The Acquaintance Inference as Scalar Exhaustification.

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Abstract

Predicates of personal taste (PPTs) trigger an inference that the speaker is acquainted with the thing being evaluated. While the acquaintance inference (AI) is often analyzed as part of an utterance's non-at-issue content, we argue it's best explained as a semantic entailment. Building on Magri's [15, 16] analysis of individual-level predicates as obligatory triggers of scalar exhaustification, we show that, if we treat the AI as arising from obligatory scalar exhaustification, we can explain much of the relevant projection data, provided we are willing to treating the AI as a semantic entailment of PPTs.

1 Introduction

Predicates of personal taste (PPTs) trigger an acquaintance inference (AI) that the speaker has first-hand knowledge of the object of predication [22, 3]. For example, *tasty* triggers an inference that the speaker has tried the thing in question.

(1) The cookies are tasty. $\rightsquigarrow$ *The speaker has tried the cookies.*

The AI has largely been viewed as part of an utterance's non-at-issue content [19, 17, 18, 2, 4, 12]. This paper argues that, in light of various projection data, we should take seriously the view, seldom defended in the literature, that the AI is a semantic entailment.[1]

We will assume that when a PPT appears without an overt experiencer, the PPT has a covert pronoun PRO in internal argument position.[2] Following Stephenson [21], we will assume that PRO refers to a judge parameter j. In autocentric contexts, the judge is the speaker. In non-autocentric contexts, it's some contextually salient individual. The view we'll defend in this paper is that a PPT relativized to PRO_j semantically entails that j has experienced the object in question.

(2) This cake is [tasty PRO_j] $\models$ PRO_j tried this cake

When a PPT occurs in the scope of conjunction, disjunction, and positive quantifiers, the AI behaves more-or-less like an ordinary entailment:

(3) a. The cookies and cake are tasty. $\rightsquigarrow$ *The speaker has tried the cookies and cake.*

b. The cookies or cake is tasty. $\rightsquigarrow$ *The speaker has tried the cookies or cake.*

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[1] A notable exception is Dinges and Zakkou [9] who argue that PPTs explicitly relativized to an experiencer (e.g., *the cookies are tasty to me*) entail their corresponding AI inferences.

[2] This is, I take it, is one of the dominant views in the literature [13, 21].

c. Every cookie is tasty. $\rightsquigarrow$ *The speaker has tried every cookie.*

However, unlike ordinary entailments, the AI persists in the scope of negation and negative quantifiers.[3]

(5) a. The cookies are not tasty. $\rightsquigarrow$ *The speaker has tried the cookies.*

b. None of the cookies are tasty. $\rightsquigarrow$ *The speaker has tried the cookies.*

In this respect, the AI patterns more like a presupposition, but, unlike standard presuppositions, which project from intensional environments, the AI is obviated by modals, attitude verbs, futurates, and questions.

(6) a. The cookies must be tasty. $\not\rightsquigarrow$ *The speaker has tried the cookies.*

b. I think the cookies are tasty. $\not\rightsquigarrow$ *The speaker has tried the cookies.*

c. The cookies are gonna be tasty. $\not\rightsquigarrow$ *The speaker has tried the cookies.*

d. Are these cookies tasty? $\not\rightsquigarrow$ *The speaker has tried the cookies.*

Likewise, the AI doesn't appear to be a conversational implicature, because it can't be canceled.

(7) ?? This cake is tasty, but I haven't tried.

So, if we can solve its negation problems, the entailment account seems like our best bet. In the next section, we sketch a theory on which PPTs trigger obligatory scalar exhaustification. This, we show, solves our initial negation problem, and yields many other plausible predictions.

2 PPTs as triggers of scalar exhaustification

Our positive theory starts from the common observation that PPTs behave like individual-level predicates (ILPs) [1, 19, 20]. Roughly, ILPs are predicates that pick out non-accidental properties (*tall*, *French*), unlike stage-level predicates (SLPs) which pick out accidental properties (*happy*, *sick*) [5]. ILPs have many well-known grammatical restrictions; for example, they do not tolerate temporal or locative modifiers [14].

(8) a. ?? John is tall in the classroom.

b. ?? John is French in the morning.

c. John is happy in the classroom.

d. John is sick in the morning.

[3] Dinges and Zakkou [9], who defend an entailment view like ours, attempt to explain this by positing that negation takes narrow scope with respect to a generic operator. The problem with this explanation is that we would then expect negation to sometimes take wide-scope over the generic. Dinges and Zakkou argue that we do see this:

(4) A: The cake tastes good to Hannah.—B: The cake doesn't taste good to Hannah. She hasn't even tried it!

