reveals contradictory intuitions. Finlay (2010, p. 69) summarizes these well, discussing the natural language formulation of such a principle in (56).

(56) **Subjective Instrumental Principle:** If an agent *S* intends an end *E* and believes that doing *M* is the necessary means to achieving *E*, then *S* ought to [intend to] do *M*.

On the one hand, Finlay says, . . .

> '[. . . t]here is something intuitively right about this principle. If Jorja intends to skip school and believes that feigning illness is the necessary means, but fails to (intend to) feign illness, then she or her behaviour is in some way defective ("irrational").'

But on the other hand, . . .

> '[. . .] the principle appears to imply something implausible: that a person always acts as she ought when she successfully pursues her ends. By modus ponens, we could conclude simply that Jorja ought to feign illness. But surely it is possible that Jorja ought not to skip school, and so ought not to feign illness.'

These contradicting intuitions led Finlay to conclude (as many had before him), that while (56) is a true conditional (for any *S*, *E* and *M*), it should not validate detachment, just as Step 3 has it.[30] The alternative is to take at face value the intuition that instances of (56) entail something that is arguably false—and conclude that, in these cases, the corresponding instance of (56) is false, as well. This alternative view, consequently, denies that (56) expresses a generally applicable constraint of rationality.

Adopting this view does not sacrifice much. It does not imply that these requirements are not real, they just cannot be expressed in English using a

---

[30]Finlay does not *quite* advocate for what Step 3 says—he does not advocate a 'wide-scope **ought**' analysis, according to which **ought** outscopes the conditional, but proposes an alternative based on Kratzer's semantics that fails to validate detachment.

conditional sentence.[31] Certainly, a proponent of 'wide-scope' rationality requirements, even one who wants to reason about them using formulas like (53), does not need to assume that they can be expressed by English conditionals. Indeed, the most prominent contemporary exponent of such a view, Broome, appears to reject the idea that the English conditional can mean what (49) says:[32]

> 'More precisely, I meant to say that you ought, if you intend one premise and believe the other, to intend the conclusion. This sentence, too, needs to be made more precise. I mean the conditional clause, "if you intend one premise and believe the other", to be within the scope of "you ought". This will be my usage throughout this paper, even though it is not standard English. As I mean it, the sentence is not equivalent to: "If you intend one premise and believe the other, you ought to intend the conclusion."'

<div align="right">(Broome 2001, p. 179)</div>

We conclude this section by drawing out the difference between three ways to understand the term 'wide-scoping', all of which are used in the literature, and situate our own position.

1. **'Wide-scope' = Relational conception of requirements**: The view that requirements are best thought of as relating sets of attitudes an agent may have, either expressing static structural requirements of what a cognitive state can be like, or dynamic process requirements about how such states can evolve.

2. **'Wide-scope' = $\mathbb{O}$-over-$\supset$ construal of requirements**: Relational conception of requirements plus the assumption that the content of such requirements is adequately captured by formulas like (53). That is, $P_1, \ldots, P_n \leadsto_{\text{req}} C$ says nothing more and nothing less than that an agent who has $P_1, \ldots, P_n$, but not C fails to be rational.

3. **'Wide-scope' = Wide scope of modals in conditional sentences**: The view that conditionalized modals in natural language have a 'wide-scope' reading, on which the conditional fails to validate *modus ponens*.

We embrace wide-scoping in the first sense, reserve judgement on the second, but reject it in the third sense. In other words, we agree that the relational conception is the best way to think of rationality requirements, but we deny that natural language conditionals have a reading on which they can express such requirements. Hence considerations about requirements of rationality have no direct bearing on the semantics of natural language conditionals.

---

[31]But maybe they can be expressed in other ways—such as Finlay's 'If Jorja intends to skip school and believes that feigning illness is the necessary means, but fails to (intend to) feign illness, then she or her behaviour is in some way defective ("irrational").'

