

Relevance and Existence in the Meanings of Weak and Strong Determiners

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Introduction

A notable distinction between strong and weak determiners is seen in sentences such as (1), where a determiner quantifies over an empty set.

- (1) a. No American king lives in New York.
- b. Every American king lives in New York.

Lappin and Reinhart (1988) point out that, for weak determiners, speakers are often able to assign truth values to these sentences even though there are no American kings. Sentences with weak determiners such as (1a) will be judged true, whereas strong determiners as in (1b) usually result in a perception of oddness. They propose that this is a result of how people are processing the sets involved. Weak determiners depend only on the intersection of two sets – (1a) can be evaluated by seeing whether there are any individuals who are American kings *and* live in New York – but strong determiners require checking through all the elements of one of the sets. When this set is empty, the process is stopped, resulting in infelicity.

However, it is observed by Abusch and Rooth (2005) that there is no reason given for why the process has to stop when it tries to check through the empty set. If, as Lappin and Reinhart (1988) assume, strong determiners' semantic definitions do not presuppose the nonemptiness of their domains, then sentences should be defined even for the empty set. Abusch and Rooth suggest instead that the oddness of sentences like (1b) comes from a conversational implicature. (1b) is entailed by the stronger alternative (2):

(2) There are no American kings.

and so if the speaker believed there were no American kings, he could have said (2). The fact that he said (1b) therefore results in the implicature that he does not believe (2). The same implicature can be avoided for weak determiners because one can restrict assessment to only the speaker's beliefs related to the specific context in which the utterance occurs.

Geurts (2007) rejects the idea that there is such an implicature, on the basis that it does not function in the same way as other implicatures. He proposes that strong determiners do in fact have a presuppositional meaning, but that it is in the form of pragmatic expectations rather than semantic domain restrictions. This can explain why it is possible for sentences to be assigned truth values even when their presuppositions are not met, and why a statement can be acceptable in one context but infelicitous in another.

A key factor in both of these accounts is the notion of relevance. Sentences do not occur in isolation, and how they are interpreted can depend heavily on context. Both Abusch and Rooth (2005) and Geurts (2007) bring up the related issue of topicality – a sentence is more likely to be perceived as infelicitous when a violation occurs in what is considered to be its “topic” – but relevance extends even beyond this. A sentence sounds more felicitous when it expresses information in a way that is relevant to the conversation, even if the facts of the world make the sentence itself uninformative.

This paper will discuss some of the details of the arguments given by Abusch and Rooth (2005) and Geurts (2007), with specific emphasis on incorporating contextual relevance as an additional way of accounting for their observations.

Implicature

As mentioned above, Abusch and Rooth (2005) attempt to account for the infelicity of strong determiners quantifying over empty sets by invoking conversational implicature, using the following definition:

(3) Scalar Implicature

If ψ asymmetrically entails ϕ and ψ is an assertional alternative to ϕ , then
A asserting ϕ implicates that A does not believe ψ .

For both weak and strong determiners, it is possible to use only this fact and thus obtain an oddness judgment for sentences like (1a) and (1b). In the case of weak

determiners, however, they claim that the speaker’s “belief” can be restricted to “a coherent part of a belief state,” some subset of his global belief state that has to do with particular things being talked about. When (3) is applied, it implies that ψ is not contained in this particular subset, but it does not imply that the speaker necessarily does not believe ψ at all, so the assertion is not considered odd.

It is not immediately apparent why this reasoning cannot be applied to strong determiners as well. According to Abusch and Rooth’s account, what licences the belief-state restriction is a particular property of weak determiners (we assume that a determiner is a two-place function from sets of individuals to truth values):

- (4) If D is a weak determiner, then
 $Q \subseteq Q' \rightarrow D(P, Q) = D(P \cap Q', Q)$.

In other words, the first argument to the determiner can be restricted to its intersection with some other set, as long as this other set contains the second argument. This does not hold for strong determiners, as shown in (5b).

- (5) Given that all kings are male,
 a. No American is a king = No American male is a king.
 b. Every American is a king \neq Every American male is a king.

For weak determiners, then, a listener can find some set Q' and apply the property in (4), so a truth value can be computed without considering the entire set P . This new set Q' is what belief inference takes place with respect to.

Although it is a reasonable idea to restrict attention to the context of the statement, there is a problem with this analysis, which lies in the definition (3) of implicature. The definition requires that ψ , the stronger statement which it is inferred that the speaker does not believe, be an “assertional alternative” to ϕ , the actual statement. Obviously not just any statement counts as an assertional alternative, because if that were the case then we would always infer that people did not believe anything except what they said. In any sentence ϕ that would typically trigger an implicature, the implicature can be avoided if it is clear from context that the usual alternative ψ does not apply. Abusch and Rooth give the example in (6), but if, for example, (6a) were a response to (7), the conclusion (6c) would not necessarily be drawn.

- (6) a. speaker states ϕ : Every male guest at the party was a bore.
 b. stronger alternative ψ : Every guest at the party was a bore.
 c. \rightarrow speaker does not believe ψ .

