Default Premise Semantics for Anankastic Conditionals

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Abstract

I show that a generalization of premise semantics allows for a new set of solutions to the problems posed by anankastic conditionals.

Anankastic conditionals have been a steady source of puzzlement for the orthodox analysis of priority modals. I show that a generalization of premise semantics allows for a new set of solutions to the problems they pose. My proposal integrates standard premise semantics with established ideas from the literature on defeasible reasoning in logic and computer science — particularly Horty's theory of reasons as defaults (e.g. Horty 2012, but see also Stojnic forthcoming, Willer 2016).

1 The core problems of anankastic conditionals

Here is a small variant on the classic example from Sæbø 2001.

(1) **context:** Lila is located in Jersey city.
If Lila wants to go to Harlem, she has to cross a state line. [True]

The *compositional problem* is to characterize the update provided by the antecedent of (2). Intuitively, it seems to operate on the considerations that affect the domain (Sæbø 2001) and "ignore" the desire predicate, but the compositional mechanics that achieve this are opaque (von Fintel and Iatridou 2005, and §§4.2.4-4.2.5 of Huitink 2008).

The *conflict problem* arises if we additionally suppose that in the actual world, Lila has a desire that is incompatible with the desire introduced by the antecedent of (2) .

(2) **context:** Lila is located in Jersey city. She wants to go to Hoboken.
If Lila wants to go to Harlem, she has to cross a state line. [True]

An account of sentences like (2) must systematically predict that when actual goals and hypothetical goals conflict, the hypothetical ones win out (von Fintel and Iatridou 2005, Huitink 2008, (Condoravdi and Lauer 2016).

It is well established in the literature, that counting as an anankastic conditional is not just a matter of matching the surface form of (2). Indeed, prior to the development of the literature, Hare 1973 introduced the pair:

(3) a. If you want to put sugar in your soup, you should use a spoon.
b. If you want to put sugar in your soup, you should get checked by a doctor.

The same difference in readings occurs in variants of (3) that, like (2), involve *has to*.

(4) a. If you want to put sugar in your soup, you have to use a spoon.
b. If you want to put sugar in your soup, you have to get checked by a doctor.

The critical difference is that (4-a) is anankastic, while (4-b) is not. Anankastic conditionals are roughly characterized by the fact that they express that the content of the prejacent of the teleological modal in the consequent is a necessary condition of the proposition that is the object of the desire in the antecedent. A teleological modal is one whose domain is shaped by desires, goals, and other bouletic states of the relevant agent. (Unlike much of the literature, I do not draw a distinction between teleological and bouletic modality.)

2 Standard Solutions

It is standard (see von Fintel and Iatridou 2005, Huitink 2008, Condoravdi and Lauer 2016) to approach the compositional problem by positing a double modal, as opposed to single-modal, construal for (2) (see Figs 1 and 2). As a result, the *if-clause* shifts the world of evaluation, and not the modal base of *has to*.

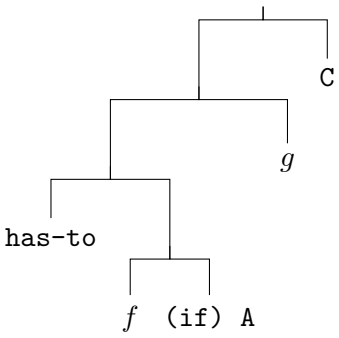

Figure 1: Single modal LF

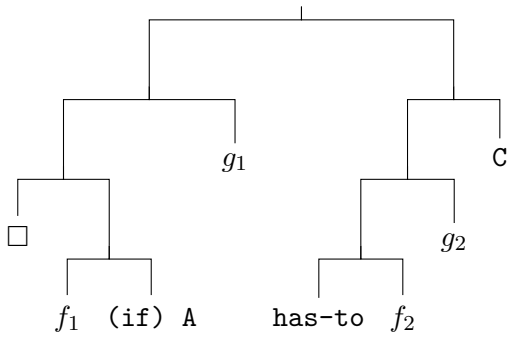

Figure 2: Double Modal LF

There is more disagreement about the conflict problem. For space reasons, I single out Condoravdi and Lauer's (2016, henceforth C&L) approach as a primary contrast to my proposal.[1] C&L distinguish between *weak* and *effective* interpretations of desire predicates. Effective desires capture the conclusions of an agent's deliberation (somewhat similar, but not identical, to the state expressed by *I intend to*). They suggest that (i) anankastics involve effective desires in the antecedent; (ii) one can't have effective desires whose satisfaction is ruled out by one's beliefs. Thus in the effective sense (5) is defective when uttered by someone who was not born in the United States.