However, we disagree that there's a wide-scope reading available here. If there is a felicitous reading of (4), it seems to be one where negation is interpreted meta-linguistically.

Magri [15, 16] explains the infelicity of (8a) and (8b) by positing that ILPs trigger obligatory scalar exhaustification, which is blind to conflicting information that's common ground. So, (8a) is obligatorily strengthened to 'John is only tall in the classroom' and (8b) is obligatorily strengthened to 'John is only French in the morning,' both of which are clearly infelicitous.

We propose that, as ILPs, PPTs also obligatorily trigger scalar exhaustification of a set of asymmetric alternatives. Following the "grammatical" approach to scalar implicature [6, 8], we'll treat LFs as containing a covert **exhaustification operator** (EXH) defined as follows:

$$[\![\textsc{exh}]\!]^w = \lambda p \,.\, p(w) = 1 \;\&\; \forall q \in \mathit{Alt}(p)[q \in \mathcal{E}(p) \Rightarrow q(w) = 0]$$

where $\mathit{Alt}(\phi)$ is a set of alternatives to ϕ and $\mathcal{E}(\phi)$ is a subset of "innocently excludable" alternatives. The elements of $\mathit{Alt}(\phi)$ are the sentences ϕ' derivable from ϕ by successive replacement of scalar items with members of their Horn scale. The set of innocently excludable alternatives $\mathcal{E}(\phi)$ consists of all the $\psi \in \mathit{Alt}(\phi)$ such that:

- it's not the case that $\phi \wedge \neg\psi \models \bot$
- and there exists no $\chi \in \mathit{Alt}(\phi)$ such that $\phi \wedge \neg\psi \models \chi$ while $\phi \not\models \chi$.

In other words, the innocently excludable alternatives of ϕ are those alternatives whose negation is consistent with ϕ, and which don't allow one to infer alternatives not already inferable from ϕ alone.

When unnegated, the effect of exhaustifying *tasty* is vacuous and the AI is predicted to follow as an entailment; but, when negated, exhaustifying *tasty* leads to the scalar inference that the object in question is not tasty and that the speaker has tried it.

(9) a. $\mathcal{E}(\textbf{tasty}(c)) = \emptyset$

b. $\textsc{exh}([\![\text{the cake is tasty}]\!]) = \textbf{tasty}(c)$

(10) a. $\mathcal{E}(\neg\textbf{tasty}(c)) = \{\neg\textbf{tried}(s, c)\}$

b. $\textsc{exh}([\![\text{the cake is not tasty}]\!]) = \neg\textbf{tasty}(c) \wedge \neg\neg\textbf{tried}(s, c) = \neg\textbf{tasty}(c) \wedge \textbf{tried}(s, c)$

We've, therefore, solved our initial negation problem. In the following section, we show that this solution also makes correct predictions about extensional quantifiers, disjunction, and conjunction.

2.1 Extensional quantifiers

When a PPT occurs in the scope of a positive quantifier, the effect of exhaustification is vacuous and the AI projects as an ordinary semantic entailment.

(11) a. Some dessert is tasty $\rightsquigarrow$ *The speaker has tried some dessert.*

b. $\mathit{Alt} = \left\{ \begin{matrix} \exists x[\textbf{dessert}(x) \wedge \textbf{tasty}(x)], \exists x[\textbf{dessert}(x) \wedge \textbf{tried}(s, x)] \\ \forall x[\textbf{dessert}(x) \rightarrow \textbf{tasty}(x)], \forall x[\textbf{dessert}(x) \rightarrow \textbf{tried}(s, x)] \end{matrix} \right\}$

c. $\textsc{exh}([\![\text{some dessert is tasty}]\!]) = \exists x[\textbf{dessert}(x) \wedge \textbf{tasty}(x)]$

But, when in the scope of a negative quantifier, scalar exhaustification is non-vacuous, allowing us to correctly derive the AI as a scalar inference.

