Want and polarity sensitivity

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Heim (1992) proposes that sentences with *want* have the presupposition in (1a). Romoli (2012) argues that (1a) is incompatible with recent accounts of strong NPI licensing, which substitute Anti-Additivity with the requirement that strong NPIs are felicitous when in addition to the assertive content, scalar implicatures and presuppositions are also Downward Entailing (DE) (Gajewski, 2011; Chierchia, 2013). Romoli (2012) proposes a weaker presupposition in (1b).

(1) a. 'x want ϕ' only defined iff $\Diamond^{B_x}\phi \wedge \Diamond^{B_x}\neg\phi$ (ϕ and $\neg\phi$ are epistemically possible for x)

    b. 'x want ϕ' only defined iff $\Diamond^{B_x}\phi \rightarrow \Diamond^{B_x}\neg\phi$

We show that (1b) is also inadequate for accounting for the distribution of strong NPIs, as well as other PSIs, and propose a new dynamic presupposition for *want*.

Data We base our argument on the novel observation that (anti-)licensing of PSIs is affected by the interpretation of the embedded predicate (see also Szabolcsi 2004, 2010). Strong NPIs, such as the punctual *until*, become deviant when the action is not controlled by the agent (as specified below), (2). Positive Polarity Items (PPIs), such as *some*, show the mirror image, i.e. they are infelicitous when the action is controlled by the agent, (3). Weak NPIs, such as *any*, are insensitive to the interpretation of the verb, (4). We show that the data in (2)-(4) are supported by a Likert-scale felicity judgement experiment on the Amazon Mechanical Turk.

(2) a. I don't want to give a red cent to this project.

    b. ?? I don't want to win a red cent in this game.

(3) a. I don't want to call someone/eat something.   ($\exists\neg / *\neg\exists$, controlled)

    b. I don't want to offend someone/break something.   ($\exists\neg / \neg\exists$, non-controlled)

(4) a. I don't want to call anyone/eat anything.   (controlled)

    b. I don't want to offend anyone/break anything.   (non-controlled)

Assuming Gajewski 2011/Chierchia 2013 approach to strong NPIs, neither (1a) nor (1b) predicts the contrast in (2). (1a) predicts that both (2a) and (2b) are ungrammatical (one of the conjuncts is not DE), whereas (1b) predicts that both are grammatical. The asymmetry between strong and weak NPIs (the latter require only the assertion to be DE), suggests the following solution: in (2b), there is an intervening presupposition, absent in (2a). Similar solution explains the contrast in (3), if we assume that the intervening presupposition 'shields' PPIs from anti-licensing. This latter assumption is collaborated by the fact that *some* is not anti-licensed under DE quantifiers with intervening presuppositions, such as *few* and *at most* (Szabolcsi 2004, Nicolae 2016, a.o.). In other words, with controlled actions *want* has the presupposition in (5a), whereas with non-controlled actions, *want* has the presupposition in (5b).

(5) a. 'x not want ϕ^{contr}' only defined iff $\square^{B_x}\neg\phi$

    b. 'x not want $\phi^{non-contr}$' only defined iff $\Diamond^{B_x}\phi \wedge \Diamond^{B_x}\neg\phi$

Controlled/non-controlled distinction We say that an action is interpreted as *controlled* when the agent x of the action believes that if she acts so as to bring about ϕ, the state of affairs described by ϕ obtains and similarly for $\neg\phi$, (6a). An action is interpreted as *non-controlled* when the negation of (6a) holds, (6b).

(6) **Notations:** ϕ = the proposition that describes the action, e.g. '$\exists x[\text{call(speaker,x)}]$' in (4a); ψ = 'the agent acts so as to bring about ϕ'

    a. Controlled actions: $\square^{B_x}(\psi \rightarrow \phi) \wedge \square^{B_x}(\neg\psi \rightarrow \neg\phi)$

    b. Non-controlled actions: $\neg\square^{B_x}(\psi \rightarrow \phi) \vee \neg\square^{B_x}(\neg\psi \rightarrow \neg\phi)$

The condition in (6a) comes from two independent sources: i) the intentionality condition in philosophy, e.g. Pritchard 2016, Horst 2015, and ii) the so-called 'matching rule' in psychology, e.g. Shultz and Wells 1985, Miller and Aloise 1989. We argue that (6b) can be regarded as a conversational (scalar) implicature (Egré 2014). Circumstantial evidence for this comes from

the fact that pre-school children over-attribute controllability. They acquire the non-controlled interpretation later on, at the same age as scalar implicatures like *some, but not all*, e.g. Guasti et al. 2005. Both controlled and non-controlled actions can be intentional or accidental (in the everyday sense). Only intentional controlled actions must satisfy (6a). Accidental controlled actions pattern together with non-controlled (intentional or accidental) actions, (6b). This classification correctly predicts that adding *accidentally/by mistake* to e.g. (3a) or interpreting *call* in the context of pocket dialing allows us to interpret *some* under negation.