(5) I want to become president of the United States.

The proposal encounters problems that, while perhaps not reaching the status of refutations, motivate the search for an alternative. Methodologically, it relies on substantial and under-motivated assumptions about the nature of desires. Specifically, it assumes that the perceived existence of two readings of desire predicates is to be accounted in terms of two kinds of desire-like attitudes. Empirically, I note two problems. First, there are anankastic-like sentences with weak desire predicates like (6-a), as well as other non-desire pro-attitudes, like (6-b).[2]

(6) a. If Lila would like to go to Harlem, she has to cross a state line.
b. If Lila hopes to go to Harlem, she has to cross a state line.

[1] A fuller discussion of the literature must address the well-known analyses by von Fintel and Iatridou 2005; von Stechow, Krasikova, and Penka 2006; Huitink 2008.

[2] Data of this kind was originally reported in von Fintel and Iatridou 2006 where it is attributed to Brian Weatherson (p.c.).

To account for these, the effective analysis would have to extend beyond the domain of simple desire ascriptions, and turn into a sweeping ambiguity claim.[3] Additionally, the analysis falters if in some worlds the agent doesn't believe that the desires are incompatible, as pointed out by Phillips-Brown (2019).

In contrast, the approach advocated here does not require specific assumptions about desire-talk or the metaphysics of desire, nor does it require a double-modal construal of anankastics.[4]

3 The idea of default premise semantics

Standard premise semantics for deontics assumes an ordering source that is a function from worlds to sets of propositions. Inspired by the formal theory of reasons in Horty 2012 this is replaced here by a *default ordering source* (a function from worlds to) sets of *pairs* of propositions $[\mathbf{A} \Rightarrow \mathbf{B}]$. A helpful heuristic is to think of this as expressing that **A** functions as a reason for **B**.[5] We refer to $[\mathbf{A} \Rightarrow \mathbf{B}]$ as a *consideration*; to **A** as the *premise* and to **B** as the *conclusion*

This enriched perspective on ordering sources is not just motivated by the application to anankastic conditionals, even though that is the only case discussed in this talk. Default premise semantics is a strict generalization of classical premise semantics that is capable of modeling a variety of phenomena including the puzzles of information-sensitive *oughts* (Cariani, M. Kaufmann, and S. Kaufmann 2013; Charlow 2013b; Kolodny and MacFarlane 2010; Willer 2016).

The formalism presented here is based on the idea of filtering the context-initialized default ordering source twice over. In the first stage, we only restrict attention to those considerations whose premise is entailed by the relevant modal base at the world of evaluation. In the second stage, we resolve those conflicts among triggered considerations that can be resolved by attending to the relevant priority of different considerations. (Not all conflicts are of this sort: see the discussion in Cariani ms. specifically §2.4). Fig. 3 displays the architecture of the resulting theory.

