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Localizing To-Do Lists

Overview. According to the influential analysis of imperatives proposed by Portner (2004, 2007, 2018), imperatives denote properties of their addressee:

(1) $[\![\text{Sit down!}]\!]^w = \lambda x_e : x$ is the addressee in $c\,.\,x$ sits down in w

However, unlike declaratives which update the common ground, imperatives update a separate dimension of the conversational context, what Portner dubs the *to-do list* (TDL). However, this global approach struggles to capture disjunctions and conjunctions of imperatives and declaratives (IaDs). In light of this data, Starr (2018, 2020) has proposed a dynamic semantics for imperatives. This approach, however, generates a analogue of the classic "explanatory problem" for dynamic semantics (Soames, 1989). In contrast, we propose a new version of the dynamic pragmatic account inspired by Schlenker (2009, 2010a,b) which treats Portner's to-do list as part of the local context rather than the global conversational context.

IaDs and the explanatory problem. A major problem for Portner's TDL analysis is explaining disjunctions and conjunctions involving imperatives and declaratives (IaDs). For example, in (2), the deontic modal in the right disjunct is intuitively evaluated against an ordering induced by the to-do list updated with "Don't clean the table!", not an ordering induced by the to-do list updated with "Clean the table!". But given that no imperative is unconditionally endorsed and thus no imperative gets added to the TDL, a global TDL model doesn't predict the conditional reading.

(2) Clean the table or you should help wash dishes.
$\approx$ Clean the table or if you don't, you should help wash the dishes.

Likewise, imperative-*will* conjunctions often give rise to conditional readings while the imperatives are not endorsed and the TDL is not updated (Russell, 2007; von Fintel and Iatridou, 2017).

(3) Eat candy before dinner and you'll regret it.
$\approx$ If you eat candy before dinner, you'll regret it.

To account for IaDs, Starr (2018, 2020) proposes a dynamic preference semantics for imperatives. A preference ranking $r = \{\langle p_1, p_2\rangle, \ldots, \langle p_n, p_m\rangle\}$ is a set of pairs of propositions. The context set can be recovered from r by unioning the domain and range of r as follows $c_r = \bigcup(\text{dom}\, r \cup \text{ran}\, r)$. The meaning of an imperative is its preference change potential. So, an imperative !A changes r so that every A-world is ranked higher than every ¬A-world, while a declarative A changes r so that c_r only contains A-worlds.

- $r[!\text{A}] = \{\langle p_1, p_2\rangle, \ldots, \langle p_n, p_m\rangle, \langle c_r \cap [\![\text{A}]\!], c_r \setminus [\![\text{A}]\!]\rangle\}$
- $r[\text{A}] = c_r \cap [\![\text{A}]\!]$

We can then assume that connectives have their familiar entries from dynamic semantics–conjunction is sequential update, and disjunction is preference ranking updated with right disjunct unioned with the preference ranking updated with the negation of the right disjunct and the left disjunct.

- $r[\phi \wedge \psi] = (r[\phi])[\psi]$
- $r[\phi \vee \psi] = r[\phi] \cup (r[\neg\phi])[\psi]$

As Starr demonstrates, a dynamic preference semantics is adequate to explain much of the IaD data. Hopwever, just as Soames (1989) famously criticized the dynamic semantics of Heim (1982, 1983) on grounds of explanatoriness, a similar worry arises here; in principle, there is no reason why in Starr's semantics we couldn't define a new connective $\wedge^*$ which updates r anti-sequentially.

- $r[\phi \wedge^* \psi] = (r[\psi])[\phi]$

If conjunction could be interpreted anti-sequentially, then (3) would have reading where the speaker asserts that the addressee will regret eating candy and then directs the addressee to eat candy.

Local to-do lists. Given the inability of global dynamic pragmatics to explain the IaD data, we suggest a local version of Portner's dynamic pragmatics. We propose that local contexts, in addition to containing an information parameter κ as in Schlenker (2009, 2010a,b), modeled as a set of worlds, also have a *local to-do list* parameter τ, where τ is a function assigning each participant α in the conversation a set of properties $\tau(\alpha)$. From the local context $\langle \kappa, \tau \rangle$, we can then define a partial ordering on worlds:

> For any $w_1, w_2 \in \kappa$ and any participant i, $w_1 <_i w_2$ iff for some $P \in \tau(i)$, $P(w_2)(i) = 1$ and $P(w_1)(i)$, and for all $Q \in \tau(i)$, if $Q(w_1)(i) = 1$, then $Q(w_2)(i)$.

