



---

1-28-2013

## Only One At Least: Refining the Role of Discourse in Building Alternatives

María Biezma  
*Carleton University*

Follow this and additional works at: <https://repository.upenn.edu/pwpl>

---

### Recommended Citation

Biezma, María (2013) "Only One At Least: Refining the Role of Discourse in Building Alternatives,"  
*University of Pennsylvania Working Papers in Linguistics*: Vol. 19 : Iss. 1 , Article 3.  
Available at: <https://repository.upenn.edu/pwpl/vol19/iss1/3>

This paper is posted at ScholarlyCommons. <https://repository.upenn.edu/pwpl/vol19/iss1/3>  
For more information, please contact [repository@pobox.upenn.edu](mailto:repository@pobox.upenn.edu).

---

## Only One At Least: Refining the Role of Discourse in Building Alternatives

### Abstract

In this paper I provide an analysis of at least that derives the epistemic and concessive interpretations of utterances containing at least (discussed in Nakanishi & Rullmann 2009) from a single denotation. I propose that the presence of at least merely indicates that the prejacent is considered within a scale in which there are higher alternatives (which may or may not be true given what we know) and lower alternatives. I further argue that the different alternatives in the scale as well as the ordering relation need not be lexically generated but can be contextually provided. This is cashed out by making use of a discourse model.

# Only One At Least: Refining the Role of Discourse in Building Alternatives

María Biezma

## 1 Introduction

Nakanishi and Rullmann (2009) (henceforth N&R) observe that sentences containing *at least* have two possible readings: (i) a concessive reading (CON), and (ii) an epistemic reading (EP). (Examples below are from N&R)

(1) EPISTEMIC

- a. Mary wrote at least four novels.

*The speaker is uncertain about exactly how many novels Mary wrote*

- b. Mary won at least a silver medal.

*The speaker is uncertain about what medal Mary won*

(2) CONCESSIVE

- a. Mary didn't win a gold medal, but *at least* she won a silver medal.

*(roughly) Although winning a silver medal is less preferable than winning a gold medal, a silver medal is satisfactory*

N&R propose to account for the two different meanings by claiming that there are two different lexical entries for *at least*, one accounting for the concessive interpretation and one for the epistemic interpretation. The authors provide a description of the data in which it is claimed that in pronominal position, (1), we only find epistemic-*at least*, whereas in sentence-initial position concessive-*at least* is the preferred interpretation, (2).

The discussion of *at least* is traditionally framed within a broader discussion regarding superlative quantifiers (SQs) (*at least*, *at most*) and comparative quantifiers (CQs) (*more than*, *less than*) (in which the contrast between EP and CON had never been discussed before). We can identify two main approaches in this discussion: (i) a semantic approach in which the epistemic inferences are derived as consequence of the presence of a modal (Geurts and Nouwen 2007); (ii) a pragmatic approach, in which epistemic inferences are derived via implicatures (Büring 2008, Cummins and Katsos 2010). In this paper I propose a unified analysis for concessive and epistemic *at least* that favors a pragmatic approach. However, a full comparison with semantic approaches is left out for space reasons and I will merely sketch some comments. In short, I propose that the presence of *at least* merely indicates that the prejacent<sup>1</sup> is considered within a scale in which there are higher alternatives (which may or may not be true given what we know) and lower alternatives. I further argue that the different alternatives in the scale as well as the ordering relation need not be lexically generated but can be contextually provided.

The remainder of the paper is organized as follows: in Section 2 I review previous proposals for *at least*, primarily I overview the debate between the pragmatic approach in Büring's (2008) and how it differs from Geurts and Nouwen's (2007) modal account; in Section 3 I briefly review Nakanishi and Rullmann's (2009) proposal. This discussion will shed light on how the proposal in Section 4 makes roughly the same predictions as a pragmatic approach to *at least* would, and further explains data not previously accounted for by taking into account discourse.