[32]While this quote seems to straightforwardly deny that English conditionals can express Broomian rationality requirements, other remarks in Broome's work, mostly made in passing, are more ambiguous or strongly suggest that the 'correct logical form' of such English sentences is the one in (53). At any rate, Broome's main concern is not the correct semantics of natural language sentences.

6 Bootstrapping with 'rationality requires' construals?

A non-linguistic consideration that has made philosophers question the validity of detachment via *modus ponens*, in particular with conditionals whose antecedents involve the attitudes of an agent, is the worry that such detachment might license *bootstrapping*: By virtue of having a (possibly unjustified, or otherwise inappropriate) belief or a (possibly unjustified, or otherwise inappropriate) preference, an agent can make it so that he is required to have another preference or belief, which now is justified by his prior attitudes.

Clearly, on the 'instrumental' construal we advocate for run-off-the-mill advice-giving ACs—according to which the modal specifies what is necessary if an agent's effective preferences are optimally satisfied—detachment does not confer any justification in this way. However, our discussion of detachment in section 3 allowed for the possibility that there is a 'rationality requires' (RR) construal of modal sentences, according to which they specify 'what rationality requires' of an agent. On such a construal, the Harlem sentence, repeated in (57a), can be paraphrased as in (57b).

(57)   a. If you want to go to Harlem, you should take the A train.
        b. If you effectively prefer to go to Harlem, rationality requires (of you) that you (intend to) take the A train.

Since on the analysis of conditionals we have adopted, the sentences in (57) support detachment, the question arises whether such sentences raise bootstrapping worries.

We don't think there is any reason to think that they do. Detachment would be problematic with such conditionals only if there are instances where we must assume that the RR-construal of a conditional sentence is true, while its detached conclusion, under the same construal, is false. We suggest that in any case where we have a strong intuition that the detached conclusion is false (and the antecedent of the conditional possibly true), there is good reason to assume that the conditional premise itself is false.

To investigate whether this is a plausible position, it makes sense to focus on cases where we have a *prima facie* intuition that a conditional is generally true, such as putative statements of rationality constraints in terms of English conditionals. (58) repeats Finlay's formulation of the Subjective Instrumental Principle given above, (59) paraphrases the reading the sentence gets on its RR-construal.

(58)   **Subjective Instrumental Principle (SIP):** If an agent *S* intends an end *E* and believes that doing *M* is the necessary means to achieving *E*, then *S* ought to [intend to] do *M*.

(59)   **RR-construal of the SIP (RR-SIP)**: If an agent *S* intends an end *E* and believes that doing *M* is the necessary means to achieving *E*, then rationality requires that *S* also intend *E*.

It is important to keep (58)/(59) apart from a superficially similar 'requirement' construal of the Instrumental Reasoning Schema in (60).

(60) **Instrumental Reasoning Schema, requirement-version (req-IRS)**

    a. $EP_a \vDash p$
    b. $B_a \vDash NecCond(q, p)$
    c. $B_a \vDash \blacklozenge_r q$
    $\rightsquigarrow_{req}$
    d. $EP_a \vDash q$

Given a suitable theory of $\rightsquigarrow_{req}$, (60) expresses a general requirement of rationality, thus constraining what kinds of cognitive states qualify as 'rational'. The RR-SIP, on the other hand, is a schema for constructing conditional sentences in English. In section 5, we argued against the idea of identifying the req-IRS with the RR-SIP (or, indeed, any English conditional under any construal), largely because this would require an implausible semantic analysis of conditional sentences.

Bootstrapping worries would remain, however, if we assumed a tight connection between the req-IRS and the RR-SIP schema, specifically, if the req-IRS is a genuine requirement of rationality, then all instances of the RR-SIP have to come out as true, either because they are analytic truths, or because they are theorems of a theory of rationality. But once we carefully distinguish between the req-IRS on the one hand, and the RR-SIP on the other, we see no reason to make such an assumption. Instead, we take individual instances of the RR-SIP to make contingent claims that will often come out as false—precisely in the cases that raise worries about detachment.

