# **Negative Polarity and Phantom Reference\***

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## 1. On the Diversity of Polarity Sensitivities

It is well-known that negative polarity items (NPIs) are sensitive to a variety of licensers besides negation, including questions, conditionals, comparatives, certain quantifiers and various adverbs like *rarely* and *hardly*. Years of effort and a voluminous literature have not reduced the controversy as to what makes these all a natural class. But in addition to the question of what in general is responsible for licensing NPIs, there is also the problem that not all NPIs share precisely the same sensitivities. NPIs like *any* and *ever* are notoriously liberal as to what they will accept as a licenser; but other NPIs can be rather more particular.

Traditionally, the response to this problem has been to posit a hierarchy of 'negative strength' such that stronger NPIs will only be licensed by stronger licensers (Edmondson 1981; van der Wouden 1994). But such an approach, if it is even feasible, may have little to say about why different NPIs have the peculiar sensitivities they do.<sup>1</sup>

Given the diversity of NPI sensitivities, the goals of this paper are quite modest. I will focus on two classes of NPIs, minimizers and indefinites, arguing that distributional differences between them directly reflect their distinct constructional semantics. Minimizers are a class of moderate NPIs including forms like *so much as, the least bit, a hope in hell*, and *sleep a wink;* the indefinite NPIs, including *any (anyone, anything* etc.) and *ever*, are slightly more liberal. I will argue that both classes are subject to a general licensing condition, but that they differ crucially in the ways they can meet this condition.

I draw my data from three sorts of environments in which these classes show distinct patterns of sensitivity. The examples in 1 show NPIs in negated *because* clauses. Here the indefinite *any* is licensed, but the minimizer *drink a drop* sounds odd. Note that on the intended reading these sentences presuppose that Zelda did fall asleep and deny only that it was vodka that caused her to do so.

- 1. a.Zelda didn't fall asleep because she drank any vodka. She was just very tired.
  - b. \* Zelda didn't fall asleep because she drank a drop of vodka. She was just very tired.

The examples in 2, from Heim (1984), show that while both *ever* and the minimizer *so much as* can be licensed in the restriction of a universal quantifier, *so much as* is more particular about which sentences of this sort it will accept.

- 2. a. Every restaurant that I've ever been to happens to have four stars in the handbook.
  - b. Every restaurant that charges so much as a dime for iceberg lettuce should be shut down.
  - c. \*?Every restaurant that charges so much as a dime for iceberg lettuce

As Heim notes, the difference between 2b and 2c seems to be that while 2b implies that the restaurants should be shut down precisely because of what they charge for iceberg lettuce, in 2c there can be only a fortuitous correlation between what a restaurant charges for lettuce and its rating in the handbook. While this poses a problem for *so much as*, the more liberal *ever* sounds fine in 2a despite the apparently fortuitous correlation between the habits of the speaker and the ratings of the restaurants.

Finally, as noted by Lee and Horn (1994), minimizers and indefinites are not equally acceptable in the focus constituent of *only*. In 3a the indefinite *ever* is fine; in 3b the minimizer *the least bit* is atrocious.

- 3. a. Only people who've ever read Heidegger will understand this movie.
  - b. \*Only people who've read the least bit of Heidegger will understand this movie.

Having thus established that minimizers and indefinites do indeed behave differently, we can now turn to the question of why this should be.

#### 2. Representing the Constructions

Both the minimizers and the indefinite NPIs, I claim, are scalar operators and, as such, depend on the availability of a scalar model in order to be happily interpreted (cf. Fauconnier 1975, 1979; Israel 1994). Following Kay (1990), a scalar model is understood as a structured set of propositions ordered so as to support inferences between them. The basic difference between the minimizers and the indefinites resides in the precise structures they require of a scalar model.

Figure 1 gives an example of a scalar model. The model consists of a propositional schema, for example the schema P, 'Norm can solve y,' paired with a set of values for y ordered (at least partially) along a dimension of difficulty.