## 2 Previous Accounts: a Semantic and a Pragmatic Perspective

The analysis of *at least* is usually framed within a larger discussion concerning generalized quantifiers involving *superlative quantifiers* (SQs) such as *at least* and *at most*, and *comparative quantifiers* (CQs) such as *fewer than* and *more than* (Barwise and Cooper 1981). Under this account SQs are

<sup>1</sup>I use the term prejacent loosely to refer to the proposition resulting from eliminating *at least*. I do not enter into further considerations.

defined in terms of  $\geq$  and  $\leq$ , whereas CQs are defined using  $>$  and  $<$ . Hence, SQs and CQs are interdefinable (modulo the scalar term):

- (3) a. Mary won at least two medals  $\leftrightarrow$  Mary won more than one medal  
 b. Mary won at most two medals  $\leftrightarrow$  Mary won fewer than three medals

However, Geurts and Nouwen (2007) observed differences that called for a different analysis of SQs and CQs. For example, they observed that the inference patterns were not the same regarding utterances containing *at least* and utterances containing *more than* ( $\rightsquigarrow$  stands for ‘inference’ below).

- (4) Mary won exactly 3 medals.  
 $\rightsquigarrow$  Mary won more than 2 medals.  
 $\not\rightsquigarrow$  Mary won at least 3 medals.

If SQs and CQs were interdefinable, we wouldn’t expect the contrast in (4). Based on this and other three differences, Geurts and Nouwen propose that SQs differ from CQs in that SQs are modalized (they involve conjunction of modalized conjuncts), whereas CQs are not:

- (5) a. Mary won more than 2 medals.  
 $\exists x[\text{medal}(x) \wedge \#x > 2 \wedge \text{won}(\text{Mary}, x)]$   
 b. Mary won at least 3 medals.  
 $\square \exists x[\text{medal}(x) \wedge 3(x) \wedge \text{won}(\text{Mary}, x)] \wedge \diamond \exists x[\text{medal}(x) \wedge \#x > 3 \wedge \text{won}(\text{Mary}, x)]$

Based on data regarding the interaction of *at least* with other modals, Büring (2008) argues back in favour of a more classical account of *at least*.<sup>2</sup> Contrary to Geurts and Nouwen’s (2007), Büring (2008) proposes to derive all modal aspects of *at least* from pragmatic implicatures (as derived in the Gricean tradition). In his account we find disjunction with non-modalized disjuncts. Roughly:

- (6) ‘at least  $n$   $p$   $q$  := ‘exactly  $n$   $p$   $q$  OR  $m$   $p$   $q$ ’ where  $n < m$

It is important to note that the meaning of *at least* in (6) is not merely  $\leq$ , but that disjunction and the quantity implicatures arising in utterances involving disjunction play a role. On hearing *at least*  $n$ , the addressee infers that the speaker does not know whether  $m$  is true (where  $n < m$ ) or else, assuming a cooperative participant, the speaker would have said so. This proposal has later been taken up in Cummins and Katsos (2010), who provide experimental support for the pragmatic approach.

### 3 Nakanishi & Rullmann 2009

N&R do not enter the debate regarding the semantic/pragmatic approach to *at least*. In their paper, they focus on providing us with an analysis of *at least* that captures the contrast between CON and EP and that could be implemented either way. In what follows I overview the central data in N&R’s proposal, Section 3.1, and their analysis, Section 3.2.

#### 3.1 The Data

Nakanishi and Rullmann (2009) put forward the contrast illustrated in (1) and (2), and further describe the differences in meaning between utterances in which utterances with *at least* give rise to a concessive interpretation from those that bring about an epistemic interpretation. Given N&R’s claims regarding the syntactic distribution of *at least* and the possible readings (see discussion above), they always illustrate the EP by using pre-nominal *at least*, whereas sentence-initial *at least* is used to convey the CON. Below I summarize N&R’s observations (examples belong to N&R).

N&R observe that EPs are odd when higher values in the scale are known to be false, but that is not the case with concessive readings:

- (7) a. # Mary didn’t win a gold medal but she won at least a silver medal. EP  
 b. Mary didn’t win a gold medal, but at least she won a silver medal. CON

<sup>2</sup>Büring elaborates on Krifka (1999) and differs from the latter regarding the scalar implicatures and *at least*.

Furthermore, scalar implicatures (SIs) typically available with the use of scalar items are not available in EPs but they are in CONS.

- (8) a. Mary wrote four novels.  
       SI: Mary didn't write five novels.  
       b. Mary wrote at least four novels. EP  
       No SI.  
       c. At least Mary wrote four novels. CON  
       SI: Mary didn't write five novels

EPs do not entail the truth of the prejacent, whereas CONS do:

- (9) a. Mary is at least an associate professor. EP  
       (does not entail that Mary is an associate professor)  
       b. At least Mary is an associate professor. CON  
       (entails that Mary is an associate professor)

N&R note that CONS have a “settle for less” interpretation that is not present in EPs.