For example, take the following 'Harlem' instance of the RR-SIP:

(61)   If Pete wants to go Harlem and he believes that taking the A Train is a necessary means for doing so, then rationality requires that Pete intend to take the A train.

(61) can be true, in a particular context, *viz.*, if Pete's preference for going to Harlem is well-justified and otherwise unproblematic, as is his belief, and taking the A train is not in conflict with his other preferences, and so forth.

Things are different, we claim, in the 'virus' scenario from section 3. In this scenario, the relevant agents (including Pete) know that a deadly virus has been set free in Harlem, hence that it is likely that going to Harlem will result in something detrimental, such as premature death, being quarantined, etc. In this scenario, one would not say that rationality requires that Pete intend to take the A train. Indeed, one would be tempted to say that rationality requires that Pete intend the opposite, even if he has the (irrational) preference for going to Harlem. But crucially, in such a scenario, (61) also strikes one as false: If Pete effectively prefers to go to Harlem, rationality requires that he change his effective preferences, not that he take the means for going there.

The only reason one may initially be tempted to insist that (61) is true, even in the virus scenario, is to assume that (61) is an instance of a general, overarching

principle of rationality. If one does not make this assumption, there is no problem with assuming that (61) is contingent. It neither expresses a principle of rationality, nor does it figure in practical reasoning, even in circumstances in which it is true.

7 Conclusion

In this paper, we have discussed how conditional necessity statements that involve attitude ascriptions in their antecedents, in particular anankastic conditionals, relate to practical reasoning. We have presented an analysis of such conditionals according to which the modal in the consequent takes narrow scope with respect to a conditional operator, and expresses an 'instrumental' necessity—it specifies what is necessarily the case if an agent's action-relevant preferences are optimally satisfied.

This narrow-scope analysis validates detachment via *modus ponens*, so we considered some putative counterexamples to such detachment, and emphasized that, on the 'instrumental' construal, neither anankastic conditionals nor their detached consequents have any normative impact, nor do they specify what is rational to do—all that they specify is what is necessary if the agent's preferences are fulfilled (in an optimal way).

We showed that a narrow-scope, instrumental construal is well-suited for explaining how anankastic conditionals enter into practical reasoning, *viz.*, by providing, via a defeasible pragmatic inference, a reason for the agent to form a belief that he can utilize in his reasoning. A crucial feature of this account is that it does not take detachment to be involved in such reasoning.

Finally, we emphasized that requirements of rationality—such as the requirement to intend the (necessary) means to one's ends—need to be carefully distinguished from superficially similar conditional sentences involving the same kinds of cognitive attitudes and argued that there is good reason to think that such requirements cannot be expressed by natural language conditionals. Consequently, even if there is a construal of modals which, in contrast with the 'instrumental' construal, concerns what rationality requires of an agent, there is no problem with assuming that the relevant conditional sentences are false in the very cases that seem to cast doubt on detachment.

Before concluding this paper, we want to note that we are not convinced that such a 'rationality requires' construal of modals in fact exists. *Prima facie*, there are two reasons to assume that it does. First, because such a reading is necessary if we want to express the requirements of rationality as conditional **ought**s. Secondly, such a reading may initially seem necessary for explaining how preference-conditioned **ought**s can enter into practical reasoning, in particular instrumental reasoning. We have argued that neither reason provides justification for such a construal. Regarding the first, we disputed that requirements of rationality cannot be expressed by conditional sentences with modals in their consequents. Regarding the second, we provided a conception of the interaction of conditional **ought**s with practical reasoning which makes

no appeal to such a reading.

But even if such 'rationality requires' construals exist, and even if, for some reason, they do not validate detachment, this does not affect our analysis of anankastic conditionals, for it should be clear that these conditionals, on their advice-giving uses, do not receive such construals.