Following Schlenker, we define the informational part κ of the local context of a proposition b occurring in a syntactic environment a_c as the smallest proposition (set of worlds) κ such that $a(\kappa \wedge b')c' \Leftrightarrow ab'c'$ for all well-formed completions b' and c'. Since imperatives are properties of individuals rather than propositions and TDLs are sets of properties, to lift Schlenker's algorithm to TDLs, we must consider instances of those properties. Specifically, we calculate the local to-do list in two steps. First, to determine the local TDL for an addressee α w.r.t an expression b occurring in environment a_c, we saturate the arguments of imperatives indexed to α in the expression that precedes b, i.e. the imperatives in a, with α. The saturation step turns indexed properties into propositions, which are suitable input for the Schlenker algorithm. Call the saturated a' the saturated counterpart of a given α. Then, we find the conjunction $\bigwedge_{F \in \tau} F(\alpha)$ that contains as many conjuncts as possible such that $a'(\kappa \wedge \bigwedge_{F \in \tau} F(\alpha) \wedge b')c' \Leftrightarrow a'b'c'$ for all well-formed completions b' and c' (note that κ is calculated independently, and we assume that $\bigwedge_{F \in \tau} F(\alpha)$ doesn't overlap with κ to avoid redundancy).

Definition 1. (Local TDLs). For an addressee α, τ in the local context $\langle \kappa, \tau \rangle$ of a proposition b occurring in a syntactic environment a_c assigns a set of properties $\tau(\alpha)$ to α where $\bigwedge_{F \in \tau} F(\alpha)$ is the smallest proposition such that $a'(\kappa \wedge \bigwedge_{F \in \tau} F(\alpha) \wedge b')c' \Leftrightarrow a'b'c'$ for all well-formed completions b' and c', where a' is the saturated counterpart of a towards α if a contains an α-indexed property and equivalent to a otherwise.

Definition 2. (Saturated counterpart) For an addressee α, a property F indexed to α, and a syntactic environment a_c, the saturated counterpart of aFc given α is $aF(\alpha)c$.

The local to-do list for α will thus pick out a set of properties indexed to α and likewise for any other addressee. Given our lifted version of Schlenker's algorithm, we derive the following entries for disjunction and conjunction with left-embedded imperatives:

- $[\![\text{A! or B}]\!]^{w,\kappa,\tau} \Leftrightarrow [\![\text{A}]\!]^{w,\kappa,\tau}$ or $[\![\text{B}]\!]^{w,\kappa,\tau+\neg\text{A}}$
- $[\![\text{A! and B}]\!]^{w,\kappa,\tau} \Leftrightarrow [\![\text{A}]\!]^{w,\kappa,\tau}$ and $[\![\text{B}]\!]^{w,\kappa,\tau+\text{A}}$

If we assume that the ordering source of deontic modals is generated from the partial ordering induced by the local to-do list, then we derive the conditional interpretation of (2). Likewise, if we assume that *will* is a modal á la Copley (2009) and Cariani and Santorio (2018) and subject to Locality, it follows that imperative-*will* conjunctions generate conditional interpretations.

> **Locality.** $[\![\text{will}]\!]^{w,f,g}$ is defined relative to $\langle \kappa, \tau \rangle$ only if $max_{g(w)}(f(w)) \subseteq \kappa_{<_\tau}$

where f and g are the modal base and ordering source of *will* and $\kappa_{<_\tau}$ are the worlds in the local context that are highest ranked by the ordering induced by the TDL. These are worlds where the properties on the TDL are realized. Therefore, in *eat candy before dinner and you'll regret it*, the modal's domain is restricted by the local context to worlds where the addressee eats (or, will eat) candy before dinner.

Conclusion. We have shown how Schlenker's algorithm for local contexts can be extended to calculate local TDLs, solving the explanatory problem for dynamic theories of imperatives. In the full paper, we leverage the resulting framework to make progress on a number open questions, including using TDLs generated by a symmetric version of Schlenker's algorithm to explain Moore paradoxical utterances of the form ⌜you may not A, but do A⌝.

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