(12) a. No dessert was tasty. $\rightsquigarrow$ *The speaker has tried all the desserts.*

b. $Alt = \begin{Bmatrix} \neg\exists x[\textbf{dessert}(x) \wedge \textbf{tasty}(x)], \neg\exists x[\textbf{dessert}(x) \wedge \textbf{tried}(s,x)] \\ \neg\forall x[\textbf{dessert}(x) \to \textbf{tasty}(x)], \neg\forall x[\textbf{dessert}(x) \to \textbf{tried}(s,x)] \end{Bmatrix}$

c. $\text{EXH}([\![\text{no dessert was tasty}]\!]) = \neg\exists x[\textbf{dessert}(x) \wedge \textbf{tasty}(x)] \wedge \neg\neg\forall x[\textbf{dessert}(x) \to \textbf{tried}(s,x)] = \neg\exists x[\textbf{dessert}(x) \wedge \textbf{tasty}(x)] \wedge \forall x[\textbf{dessert}(x) \to \textbf{tried}(s,x)]$

So, we've also solved our negative quantifier problem.[4]

2.2 Disjunction and negated conjunctions

When a PPT occurs in a disjunction, the AI doesn't quite project like, say, a presupposition. However, when both disjuncts contain an occurrence of a PPT, the entire disjunction can license weak acquaintance-like inferences. For example, suppose we're at a party and you ask me which of the refreshments are good. I can't remember what I ate so I respond:

(14) Either the cake or the cookies are tasty. $\rightsquigarrow$ *The speaker tried the cookies or tried the cake.*

This is exactly what we would expect if the entailment account were correct. Each disjunct entails that the speaker has tried something–hence, the entire disjunction entails that the speaker has tried something. Our theory can also account for other nearby cases. For example, suppose we're at the party and I've tried something I didn't like. I can't remember what it was so I tell you:

(15) The cake and pie are not both tasty. $\rightsquigarrow$ *The speaker tried the cookies or tried the cake.*

This is something our theory captures as well:

(16) a. $Alt = \begin{Bmatrix} \neg[\textbf{tasty}(p) \wedge \textbf{tasty}(c)], \neg[\textbf{tried}(s,p) \wedge \textbf{tried}(s,c)] \\ \neg[\textbf{tasty}(p) \vee \textbf{tasty}(c)], \neg[\textbf{tried}(s,p) \vee \textbf{tried}(s,c)] \end{Bmatrix}$

b. $\text{EXH}(\neg[\textbf{tasty}(p) \wedge \textbf{tasty}(c)]) = \neg[\textbf{tasty}(p) \wedge \textbf{tasty}(c)] \wedge \neg\neg[\textbf{tried}(s,p) \vee \textbf{tried}(s,c)] = \neg[\textbf{tasty}(p) \wedge \textbf{tasty}(c)] \wedge [\textbf{tried}(s,p) \vee \textbf{tried}(s,c)]$

The current theory can also explain why the AI disappears in excluded middle disjunctions like (18a).[5]

[4] Similarly, we also derive the correct prediction about negation in the scope of a universal quantifier:

(13) a. Every dessert is not tasty $\rightsquigarrow$ *The speaker has tried every dessert.*

b. $Alt = \begin{Bmatrix} \exists x[\textbf{dessert}(x) \wedge \neg\textbf{tasty}(x)], \exists x[\textbf{dessert}(x) \wedge \neg\textbf{tried}(s,x)] \\ \forall x[\textbf{dessert}(x) \to \neg\textbf{tasty}(x)], \forall x[\textbf{dessert}(x) \to \neg\textbf{tried}(s,x)] \end{Bmatrix}$

c. $\text{EXH}([\![\text{some dessert is tasty}]\!]) = \forall x[\textbf{dessert}(x) \to \neg\textbf{tasty}(x)] \wedge \neg\exists x[\textbf{dessert}(x) \wedge \neg\textbf{tried}(s,x)] = \forall x[\textbf{dessert}(x) \to \neg\textbf{tasty}(x)] \wedge \forall x[\neg\textbf{dessert}(x) \vee \textbf{tried}(s,x)]$

[5] Our theory also derives the correct predictions in nearby cases too like negated contradictions containing PPTs. For example, Cariani [4] observes that the AI is obviated in (17a).

(17) a. The cake is not both tasty and not tasty. $\not\rightsquigarrow$ *The speaker has tried the cake.*

(18) a. The cake is either tasty or not tasty. $\not\rightsquigarrow$ *The speaker has tried the cake.*

b. $Alt = \begin{Bmatrix} \textbf{tasty}(c) \vee \neg\textbf{tasty}(c), \textbf{tried}(s,c) \vee \neg\textbf{tried}(s,c) \\ \textbf{tasty}(c) \wedge \neg\textbf{tasty}(c), \textbf{tried}(s,c) \wedge \neg\textbf{tried}(s,c) \end{Bmatrix}$

c. $\text{EXH}(\neg[\textbf{tasty}(c) \wedge \neg\textbf{tasty}(c)]) = [\textbf{tasty}(c) \vee \neg\textbf{tasty}(c)]$

In these contexts, the only innocently excludable alternative is a contradiction–e.g., $\textbf{tried}(c) \wedge \neg\textbf{tried}(s,c)$–so the effect of excluding it is vacuous.