To appreciate the point, suppose once again that *A* and *B* are on a subway platform, and *A* has just asked *B* how to get to Harlem. If *B* replies with (62), it would not seem that he has answered *A*'s question in a helpful way.

(62)   Well, if you want to go to Harlem and (you believe that) the A train is the best/only way to go there, rationality requires that you take the A train.

By contrast, if *B* answers with the original Harlem sentence in (63), *A*'s query will have been answered, and *A* will likely form an effective preference for taking the A train, if indeed he wants to go to Harlem.

(63)   Well, if you want to go to Harlem, you should take the A train.

This is so because *A* is faced with a practical problem, and in asking for advice, he is not asking about how he can bring his cognitive state in line with the requirements of rationality. Nor will he be reasoning, upon hearing (63), about how he can make sure that his just-updated cognitive state is in accordance with the requirements of rationality. Instead, he will be reasoning about how to realize one (or several) of his effective preferences. For that purpose, (63) is just the right response, while (62) quite clearly is not.

Sven Lauer   Cleo Condoravdi
Zukunftskolleg/Department of Linguistics Department of Linguistics
University of Konstanz   Stanford University
Konstanz, Germany   Stanford, CA

References

Anscombe, G. E. M.: 1957, *Intention*, Basil Blackwell, London.

Arregui, A.: 2010, Detaching *if*-clauses from *should*, *Natural Language Semantics* **18**, 241–293.

Bratman, M. E.: 1987, *Intention, Plans, and Practical Reason*, Harvard University Press, Cambridge, MA.

Broome, J.: 1999, Normative requirements, *Ratio* **12**, 398–419.

Broome, J.: 2001, Normative practical reasoning, *Proceedings of the Aristotelian Society* **Supplementary Volume 75**, 175–193.

Broome, J.: 2002, Practical reasoning, *in* J. Bermùdez and A. Millar (eds), *Reason and Nature: Essays in the Theory of Rationality*, Oxford University Press, Oxford, pp. 85–111.

Broome, J.: 2004, Reasons, *in* R. J. Wallace, P. Pettit, M. Smith and S. Scheffler (eds), *Reason and Value*, Clarendon Press, Oxford, UK.

Broome, J.: 2007, Wide or narrow scope?, *Mind* **116**, 359–370.

Broome, J.: 2008, Is rationality normative?, *Disputatio* **11**, 153–171.

Broome, J.: 2009, The unity of reasoning?, *in* S. Robertson (ed.), *Spheres of Reason*, Oxford University Press, pp. 62–92.

Chisholm, R. M.: 1963, Contrary-to-duty imperatives and deontic logic, *Analysis* **24**, 33–36.

Condoravdi, C. and Lauer, S.: 2011, Performative verbs and performative acts, *in* I. Reich, E. Horch and D. Pauly (eds), *Sinn and Bedeutung 15: Proceedings of the 2010 Annual Conference of the Gesellschaft für Semantik*, Universaar – Saarland University Press, Saarbrücken, pp. 149–164.

Condoravdi, C. and Lauer, S.: 2012, Imperatives: Meaning and illocutionary force, *in* C. Piñón (ed.), *Empirical Issues in Syntax and Semantics 9*, pp. 37–58.

Condoravdi, C. and Lauer, S.: 2014, Anankastic conditionals are just conditionals. Ms., Stanford University and University of Konstanz.
URL: *http://www.sven-lauer.net/output/CondoravdiLauer-anankastics.pdf*

Davidson, D.: 1978, Intending, *in* Y. Yovel (ed.), *Philosophy of History and Action*.

Davis, W. A.: 1984, The two senses of desire, *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition* **45**(2), 181–195.

Dowell, J.: 2012, Contextualist solutions to three puzzles about practical conditionals, *in* R. Shafer-Landau (ed.), *Oxford Studies in Metaethics*, Vol. 7, Oxford University Press, pp. 271–303.