In general, ability to solve a puzzle ranked high in the model will entail the ability to solve any lower ranked puzzle; conversely, inability to solve puzzles low in the ranking will entail an inability to solve any puzzles ranked higher.<sup>2</sup>

Two properties can be distinguished which characterize any proposition in the scale: (quantitative) q-value refers to a proposition's position, high or low, within the scalar ordering; (informative) i-value distinguishes emphatic (high i-value) propositions entailing other propositions within the model from weak (low i-value) propositions which are themselves entailed.<sup>3</sup>

Given this, minimizers can be defined as inherently emphatic forms which encode a low q-value. Normally a scalar model supports inferences only from high q-values to low q-values, but minimizers will be restricted to just those contexts in which the inferences are reversed, for only in such contexts will a minimizer be appropriately emphatic. As Fauconnier (1975, 1979) has shown, the class of scale reversing contexts, including negation, conditionals, comparatives and much more, corresponds quite neatly to the class of NPI licensers.

It is important to note that a minimizer's q-value does not define an actual individual but simply marks a phantom minimal element on the scale. I call the element a 'phantom' because, lacking any inherent referential force of its own, it refers only by virtue of the entailments it licenses. The phantom is never experienced directly – it cannot, for example, establish discourse referents – but it makes itself known by virtue of its strategic position within the scale.

Now, indefinite NPIs are just like minimizers: they too encode a phantom instance which, in order to refer, must entail other instances within a set. But whereas a minimizer makes crucial reference to some quantitative ordering within which it encodes a minimal q-value, indefinites are pure phantoms encoding only an arbitrary instance randomly selected from an array of possible instances (cf. Langacker 1991: 138). As such, indefinites require only a minimal scalar model with just one element, the phantom, ordered with respect to all other possible values. Thus although indefinite NPIs do trigger entailments over a full set of alternative values, unlike the minimizers, they are not inherently emphatic.<sup>4</sup>

The difference between the two constructions is illustrated in figure 2.



Both NPI types yield a proposition which must be construed with respect to a set of entailed, alternate propositions. Minimizers further require that the set of alternate propositions be itself partially ordered; the indefinites are compatible with such an ordering, but do not require it. They are fine so long as the phantom element counts as arbitrarily standing in for and entailing all possible alternatives.

The proposed representations capture the intuitions of Schmerling (1971) and Heim (1984), who suggest that minimizing NPIs, but not the indefinites *any* and *ever*, "are semantically equivalent to expressions containing the word *even*" (Heim, p. 105). Just as the focus constituent of *even* must represent the least likely, and hence most informative value that would satisfy its sentence's expressed proposition (cf. Horn 1969; Kay 1990), so too do minimizers encode the scalar element which is least likely to satisfy a given propositional schema and whose predication is thus maximally informative.

#### **3. Phantom Reference and the Implication Constraint**

Since both minimizers and indefinites encode phantoms, both will be subject to a general constraint limiting them to environments in which they can achieve what we might call 'phantom reference.' In essence, a phantom is a maximally schematic indefinite which is linked to an array (i.e. a partially ordered set) of elements and which can refer only by triggering entailments over that array.

Normally, predication of any particular instance, P(x), will entail the predication of an indefinite element: if we know that Zelda drank vodka, we know that Zelda drank a (some) thing. For a phantom to be licensed this implication must be reversed. In that case, when entailments run from indefinite values to particular instances, a phantom will be able to refer indirectly by virtue of the inferences it licenses. The requirement is captured by the implication constraint (IC) given in 4.

4. IC: Given a partially ordered set A with elements {a, b, c ... } and phantom  $\alpha$  linked to A,  $\alpha$  is licensed in a proposition P iff for every element x of A,  $P[\alpha] \rightarrow P[x]$ .<sup>5</sup>

Not surprisingly, negation satisfies the IC: if Zelda did not drink a thing, then clearly Zelda did not drink vodka.

We may note that the IC is rather similar in spirit to Ladusaw's (1979) proposal that NPIs are licensed only in the scope of a downward entailing (DE) operator; however, as will be shown, the IC represents a distinct, and rather less stringent constraint on NPI licensing.<sup>6</sup> Moreover, while I take it for granted that all scale reversing contexts satisfy the IC and thus allow for phantom reference, it turns out that not all environments which satisfy the IC can also reverse entailments on a scale.

# 4. Differing Entailments: Negated *because* Clauses

Given the differences between minimizers and indefinites there are at least two sorts of situations in which an indefinite NPI might be licensed where a minimizer is blocked. On the one hand, there may be contexts which satisfy the IC for pure phantoms, but which fail to reverse implications on a scale. On the other hand, we may find contexts which do satisfy the IC both for pure phantoms and for the scalar minimizers, but which nonetheless do not provide a coherent scalar model in which to interpret a minimizer. In the next two sections I will present examples illustrating the latter situation. In this section I argue that negated *because* clauses provide an example of the former case.