(7) Did you meet any interesting men at the party?

If the context is given by (7), non-male guests might be considered irrelevant, so a response like ψ would not be an assertional alternative to ϕ .

The objection raised by Geurts (2007) to the implicature explanation, though presented as a somewhat unsupported appeal to the intuition that “it is fairly obvious that this inference doesn’t behave as an ordinary implicature,” is actually addressing this same point. He points out that scalar implicatures can be cancelled by adding information, but the same does not seem to hold for the purported implicature of nonemptiness.

- (8) a. Many orphans are sick – in fact, all of them are.
- b. Every American king lives in New York – in fact, there are no American kings.

It is true that (8b) sounds quite odd and (8a) sounds fine, but this is not due to the second clause in (8b) not being a stronger statement than the first. Rather, it is due to the fact that the second clause is stating a different type of thing, so it is ruled out as an assertional alternative. Consider the same sentence with a different determiner.¹

- (8) c. Not every American king lives in New York – in fact, there are no American kings.

This version, though perhaps not completely natural-sounding, is at least significantly better than (8b). This is because the two clauses in (8c) are more similar to each other in what information the speaker is intending to convey than are the two clauses in (8b). One can possibly imagine a situation where someone could make either of the statements in (8c), but it is difficult to come up with one in which both the statements in (8b) would be equally appropriate.

Despite this clarification, the objection remains valid for the original example. Because the stronger statements of nonexistence are not generally assertional alternatives to the quantified statements, it is unlikely that the existence of these statements would result in implicatures.

¹It is assumed here that *not every* functions as a single (strong) determiner.

Topicality

Abusch and Rooth's implicature idea does touch upon a critical fact about what it is that makes sentences infelicitous: statements are generally evaluated as utterances speakers make in order to provide information within a conversational context. There are many statements that, though true, would not be assertional options in a given context. The implicature argument ignored this fact and tried to use semantic properties of weak determiners to explain the restriction, but as (8c) shows, similar cancellations of the implicature can occur with strong determiners. What matters is that the speaker has *some* reason to make one statement and not the other.

When people talk, they are talking *about* something, and so a statement is perceived as having a topic. Often it is known from context approximately what this topic is, but even when that is not the case, the listener can infer from general world knowledge and linguistic cues that certain parts of a sentence are more likely topics than others. Geurts provides the following example from Strawson (1964), who claims that sentence subjects and definite descriptions are more likely to be topics than are other noun phrases.

(9) Jones spent the morning at the local swimming pool.

The default topic of (9) is the individual Jones, so the truth value of the sentence is determined based on information about Jones. If he spent the morning at his house, then the sentence is false, regardless of whether there exists a local swimming pool.

Geurts then proposes that "salient objects in the context" are also more likely to be topics. For example, even though the king of France is the definite subject of both sentences in (10), he is only the topic of (10b), because the chair is a more plausible topic for (10a).

- (10) a. The king of France is sitting in that chair.
b. The king of France is bald.

Consequently, (10a) is judged to be false, and (10b) is infelicitous. He extends this analysis to all determiners and suggests that noun phrases with strong determiners are more likely to be topical because they are presuppositional.² In any case, it does seem slightly easier to think of (11a) as being about New York and not politicians than (11b).

²Whether and in what sense strong determiners actually are presuppositional will be discussed in the next section.

- (11) a. Some politicians live in New York.
b. All politicians live in New York.
c. There are some politicians in New York.

Geurts further observes that subjects of existential *there*-sentences such as (11c) are very unlikely to be topical, for such sentences by nature are asserting the existence of their subjects rather than stating anything about them.

The question now is where topicality in a given sentence comes from. Importantly, it is not a feature built in to the basic compositional semantics of a sentence. Nothing in the definition of “some” says that (11a) should be any more about politicians than about people who live in New York, yet with no conversational context we interpret it to be so. This is a consequence of having extensive experience with the general pattern that in English people tend to put things they are talking about as sentence subjects.

For sentences like (10a), the chair is taken to be the topic because it is more likely that a person would decide to talk about a nearby chair than about the king of France. But for (1), beyond the sentence structure there is no clear preference for either group of people as the topic. Compare (12), in which the order is switched.

- (12) a. The residents of New York include no American king.
b. The residents of New York include every American king.

If the topic is the residents of New York, it seems much easier to declare (12b) false, intuitively for the same reason that (10a) is false. In a conversation about who lives in New York, there is no reason to say that every American king does. As Lappin and Reinhart point out, strong determiners have nonintersective definitions, so (12b) specifically depends on the set of American kings. This matters not just because it might affect the logical evaluation process, but also because the *meaning* has to do with American kings as a whole, independently of the topic of the sentence.