- (10) a. Phelps won at least eight gold medals. EP  
       b. # At least Phelps won eight gold medals. CON

According to N&R (10b) is odd because it conveys that “winning eight gold medals falls short of an intended goal or standard”. This observation goes together with the fact that while in EPs no preference is indicated, CONS indicate that higher values in the scale are preferred.

### 3.2 Nakanishi and Rullmann's (2009) Proposal

N&R's proposal is based on the existence of two different entries for *at least*: one accounting for the EP and one for the CON. They propose that epistemic and concessive *at least* trigger different conventional implicatures and differ also in their truth conditions, (11). (N&R make the assumption that *at least* is a sentential operator regardless of where it appears in the surface)

- (11) Let  $p$  be the target proposition and  $q$  and  $r$  propositions,  $\geq$  and order relation, and  $C$  the set of alternatives.
- a. Epistemic *at least*
- Truth conditions**  
 $\exists q \in C[q \geq p \wedge q(w) = 1]$   
 “there is a proposition  $q$  which ranks higher than or as high as the target proposition  $p$ , and which is true”
- Conventional implicature**  
 $\exists w'[Epist(w, w') \wedge \exists q \in C[q > p \wedge q(w') = 1]]$   
 “it is epistemically possible that some proposition  $q$  that ranks higher than  $p$  is true”
- b. Concessive *at least*
- Truth conditions**  
 $p(w) = 1$   
 “the target proposition  $p$  is true”
- Conventional implicatures**
- i.  $\forall r, r' \in C[r' > r \leftrightarrow r'$  is preferred to  $r]$   
 “The scalar ranking reflects a preference ranking”
- ii.  $\exists q \in C[q > p]$   
 “There is a proposition  $q$  that ranks higher than  $p$ ”<sup>3</sup>
- iii.  $\exists q \in C[q < p]$   
 “There is a proposition  $q$  that ranks lower than  $p$ ”

<sup>3</sup>This takes care of the “settling for less” inference pointed out above. This inference is also noted in Geurts and Nouwen (2007), although they do not address concessive *at least* per se.

Arguably, the two different entries for *at least* account for all the differences between CON and EP described above. N&R's account relies on the speaker being able to differentiate when they have a concessive or an epistemic *at least* based on syntactic distribution (crucially, sentence-initial vs pronominal).<sup>4</sup> The great disadvantage of this proposal is the need for two entries for *at least* in the lexicon to capture readings that share some features, as, for example, the fact that in both cases we appeal to scales. In what follows, I will argue that syntactic distribution alone does not necessarily determine whether we have a CON or an EP. I also introduce data that raises concerns regarding how to generate alternatives when there is no lexical item inducing a scale.<sup>5</sup> I will then propose a unified account that explains the differences described in N&R. This account is similar to Büring's (2008) account (see also Cummins and Katsos 2010) with the addition of considering discourse structure. Hence, it can also explain other data, previously discussed in the literature. However, for space reasons I won't be able to go through that data.

## 4 A Unified Account

*At least* is a focus sensitive operator. Since it associates with the focused element, every manipulation affecting focus structure (such as word order or pitch-accent placement) affects interpretation. To keep the discussion manageable, I consider neutral intonation in all the examples.

### 4.1 Some More Data

#### 4.1.1 Not Quite a Matter of Syntactic Distribution

Nakanishi and Rullmann's (2009) proposal is based in a surface syntactic distribution that would allow speakers to identify which entry to process. However, in light of the examples below, it seems that syntactic distribution alone cannot determine whether we have a CON or an EP.

- (12) The track and field coaches are looking at the statistics and discussing the results of the last competition.

**Coach 1:** The competition was awful.

**Coach 2:** Yes, but Mary won at least that gold medal [pointing at the data in the statistics]

In (12), regardless of having a pre-nominal *at least*, the epistemic reading is not available. It cannot be the case that the speaker does not know exactly how Mary did in the competition, since they are looking at the statistics. Coach<sub>2</sub>'s utterance is felicitous, but the only possible reading in (12) is a CON. Hence CONS are not tied to *at least* being sentence initial, nor do pre-nominal *at least* necessarily give rise to EP: the CON is also available when *at least* is pre-nominal.<sup>6</sup>

#### 4.1.2 Not Quite a Lexically Induced Scale

By and large, the examples used in the literature when addressing *at least* involve a lexical item that induces a scale, like a numeral. Cases not involving scalar items usually appeal to what I will call a *cardinality* scale:

- (13) He knows at least [Alice]<sub>F</sub>.