Negated *because* clauses have played a rather prominent role in discussions of polarity ever since Linebarger (1980). Recently, Kadmon and Landman (1993) have pointed out that this context is not in fact downward entailing. The acceptability of certain NPIs in this context might thus appear problematic; however, while I accept the conclusion that negated *because* clauses are not DE, I will argue that they do nonetheless satisfy the IC for pure phantoms.

Without negation, entailments in a *because* clause run from particular individuals to indefinite phantoms. Thus, for any two propositions, P and Q, along with the individual x and the phantom  $\alpha$ , the implication in 5 will be valid.

5. Q because  $P[x] \rightarrow Q$  because  $P[\alpha]$ 

Common sense verifies this. If, for example, Elly was punished because she punched Lyle, it follows that she was punished because she punched **someone**. Similarly, if I know that Zelda fell asleep because she drank vodka, I know that she fell asleep because she drank **something**.

Not surprisingly, under negation these entailments are reversed and the implications run from phantoms to particular individuals, as in 6.

6. Q not because  $P[\alpha] \rightarrow Q$  not because P[x]

Thus, if it's not because she punched someone that Elly was punished, then it cannot be because she punched Lyle. And if Zelda didn't fall asleep because she drank something, then she didn't fall asleep because she drank vodka.

Negated *because* clauses thus satisfy the IC, and as the examples in 7-8 illustrate, the indefinite NPIs *any* and *ever* are both licensed in this context.

- 7. a. Zelda didn't fall asleep because she drank anything. She was just tired.b. Jen isn't happy because she has any money. She's just in a good mood.
- 8. a. Elmo doesn't get good grades because he ever studies. He's just smart.
  - b. Sally doesn't like him because he ever buys her flowers. She just suffers from the delusion that he's a nice guy.

But negated *because* clauses do not license minimizers, for the simple reason that *because* clauses in general do not license entailments along a quantitative scale. If, for example, Zelda fell asleep because she drank a pint of vodka, it in no way follows that she fell asleep because she drank a shot of vodka: a pint may suffice where a single shot would not. And in general, whenever some quantity, n, is a sufficient cause for some effect, one cannot assume that any lesser quantity, n - y, will also be a sufficient cause. The implication in 9 is thus not valid.

9. Q because P[n] = /-> Q because P[n-y]

Since there is no implication to be reversed, negation can have no effect and so the implication in 10 fails to hold as well.

10. Q not because P[n-y] = /-> Q not because P[n]

If drinking a shot of vodka was not a sufficient cause for Zelda to fall asleep, it's still possible that drinking a pint was enough to make her nod off.

The failure of negated *because* clauses to reverse implications on a scale leads to the prediction that minimizing NPIs will not be licensed in this context. As the examples in 11 show, the prediction is borne out.

- 11. a. \*Zelda didn't fall asleep because she drank a drop of vodka.
  - b. \*Jen isn't happy because she has a red cent.
  - c. \*Elmo didn't get an A because he so much as cracked a book.

I conclude that there is good reason to believe that minimizers and indefinites do in fact differ in the ways proposed above, and that the distributions of both depend on satisfying the IC. The moral is that implication reversal is not itself a homogeneous phenomenon: different contexts may reverse different sorts of entailments, and fine-grained differences in the representations of NPIs may have a significant effect on their distributions.

#### 5. Incoherent Scales: NPIs in restrictor clauses

If an environment does not provide the appropriate inferential structure for an NPI then obviously the NPI will not be licensed. But this is not the only thing that can go wrong. Even with the right sorts of entailments, a variety of factors may prevent the formation of a coherent scalar model in which to interpret an NPI. This is what often happens to NPIs in restrictor clauses.

As noted above (example 2), minimizing NPIs are only sometimes licensed in the restriction on a universal quantifier. As the examples in 12-13 show, similar facts hold for minimizers and indefinites in the restrictions on *most* and *few*.

- 12. a. Most students who've ever read Hegel seem to wear hats.
  - b. \*?Most students who've read the least bit of Hegel seem to wear hats.
  - c. Most students who've read the least bit of poetry will be familiar with Stevens' "The Emperor of Ice Cream".
- 13. a. Few of the guests who ate any trout dressed well.
  - b. \*?Few of the guests who ate a bite of trout dressed well.
  - c. Few of the guests who ate a bite of trout enjoyed the meal.