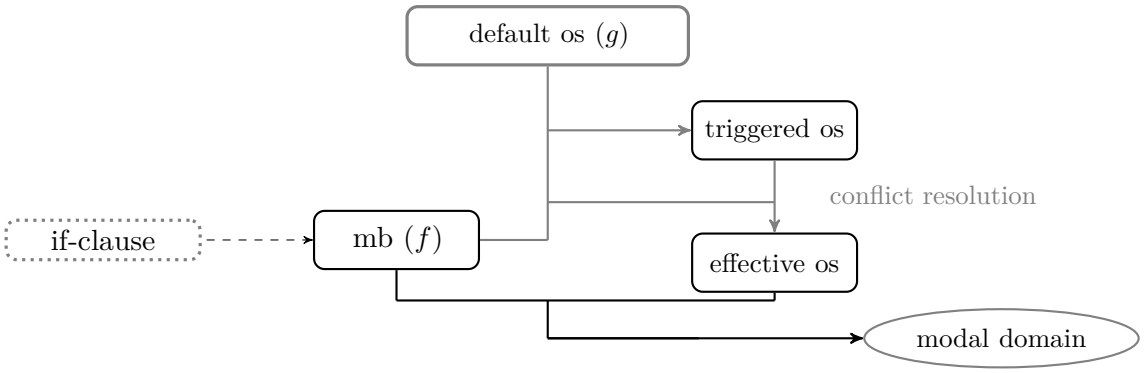

Figure 3: Figure 3: Architecture of Default Premise Semantics

[3]For the record, C&L (§7.2.3) disagree, and propose a sketch of an account of (6-a) on which these emerge as "near-anankastic readings" based on contextual reasoning. However, the proposed account is rather promissory and incomplete, so the difficulty for their view cannot be treated as resolved.

[4]One type of theory that agrees with the present one on not requiring the double modal construal is advanced by Charlow 2013a. Charlow states a constraint on a selection function for deontic conditional which covers, in more schematic form, similar ground as the domain construction recipe identify below.

[5]For empirical reasons too complex to detail here, the system cannot be replicated with single conditional propositions in the ordering source. See the full paper Cariani ms.

4 Formalities of default premise semantics

Recall that a member $[\mathbf{A} \Rightarrow \mathbf{B}]$ of a default ordering source is a **consideration**. To extract the two elements of a consideration, rely on the functions $prem([\mathbf{A} \Rightarrow \mathbf{B}]) = \mathbf{A}$ and $con([\mathbf{A} \Rightarrow \mathbf{B}]) = \mathbf{B}$. A **default ordering source** g is a function from worlds to sets of considerations. When Σ is a set of propositions $\Sigma \sqsubseteq \mathbf{A} =_{def} \bigcap \Sigma \subseteq \mathbf{A}$, (read: " Σ entails $\mathbf{A}$"). The considerations in $g(w)$ are ordered by a strict partial order $\succ$ tracking their relevant importance.

In (7) and (8), we identify the two stages of filtering:

(7) **triggered ordering source**: $\mathbf{tr}(f, g, w) = \{\pi \in g(w) \mid f(w) \sqsubseteq prem(\pi)\}$.

(8) **effective ordering source**: $\mathbf{eff}(f, g, w, \succ) = \{\pi \in g(w) \mid \neg\exists \pi' \in tr(f, g, w)$
$(\pi' \succ \pi \wedge f(w) + con(\pi') \neq \emptyset \wedge f(w) + con(\{\pi, \pi'\}) = \emptyset\}$

(7) filters out the considerations whose premise is not entailed by the modal base; (8) eliminates considerations that are defeated by a higher ranking incompatible consideration.

Given an effective ordering source as in (8), stipulate the limit assumption, and follow the Kratzerian (e.g. 2012) recipe for determining the domain of `has-to`:

(9) a. $w \preceq_{f,g,z} u$ iff $\{\mathbf{P} \in con(\mathbf{eff}(f, g, z)) \mid w \in \mathbf{P}\} \subseteq \{\mathbf{P} \in con(\mathbf{eff}(f, g, z)) \mid u \in \mathbf{P}\}$
b. $\mathbf{dom}(f, g, z) = \{u \in f(z) \mid \neg\exists w, w \geq_{f,g,z} u\}$

To complete our account of deontic conditionals, let us capture Kratzer's 1991 account of conditionals as restrictors of modals as a constraint on the semantic value of certain complex LF's, and specifically:

(10) $[\![\texttt{has-to}_{f,g}(\texttt{if}\ \cdot)[\cdot]]\!] = \lambda\mathbf{A}\lambda\mathbf{C}\lambda w.\forall u \in \mathbf{dom}(\lambda z.f(z) \cap \mathbf{A}, g, w), u \in \mathbf{C}$