While excluded middle contexts are perhaps an extraordinary case, far more mundane disjunctions obviate the AI. For example, Ninan imagines that we are in a restaurant, about to order, and everyone around us is eating lobster rolls [18, pg. 774]. In this context, the following utterance does not trigger the AI:

(19) Either the lobster rolls here are delicious or they're out of everything else.

Given our theory, we correctly predict that the AI does not project in (19). However, our theory still appears to make a problematic prediction: since *delicious* entails trying, our theory appears to predict that (19) entails that either the speaker has tried the lobster rolls or the restaurant is out of everything else. This inference is clearly not licensed in the given context. However, we believe an acquaintance inference *is* licensed in this context, but not one where the experiencer is the speaker. For example, if the taste predicate is explicitly relativized to the speaker, the utterance becomes markedly worse:

(20) ?? Either the lobster rolls here are delicious to me or they're out of everything else.

However, if the taste predicate is explicitly relativized to, say, the patrons of the restaurant, the disjunction is felicitous, and the predicted entailment seems far more natural.

(21) Either the lobster rolls here are delicious to them (the patrons) or they're out of everything else.

Disjunction also provides further support for our hypothesis that *tasty* entails *tried*. Hurford observed that a disjunction $X \wedge Y$ is infelicitous if X entails Y or Y entails X [11]. Intriguingly, (22a) seems strikingly similar to paradigm violations of Hurford's constraint (22b).

(22) a. ?? Either John tried the burger or he found it tasty.

b. ?? Either John is in Paris or he's in France.

Gazdar [10] also observed that Hurford's constraint admits exceptions like (23).

(23) Mary read some or all of the books.

We can find parallel exceptions with PPTs too. For example, when we negate both disjuncts, the disjunction is no longer infelicitous (24a). Chierchia, Fox, and Spector [7, 8] suggest that,

b. $Alt = \begin{Bmatrix} \neg[\textbf{tasty}(c) \wedge \neg\textbf{tasty}(c)], \neg[\textbf{tried}(s,c) \wedge \neg\textbf{tried}(s,c)] \\ \neg[\textbf{tasty}(c) \vee \neg\textbf{tasty}(c)], \neg[\textbf{tried}(s,c) \vee \neg\textbf{tried}(s,c)] \end{Bmatrix}$

c. $\text{EXH}(\neg[\textbf{tasty}(c) \wedge \neg\textbf{tasty}(c)]) = \neg[\textbf{tasty}(c) \wedge \neg\textbf{tasty}(c)]$

in Gazdar's exceptions, scalar exhaustification of one of the disjuncts breaks the entailment between them; hence, there is no violation of Hurford's constraint. If (24a) has the LF in (24b), as our theory predicts, then this would explain why (24a), but not (22a), is felicitous.

(24) a. Either John didn't try the burger or he didn't find it tasty.

b. Either John didn't try the burger or EXH[he didn't find it tasty].

2.3 Intensional operators

While the entailment view coupled with scalar exhaustification has made light work of the projection problem in extensional contexts, we still face difficulties in intensional contexts. As we noted in §1, virtually all intensional contexts–modals, conditionals, and attitude reports–obviate the AI. But, given, for example, the plausible assumption that knowledge is veridical, the entailment view incorrectly predicts that (25) should be a contradiction.

(25) I know that the cake is tasty, even though I haven't tried it, because every desert at the French Laundry is amazing.

We think that intensional operators obviate the AI, because they shift the judge parameter.

$$[\![know]\!]^{w,t,j} = \lambda p.\forall\langle w', t', x'\rangle \in Epi_{w,t,j} : p(w')(t')(x') = 1$$

So, (25) isn't a contradiction, because the attitude verb *know* shifts the judge parameter to a non-speaker individual. This response seems plausible. After all, if we explicitly specify that the judge is the speaker, then we get something that seems contradictory:

(26) ?? I know that the cake is tasty to me, but I haven't tried it.

In short, we believe the AI isn't completely obviated by intensional contexts–rather, intensional contexts often generate the appearance of obviation by shifting the judge parameter from the speaker or attitude holder to another individual.

3 Conclusion

We've sketched how, by helping ourselves to a "grammatical" theory of scalar implicature, an entailment view of the AI might solve the projection problem for PPTs. In many ways, the AI behaves like an ordinary scalar inference, but with a few quirks. First, unlike ordinary conversational implicatures, the AI is obligatory and its computation is blind to information that's common ground. Secondly, by manipulating the judge argument of PPTs, intensional operators introduce noise into our data, obscuring the fact that the AI is simply a scalar inference.

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