Presupposition

The basis of the problem encountered when trying to evaluate a sentence like (1b) is that the speaker seems to be making a statement about something that does not exist, namely American kings. One possible explanation for how this makes the sentence infelicitous is that the determiner *every* (along with all strong determiners) presupposes that its first argument is a nonempty set. By this account, the

domain of the word's denotation simply does not contain the empty set, so the sentence is semantically uninterpretable. However, the discussion above is evidence that such an account cannot fully explain people's judgments. These presuppositions can be cancelled in much the same way as implicatures, and in the correct context, even a sentence that would sound quite infelicitous standing alone can become acceptable. These observations suggest that any complete theory about the distinction between weak and strong determiners should include some reference to contextual information.

In their implicature account, Abusch and Rooth actually present a reasonable, intuitive explanation for why speakers can be considered to be basing their statements on limited information. They use this explanation primarily to motivate the restriction of beliefs for weak determiners, but it is still applicable on its own. When someone hears a statement, she attempts to infer the speaker's reasons for making that statement. If it is something like (1a) or (1b), she has the option to reject it as infelicitous on the basis that there are no American kings. Alternatively, she can assume that in making the statement, the speaker was thinking about some particular information, perhaps about New York and kings, and so it becomes *irrelevant* whether American kings exist.

Abusch and Rooth also describe a theory, originally from Lasnik (1993), for how sentences like (12b) can be judged not just odd but actually false, even though they are logically true. The topic of (12b) is residents of New York, so in evaluating the statement, we can restrict attention to some set of real-world facts including information about residents of New York (in particular, the fact that no American kings live there) but not about American kings. Regardless of what else is true of American kings, such as whether they exist, (12b) will never be consistent with what we already know about New York, so it is judged false. Formally this analysis requires that *every* presupposes a nonempty argument, because local accommodation of the presupposition is what allows us to ignore world knowledge about American kings. But the basic idea, that peripheral facts can be temporarily disregarded during evaluation, is valid even without this assumption.

It is not even always the case that assigning a truth value to a statement with a strong determiner quantifying over an empty set requires using limited information. The previous section described that strong determiners suggest through their meanings that their arguments are relevant, but it is still possible for context to manipulate this effect.

(13) Every farmer beats every donkey he owns.

(13) does not imply that every farmer owns a donkey. If the sentence subject were

any particular farmer who owned no donkeys, it would be odd because there is no reason to talk about his beating any set of donkeys, even an empty one, if beating donkeys is not something he does in the first place.³ But because it is within a statement that covers other farmers as well, “every donkey he owns” is a relevant idea in the overall meaning of the sentence.

According to Geurts (referencing Strawson), strong determiners do in some sense have presuppositions about their arguments, but not in the sense of domain restriction. He proposes that presupposition is handled similarly to anaphora. When a word carries a presupposition with it (such as *every*’s presupposition that its argument is a nonempty set), the presupposition can either be “bound” by some element that occurred earlier in the discourse (such as the explicit mention of members of the set which is now an argument to *every*), or be accommodated. Thus,

it is a mistake, strictly speaking, to say that a quantifier triggers the presupposition that its domain is non-empty. What we should say instead is that the quantifier signals, among other things, that the speaker presents its domain as given. (p. 270)

Because it is uncommon for people to “present as given” things they do not assume exist, we generally get the inference that arguments to strong determiners do exist. Examples like (13) show that the presence of the word is not in itself enough to cause the inference to happen.

This fact is also apparent in some situations where the set being quantified is in the future or hypothetical.

(14) Bring every flashlight you find.

(15) Every student under eighteen needs a parental signature.

In these sentences the word *every* could just as easily be replaced by *any*. The speaker does not have to be assuming in (14) that there are any flashlights you will find, or in (15) that there are any students under eighteen. The statements are relevant because he considers it possible that there are some.

³Of course, one could felicitously say “Farmer Joe beats no donkeys,” but that statement is not specifying some set of donkeys and then saying that he beats them.

Conclusion

It is clear that multiple factors contribute to whether a given sentence is perceived as felicitous and what truth value is assigned to it. Grammatical structure and conversational context can cause differing interpretations for sentences that otherwise have the same truth conditions, so the observed differences in judgments about strong and weak determiners cannot be attributed to their semantic denotations alone. Because a strong determiner's meaning has to do with some subset of its first argument in particular, as opposed to weak determiners which have to do with both their arguments in the same way, strong determiners are used when this subset is a relevant concept, which is generally not the case when it is empty. Taking relevance into account has provided an informal but coherent explanation for why strong determiners often imply that their arguments are nonempty and weak determiners do not.

References

- Abusch, D., & Rooth, M. (2005). Empty-domain effects for presuppositional and non-presuppositional determiners. In H. Kamp & B. Partee (Eds.), *Context-dependence in the analysis of linguistic meaning*. Elsevier Publishers.
- Geurts, B. (2007). Existential import. In I. Comorovski & K. von Heusinger (Eds.), *Existence: syntax and semantics*. Springer.
- Lappin, S., & Reinhart, T. (1988). Presuppositional effects of strong determiners: a processing account. *Linguistics*, 26, 1021-1037.
- Laserson, P. (1993). Existence presuppositions and background knowledge. *Journal of Semantics*, 10, 113-122.
- Strawson, P. F. (1964). Identifying reference and truth-values. *Theoria*, 96-118.