In 12a the assertion of an unexpected and fortuitous correlation between the reading of Hegel and the wearing of hats poses no problem for the indefinite *ever*; but in 12b, substitution of *the least bit* into the same context sounds jarring. In 12c, with a natural connection between the two clauses, *the least bit* is fine.

Much the same thing happens with *few* in 13. Where there is apparently only a fortuitous correlation between the two clauses, as in 13a and 13b, the indefinite *any* is fine but the minimizer *eat a bite* is blocked. But when a causal relationship can be established the minimizer suddenly becomes acceptable.

Given the difference between minimizers and indefinites, the explanation for these facts is fairly straightforward: one needs more than a fortuitous correlation in order to construct a coherent scalar model. As suggested above, minimizers presuppose, by virtue of their scalar semantics, both a set of higher values which could fill in a propositional schema, and an ordering relation such that higher values will increase the likelihood of the proposition's validity.

A sentence like 2c, repeated below, thus presupposes a correlation between the price of lettuce and the quality of restaurants such that the more a restaurant charges for iceberg lettuce, the more likely it is to have four stars.

2. c. \*?Every restaurant that charges so much as a dime for iceberg lettuce happens to have four stars in the handbook.

But such a correlation clashes with our background knowledge about restaurants and lettuce prices: no matter how much one charges for it, iceberg lettuce is still not very fancy and charging more for it does not make a restaurant any better.

Similarly, in 12b the minimizer *the least bit* presupposes a scalar model according to which the more one reads Hegel, the more likely one is to wear a hat. And in 13b the minimizer *eat a bite* suggests a correlation between gastronomic indulgence and sartorial splendor such that the more trout you eat, the less likely

you are to dress well. In as much as one can accommodate such presuppositions, these sentences may be acceptable, but the correlations they require do not fit neatly with our normal assumptions about the way the world works. And for this reason, the sentences tend to sound, at best, rather peculiar.

With the indefinites, on the other hand, no such unlikely correlations need be assumed. A sentence like 12a with *ever* requires only that of all the students who have read Hegel, most seem to wear hats. The notion of random selection encoded by *ever* simply emphasizes the claim that students seem to wear hats no matter when or how much Hegel they might have read: it does not suggest that the more one read, the more likely one would be to wear a hat.<sup>7</sup>

While the differences between minimizers and indefinites in these contexts may be straightforward, we might still ask why either of them are licensed here in the first place. After all, the restrictions of *few* and *most* are non-monotonic, and it is not obvious how or why they can satisfy the IC. While I do not claim to have definitively solved this problem, I can at least make a few suggestive remarks.

I assume that the crucial generalization uniting these quantifiers is that they are all in some important sense proportional: in order to be verified they require a global evaluation over the set of possible instances. Thus, to determine the truth of a sentence like 14a one must know what happened to every guest who ate trout. Only then can one be sure that a majority got sick.

- 14. a. Most of the guests who ate trout got sick.
  - b. Several guests who ate trout got sick.

With determiners like *some* and *several* this is not the case: to determine the truth of 14b one need only build up enough positive instances of sick trout-eaters to count as several, and it doesn't matter what happened to the rest of them.<sup>8</sup>

Some evidence for the importance of proportionality comes from the fact, previously unnoticed in the literature, that quantifiers like *many* and *some*, on their proportional readings, also seem to allow NPIs in their restrictions. Thus a number of people I've surveyed find the sentences in 15 to be at least marginally acceptable, and certainly much better than the non-proportional equivalents in 16.

- 15. a. ?Sóme of the guests who ate so much as a bite of trout got sick.
  - b. ?Mány of the guests who ate so much as a bite of trout got sick.
- 16. a. \*Some (sm) guests who ate so much as a bite of trout got sick.
  - b. \*Many (mny) guests who ate so much as a bite of trout got sick.

If this is accurate, it suggests that the proportional readings of these quantifiers may involve the same kind of global evaluation as is necessary for *most, few* and *all*, and that this global evaluation may indeed be what licenses NPIs.