Proposal To obtain (5), we use tools from dynamic epistemic logic. Following Stalnaker 2002, we understand presuppositions in terms of common beliefs (see also Kaufmann and Kaufmann 2012). More precisely, a presupposition is a statement that a (locally) rational speaker believes that a (locally) rational hearer will add to common ground upon hearing the utterance. To introduce belief revisions, we use a possible world model for AGM postulates (Grove 1988). **Notations:** K = a belief set, i.e. a set of propositions; if A is a consistent set, $[A] = \{w \in W \mid A \subseteq w\}$, otherwise $[A] = \emptyset$; $[p] = \{w \in W \mid p \in w\}$. We propose a selection function $\gamma : [K_0] \to [K_1]$ that takes a neutral common ground belief state $[K_0]$ ($[K_0] = [\Diamond^{B_x}\phi \wedge \Diamond^{B_x}\neg\phi]$ in sentences with *want*, (7a)) and returns a new (smallest) state $[K_1]$ updated with (i)-(iii) in (7b) if (i)-(iii) are compatible **(Expand if compatible!** or **Revise: contract and expand!)**. Otherwise, γ returns the neutral state $[K_0]$ **(Do not revise with contradictions!)**.

(7)   a. Neutral Common Ground: $\Box^{C_{s,h}}(\Diamond^{B_x}\phi \wedge \Diamond^{B_x}\neg\phi)$
            where $C_{s,h}$ is a transitive closure of speaker's and hearer's beliefs

      b. in *want*-sentences, the neutral common ground is updated with:

          i.   Romoli's presupposition for *want*: $\Diamond^{B_x}\phi \to \Diamond^{B_x}\neg\phi$

          ii. Controlled or non-controlled condition in (6)

          iii. Dec(ision): $\Box^{B_x}\psi$ when '*x* want ϕ' is uttered or $\Box^{B_x}\neg\psi$ when '*x* not want ϕ' is uttered (Condoravdi and Lauer 2012; Cariani, Kaufmann and Kaufmann 2013)

Sentences with *want* can have four possible revisions:

Revision 1: x want ϕ^{contr}		**Revision 2:** x want $\phi^{non-contr}$	
(i) $\Diamond^{B_x}\phi \to \Diamond^{B_x}\neg\phi$	psp	(i) $\Diamond^{B_x}\phi \to \Diamond^{B_x}\neg\phi$	psp
(ii) $\Box^{B_x}(\psi \to \phi) \wedge \Box^{B_x}(\neg\psi \to \neg\phi)$	(6a)	(ii) $\neg\Box^{B_x}(\psi \to \phi) \vee \neg\Box^{B_x}(\neg\psi \to \neg\phi)$	(6b)
(iii) $\Box^{B_x}\psi$	dec	(iii) $\Box^{B_x}\psi$	dec

> $\gamma([K_0]) = [K_0]$ ((i)-(iii) are incompatible)
> **Do not revise with contradictions!**

> $\gamma([K_0]) = [K_1] = [\Diamond^{B_x}\phi \wedge \Diamond^{B_x}\neg\phi \wedge \Box^{B_x}\psi]$
> **Expand if compatible!**

Revision 3: x not want ϕ^{contr}		**Revision 4:** x not want $\phi^{non-contr}$	
(i) $\Diamond^{B_x}\phi \to \Diamond^{B_x}\neg\phi$	psp	(i) $\Diamond^{B_x}\phi \to \Diamond^{B_x}\neg\phi$	psp
(ii) $\Box^{B_x}(\psi \to \phi) \wedge \Box^{B_x}(\neg\psi \to \neg\phi)$	(6a)	(ii) $\neg\Box^{B_x}(\psi \to \phi) \vee \neg\Box^{B_x}(\neg\psi \to \neg\phi)$	(6b)
(iii) $\Box^{B_x}\neg\psi$	dec	(iii) $\Box^{B_x}\neg\psi$	dec

> $\gamma([K_0]) = [K_1] = [\Box^{B_x}\neg\phi \wedge \Box^{B_x}\neg\psi]$
> **Revise: contract and expand!**

> $\gamma([K_0]) = [K_1] = [\Diamond^{B_x}\phi \wedge \Diamond^{B_x}\neg\phi \wedge \Box^{B_x}\neg\psi]$
> **Expand if compatible!**

Revision 1 is an unsuccessful revision. This is because (i)-(iii) are incompatible (we assume that a belief set is closed under modus ponens). By **Do not revise with contradictions!**, the revised belief state is the same as the neutral belief state in which x does not believe ϕ nor $\neg\phi$. We claim that this unsuccessful revision derives Heim's stipulation that in cases like *John hired a babysitter because he wants to go to the movies tonight*, the modal base of *want* is a superset of John's beliefs that does not take into account his decision about how to act (Dox*). When the action is non-controlled (Revisions 2 and 4), the result of the revision is expansion by ψ and $\neg\psi$ respectively. In the latter case, we derive the desired presupposition in (5b) for non-controlled actions. When the action is controlled and *want* is negated (Revision 3), the presupposition of *want* is revised to (5a). Thus, we account for (2)-(4).

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