This analysis is in need of further refinement to deal with chaining of considerations, but it will do for present purposes.[6]

5 New solutions

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While default premise semantics is a fully general framework, solving the two core problems of anankastic conditionals requires novel specific assumptions. With regards to the compositional problem, the key assumption is that in teleological flavors all instances of the schema [**want** $\mathbf{A} \Rightarrow \mathbf{A}$] that are relevant in w belong to the teleological ordering source at w. Informally, wanting a proposition to be true is a defeasible reason to bring about that proposition.

With regards to the *conflict problem*, having represented the priority relation $\succ$, we need to enforce the constraint that the *local goal* (e.g. going Harlem) is to take priority over the *global goal* (e.g. going to Hoboken). To this end, we first represent the distinction between local and global considerations. Consider evaluation parameters $\langle f, g, w\rangle$, and a modal conditional `if A, have-to C`, and a consideration γ. Stipulate:

> γ is globally triggered (relative to $\langle f, r\rangle$) iff $f(w)$ entails $prem(\gamma)$.
> γ is locally triggered (relative to $\langle f, r\rangle$) iff $f(w) + \mathbf{A}$ entails $prem(\gamma)$, but $f(w)$ does not.

[6] Suppose for instance that the ordering source at w contains $[\mathbf{A} \Rightarrow \mathbf{B}]$ and $[\mathbf{B} \Rightarrow \mathbf{C}]$, but that the modal base at w only entails $\mathbf{A}$. Once $\mathbf{B}$ is triggered by $\mathbf{A}$, we want it in turn to trigger $\mathbf{C}$. This is not provided by the present scheme. There are established tools to capture this kind of chaining, see Horty 2012; Horty 2014, as well as the coarse solution in Cariani ms.

As a first step in our account of the conflict problem, we consider the constraint:

LOCALITY: locally triggered considerations take priority over globally triggered ones.

LOCALITY is intended as a pragmatic constraint on the priority relation $\succ$. The basic idea behind locality is that highlighting a goal, e.g. with a conditional antecedent, results in that goal taking priority over others. In this respect, despite the substantial difference in implementation, we are after similar intuitions to proposals that treat the goal introduced by the antcedent as special or designated (e.g. von Fintel and Iatridou 2005). Thus understood, LOCALITY entails the desired result – i.e., that *local goal* (e.g. Harlem) $\succ$ *global goal* (e.g. Hoboken).

Despite this success, there are challenging cases in which LOCALITY seems to overgenerate. As we noted, it is a plausible lesson of the data on anankastic conditionals that, when it comes to teleological modals, desires in the antecedent take priority over incompatible desires emerging from the global context. However, LOCALITY makes the additional prediction that this should happen also when the antecedent triggers some piece of information that is not itself a desire. That this prediction is wrong can be seen with fairly simple examples:

(11) **context:** Your fancy restaurant meal is approaching the end, and a gruesome surprise is announced: there will only be one dessert, cake, and it is poisoned.

a. If the cake is tasty, you have to eat the cake. [False]
b. If you want to eat dessert, you have to eat the cake. [True]
c. If the cake is tasty and you want dessert, you have to eat the cake. [True]

The analysis that combines default premise semantics and locality hypothesis incorrectly predicts that (11-a) should be true and more generally that (11-a), (11-b), and (11-c) should be on a par. To see why, note that it is plausible that in the provided context, there is a consideration roughly representable as

(12) [**the cake is tasty** $\Rightarrow$ **eat the cake**].

This consideration is not triggered by the global context (which leaves it open that the cake is not tasty), but it is triggered by the local context of the modal in (11-a) after the update with the antecedent. A seeming consequence of the locality hypothesis is that this consideration should take priority over ones that emerge from the global context—including the unconditionally triggered consideration to not get sick. But if it does take priority, the theory predicts that (11-a) is true. The worry, then, is that by relying on something as general as LOCALITY, we have missed out on what's distinctive about anankastics. A symptom of this is that the LOCALITY does not distinguish between (11-a), (11-b), and (11-c).