A natural way to capture the requirement of global evaluation would be to represent sentences containing *few*, *most* or *all* in terms of an implication from the restriction to the nuclear scope. Since conditionals are scale reversing and, in a limited sense, downward entailing (Fauconnier 1979; Heim 1984), we might appeal to the effects of this hidden licenser to explain the licensing properties of the proportional quantifiers. But while the use of a conditional is straightforward in the representation of universal quantifiers, it might seem problematic for *most* and *few*. A sentence like *All the guests got sick* can be verified if one takes all the guests and checks that each one got sick, but if we substitute *most* for *all*, even

when the sentence is true, one could easily select a set containing a majority of the guests for which it would not be the case that each one got sick.

In order to get around this problem, the quantifier must be understood as applying only after the implication has been checked for **all** possible instances in the domain of quantification. Thus for a sentence like 14a, one must evaluate for every guest, G, the validity of the proposition *If G ate trout then G got sick*. If a majority of the possible values for G satisfy this proposition then 14a will count as true. And substituting *few* for *most*, if a minority of possible values for G satisfy the proposition, then *Few of the guests who ate trout got sick* will be true.

If this is correct, it gives us a way of viewing these contexts as at least secondarily scale reversing by virtue of the conditional. The proposal, while admittedly rather sketchy, is hopefully at least not implausible. In any event, it seems clear that there is something about the proportional determiners as a class which allows them to license NPIs. Unfortunately, any more detailed examination of this licensing will have to await another paper.

# 6. Contradictory Scales: NPIs in the focus of only

In this last section I will briefly consider why indefinite NPIs are licensed in the focus of *only* and why minimizing NPIs are not. Again, the first question seems to be rather the more problematic of the two. As the examples in 17 suggest, the focus of *only* does not appear to reverse implications.

- 17. Only people who drank something enjoyed the party.
- 18. Only people who drank guava nectar enjoyed the party.

17 clearly does not entail 18 and so it would appear that implications in this context do not run from indefinites to particular individuals as the IC would require; however, there is a sense in which an important part of the meaning of 17 does in fact entail an important part of the meaning of 18.

Roughly following Horn (1969), I assume that a sentence like 17, with termfocus *only*, encodes both of the two propositions expressed in 19, and that the first of these is presupposed, while the latter is asserted.

- 19. a. All the people who drank something enjoyed the party.
  - b. None of the people who did not drink something enjoyed the party.

In the asserted proposition, 19b, the indefinite does not occur in an environment which reverses implications. 19b does not entail 20, since someone who didn't drink guava nectar could still have drunk something else and enjoyed the party.

20. None of the people who didn't drink guava nectar enjoyed the party.

But while the assertion does not satisfy the IC, the presupposition does. In 19a, the focus of *only* has the form of the restriction on a universal quantifier, and as noted above, this context is scale reversing. The hypothesis then is that NPIs are licensed in the focus of *only* by virtue of this presupposition: that is, for essentially the same reasons that they are licensed in the restriction on a universal quantifier.

It may seem odd that a presupposition should license an NPI, but then there is a sense in which 19a is not like other presuppositions: 19a need not be assumed as part of the common ground in order for something like 17 to be felicitous. The sentence is perfectly acceptable as a response to the question *Did anyone enjoy the party?* in which clearly there is no assumption that anyone did. Thus while the proposition in 19a might not be asserted by 17, it can at least be conveyed as new information. I assume that only when this is the case will the presupposition be able to license an NPI.

But now the question arises: if the presupposition in 19a is available to license NPIs, why does it only license the indefinites? After all, the restriction on a universal quantifier generally does license minimizers, at least so long as an appropriate scalar model is available. But in 3b, the minimizer is clearly not licensed, even though a scalar correlation can presumably be made between the amount of Heidegger someone knows and their understanding of the movie.

- 3. a. Only people who've ever read Heidegger will understand this movie.
  - b. \*Only people who've read the least bit of Heidegger will understand this movie.

The problem, I suggest, lies not in the lack of a scale, but rather in a clash between the meaning of *only* and the scalar semantics required by the minimizers. As argued above, a minimizer incorporates the semantics of *even*: it represents the scalar element which is least likely to satisfy a given propositional schema and whose predication is thus maximally informative. But, as König (1991) points out, the scalar semantics of *only* has just the opposite effect, requiring that the element in its focus be the one **most** likely to make its sentence true. This is illustrated by the fact that in 21, *only* is fine with *the tallest* but odd with *the shortest*, since generally taller monkeys are the ones most likely to reach higher.