Fernando, T.: 2005, Comic relief for anankastic conditionals, *in* P. Dekker and M. Franke (eds), *Proceedings of the Fifteenth Amsterdam Colloquium*, pp. 71–76.

Finlay, S.: 2010, What *Ought* probably means, and why you can't detach it, *Synthese* **177**(1), 67–89.

Frank, A.: 1997, *Context Dependence in Modal Constructions*, PhD thesis, Stuttgart University. Published in 'Arbeitspapiere des Sonderforschungsbereichs 340, Sprachtheoretische Grundlagen für die Computerlinguistik, Nr. 91'.

Greenspan, P. S.: 1975, Conditional oughts and hypothetical imperatives, *The Journal of Philosophy* **72**(10), 259–276.

Hare, R. M.: 1968, Wanting: Some pitfalls, *in* R. Binkley (ed.), *Agent, Action and Reason, Proceedings of the Western Ontario Colloquium*, University of Toronto Press, Toronto.

Harman, G.: 1988, *Change in View: Principles of Reasoning*, Bradford Books.

Huitink, J.: 2008, *Modals, conditionals and compositionality*, PhD thesis, Radboud University Nijmegen.

Kolodny, N.: 2005, Why be rational?, *Mind* **114**, 509–563.

Kratzer, A.: 1981, The notional category of modality, *in* H. J. Eikmeyer and H. Rieser (eds), *Words, Worlds, and Contexts. New Approaches in Word Semantics*, de Gruyter, Berlin, pp. 38–74.

Lauer, S.: 2013, *Towards a dynamic pragmatics*, PhD thesis, Stanford University.

Levinson, D.: 2003, Probabilistic model-theoretic semantics for *want*, *in* R. Young and Y. Zhou (eds), *Proceedings of Semantics and Linguistic Theory (SALT) 13*, Cornell University, CLC Publications, Ithaca, NY, pp. 222–239.

Lewis, D.: 1973, *Counterfactuals*, Blackwell, Oxford.

Lewis, D.: 1975, Adverbs of quantification, *in* E. Keenan (ed.), *Formal Semantics of Natural Language*, Cambridge University Press, Cambridge, UK, pp. 3–15.

Portner, P.: 2009, *Modality*, Oxford Surveys in Semantics and Pragmatics, Oxford University Press.

Rubinstein, A.: 2012, *Roots of Modality*, PhD thesis, University of Massachusetts at Amherst.

Sæbø, K. J.: 1985, Notwendige Bedingungen im Deutschen: Zur Semantik modalisierter sätze, *Technical report*, Universität Konstanz, Sonderforschungsbereich 99: Linguistik.

Sæbø, K. J.: 2001, Necessary conditions in a natural language, *in* C. Féry and W. Sternefeld (eds), *Audiatur Vox Sapientiae: A Festschrift for Arnim von Stechow*, Akademie-Verlag, Berlin, pp. 427–449.

Schroeder, M.: 2004, The scope of instrumental reason, *Philosophical Perspectives* **18 (Ethics)**, 337–364.

Silk, A.: 2014, Why 'ought' detaches: Or, why you ought to get with my friends (if you want to be my lover), *Philosophers' imprint* **14**(7), 1–16.

von Fintel, K. and Iatridou, S.: 2005, What to do if you want to go to Harlem: Anankastic conditionals and related matters. ms., MIT.

von Fintel, K. and Iatridou, S.: 2008, How to say 'ought' in foreign: The composition of weak necessity modals, *in* J. Guéron and J. Lecarme (eds), *Time and Modality*, Springer, pp. 115–141.

von Stechow, A., Krasikova, S. and Penka, D.: 2006, Anankastic conditionals again, *in* T. Solstad, A. Grønn and D. Haug (eds), *A Festschrift for Kjell Johan Sæbø*, Oslo, pp. 151–171.