A natural next idea is to restrict the locality hypothesis to cases that can properly be characterized as instances of *conditioning on desires or goals*. A first hunch would be to think that the hypothesis only applies to considerations whose enabling condition is a pro-attitude (e.g., a desire, an intention, a hope).

However, it is not clear that this is the right restriction. There are cases like (13-a) below where the antecedent picks out a state that is not even a state of mind.

(13) **context:** Hansel and Gretel are driving on a freeway, they need to get to their destination as fast as possible. Hansel says:

a. If you are hungry for lunch, we have to stop at this gas station. [True]

Here is a way out of this impasse: although being hungry is not itself a desire, it contextually entails one. Someone who is hungry typically wants to eat food. Similarly, the antecedent of (11-c) — *the cake is tasty and you want to eat dessert* — is not itself a desire, but it entails one.

Accordingly the locality hypothesis might be restricted to antecedents that contextually entail constraints on one's structure of norms, desires, and goals.

Say that a proposition **A** is **teleologically relevant** iff **A** entails a proposition **B** that itself expresses a norm, desire or goal (or lack thereof).

> REVISED LOCALITY: When a global modal base f for a teleological modal gets updated by a teleologically relevant proposition **A** to a new modal base f^+, considerations that are triggered by f^+ but not by f have higher priority (in the sense of $\succ$) over considerations that are triggered by f.

This revised form of the locality hypothesis appears to strike the right middle ground between prioritizing the considerations that matter most directly to a teleological modal and not prioritizing ones that do not. Of course, deriving this sort of specific pragmatic constraints from more general pragmatic principles requires additional work, which is not carried out here. The intuition that carries the constraint is fairly clear nonetheless: mentioning a desire – or indeed anything that matters to desire-like states – has the effect of giving the considerations associated with that desire extra significance. As noted, this idea is convergent with accounts that maintain that the content of the desire in the antecedent gets to play a special role (e.g. von Fintel and Iatridou 2005; von Stechow, Krasikova, and Penka 2006). But it builds in flexibility so that the account does not face some of the same difficulties. Thus, C&L attack these alternate proposal for their inability to deal with certain "near-anankastics", like:

(14) If you want to go to Disneyland, you have to spend at least five days there.

As they point out, (14) is not well understood by paraphrasing it as *To go to Disneyland, you have to spend at least five days there.* By contrast, it is entirely unproblematic for the default analysis once the details about chaining discussed in footnote 6 are addressed. Summing up, the present analysis allows us to separate the idea of anankastics as involving "goal promotion" from its implementation in terms of rationale clauses.

6 Conclusion

I have developed default premise semantics, and within it new proposals for a semantic treatment of anankastic conditionals. From a motivational point of view, default premise semantics is inspired by the idea that deontic claims are made true by reasons. The technical reflection of these motivational considerations is the assumption that considerations should have the binary structure that is attributed to reasons in default models of reasons. This innovation can be imported into the classical semantics for modals in a modular and conservative way. It is modular because it only involves how considerations shape the domain of a priority modal. It is conservative because it preserves the structure of the original framework, limiting its intervention to the local structure of reasons. Under the weak (though not uncontroversial) assumption that having a desire with a proposition as content is a defeasible reason for one to bring about that proposition, the framework solves the compositional problem without invoking a dual modal analysis of deontic conditionals. Furthermore, the framework vindicates Saebo's (2001) idea that anankastics involve a kind of update to the ordering source. They indeed do, but this update is best viewed from the perspective of a filtered ordering source, and it is mediate by the standard update of the modal base. For the conflict problem, I explored the prospects for a pragmatic constraint, to the effect that the locally triggered considerations should be given higher priority. While the unrestricted version of the constraint overgenerates, the constraint can be restricted appropriately to those updates that match the flavor of the modal. This too matches the motivating ideas of important contributions in the literature (von Fintel and Iatridou 2005; von Stechow, Krasikova, and Penka 2006) while offering a new technical implementation.

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