21. Only {the tallest/# the shortest} monkey could reach the banana.<sup>9</sup>

The jarring effect of 3b thus arises from the fact that the sentence makes two contradictory claims at once. On the one hand, because of the minimizer, it says that the people who are least likely to understand the movie are those who have read only "the least bit" of Heidegger (or none at all). On the other hand, because of *only*, it also says that the people who have read "the least bit" of Heidegger are the ones most likely to understand the movie.

This scalar contradiction explains the fact, noted by Lee and Horn (1994: 134), that *even* cannot occur in the focus constituent of *only*. This poses a problem for their claim that *any* incorporates the semantics of *even*, since, as 22b (Lee and Horn's 152b) shows, *any* can occur in this environment.

- 22. a. #Only those students who have even a single sibling need to complete the survey.
  - b. Only students who have any siblings need to complete the survey.

On the present analysis, however, this fact is a virtue: *any* and *ever* are acceptable in the focus of *only* because, unlike the minimizers, they do not encode the least likely element within a scalar ordering. Rather, by virtue of their phantom semantics, they serve to trigger implications over an array of possible alternatives. Thus in 22b *any* can emphasize that everyone with a sibling must complete the survey without suggesting that those who have more than one sibling are in any way more obligated to do so.

#### 7. Conclusions

My goal in this paper has been to motivate what should be an intuitive claim: that polarity items occur in certain contexts and not in others because only certain contexts are compatible with their meanings. Along the way, I have run rather quickly through some quite complicated phenomena, but while important problems may remain, some points, hopefully, will be clear.

The first of these is that the semantics of NPIs is more subtle than what might be suggested by a simple constraint that they appear only in downward entailing contexts: it is not enough for a context to reverse entailments if the entailments reversed are not the ones an NPI demands. More importantly, it should be clear that the semantics of NPIs is not particularly complicated. The fact that NPIs are phantoms, and consequently subject to the implication constraint, is not in any way mysterious. By virtue of the IC, phantoms provide an economical way of making very general statements ranging over an array of instances. Thus while the status of any given form as a phantom may be a matter of lexical stipulation, the existence of phantoms in general is functionally motivated: they allow us to say a lot without a lot of effort. The moral is that simple functional considerations may have complicated grammatical consequences.

#### Endnotes

- \* This paper has benefitted from the comments of Raúl Aranovich, Chuck Fillmore, Ron Langacker and John Moore. Special thanks are due to Gilles Fauconnier for his tireless and invaluable advice. Any remaining defects are entirely my own fault.
- 1. Differences between NPIs do not always lend themselves to a simple ordering of NPI strength. For example, semi-modal *need* and punctual *until* are both strong NPIs, but while *need* is fine in questions and bad with the negative adverb *rarely* (i-ii), *until* is fine with *rarely* but bad in questions (iii-iv):
  - i) Need you be so rude to your grandmother? iii) \*Did Zelda leave the party until midnight?
  - ii) \*You rarely need study for these sorts of exams.
- iv) Zelda rarely leaves a party until midnight.

Given such facts, it's hard to know which forms are strong and which are weak. Unfortunately, that's about all I can say about *need* and *until*.

- <sup>2</sup>. Such an entailment is not strictly logical: there exist possible worlds, including this one, in which someone might be able to solve hard problems without being able to solve the easy ones. But the entailment does represent a default inference: it holds in all possible worlds which, all things being equal, one is likely to consider in making deductions. It is thus a 'pragmatic entailment.'
- <sup>3</sup>. Israel (1994) presents a taxonomy of four types of polarity sensitive items based on the interaction of these features. The taxonomy includes emphatic and understating versions of both negative and positive polarity items.

- <sup>4</sup>. Note that this contradicts the recent proposals of Kadmon and Landman (1993) and Lee and Horn (1994), both of which represent *any* as encoding an essentially emphatic sense.
- <sup>5</sup>. I am indebted to Fauconnier (p.c.) both for help in formulating the IC and for the general notion of phantom reference.
- <sup>6</sup>. Roughly, a downward entailing operator is one which allows subset for superset substitutions *salva veritate*. For detailed discussion see Ladusaw 1979, Barwise and Cooper 1981, or van der Wouden 1994, *inter alia*.
- <sup>7</sup>. Note that focus stress on *ever* forces the scalar reading and leads to ungrammaticality.
- <sup>8</sup>. I am indebted to Ron Langacker for discussion of these points.
- <sup>9</sup>. Note that, as one would expect, with *even* the judgements are reversed:
  - 21'. Even {# the tallest/ the shortest} monkey could reach the banana.

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