The scale is formed considering the focus alternatives to Alice (see Rooth 1985 and Krifka 1999). These alternatives consider Alice and any combination with the other salient entities and in any

<sup>4</sup>N&R focus primarily on sentence initial and pre-nominal *at least*, however they also point out that in *Mary at least won a silver medal*, and *Mary won a silver medal at least* both an EP and CON are available.

<sup>5</sup>Geurts and Nouwen (2007) use the example *At least it isn't raining* and describe the inference that "all is not lost" in this example. However, no further discussion regarding how to derive the inference the fact that that it is not raining is "better" than the alternative that it is raining.

<sup>6</sup>I will get back later to the preference for a CON when *at least* is sentence-initial.

number, the criterion being usually the quantity of people who came.<sup>7</sup> However, these are not the only possibilities when there is no lexical scalar item. For space reasons, I will only discuss two examples that illustrate the problem:

- (14) John talking to Alice, a journalist who has just come back from covering the swimming events at the Olympics in Beijing.

John: The USA swim team did very badly in the Olympics, didn't it?

Alice: At least Phelps won 8 gold medals.

Alice's utterance in (14) is felicitous. However, Alice's utterance is certainly not about how many medals Phelps won. We know (it is part of the common ground (CG)) that he won eight medals, hence we cannot obtain an EP based on the amount of medals he won (we are not uncertain regarding the amount of medals he won), and we know that he could have not won any more medals (it is also part of the CG that he won all the races he participated in), hence we cannot obtain a CON based on Phelps' performance alone. And yet, Alice's utterance is felicitous. Alice's response is felicitous because it is about the team's performance, and in that context we can understand the use of *at least* as bringing about a CON (since Alice was the journalist in charge of the swimming events, it is not conceivable that she does not know what the results of the team are, and hence an EP is discarded, more on this later). In evaluating the team, the scale we consider could be as in (15) (where '<' signals the order relation).

- (15) nobody won any medal < Phelps won 8 medals < Phelps won 5 medals + other team members performed well < all team members performed well

These alternatives are not derived lexically. Rather, these alternatives are the different possible outcomes of the swim team in the Olympics. We need a system that generates such alternatives and that orders them according to the right criteria. Here is another example.<sup>8</sup>

- (16) John: Sam is a racist, but at least he won 8 gold medals

John's utterance above can only be understood in a context in which what is under discussion is what Sam is like (the numeral expression is not doing any work in generating alternatives): he is not a good person, but he is a good athlete (it would have been worse if he weren't a good athlete either). There is certainly no lexical item that would induce such alternatives or that would order them, and yet we understand the utterance.

## 4.2 The Ingredients of the Proposal

The discussion above indicates that syntax alone does not determine whether we obtain an EP or a CON. The context of utterance influences what reading we obtain (although there are other factors that affect what reading is preferred, see Section 5). It seems that the alternatives to be ordered in a scale, as well as the order relation, is not necessarily lexically established, but also context dependent. In what follows I offer a proposal for the meaning of *at least* that accounts for both the EP and CON and is able to derive alternatives without the need to rely on a scalar item. In order to do this I make use of a discourse model, in particular, I make use of the Q(uestion) U(nder) D(iscussion) (Roberts 1996, Büring 2003, Beaver and Clark 2008).

### 4.2.1 Taking into Account Speakers' Goals and Discourse Alternatives

The alternatives that were relevant in (14) referred to the overall performance of the swim team. In order to order them, we may have to appeal to an understanding of what maximizes results and what are considered to be the best results. Notice that in this context a sense of evaluation is already built-in, and we do not need any lexical item to bring it up. Hence, scales, and alternatives, seem to be context/discourse dependent. Another example regarding the importance of discourse in selecting alternatives is in (17).

<sup>7</sup>See Krifka (1999) and posterior papers on how to derive alternatives in these cases.

<sup>8</sup>Thanks to Ash Asudeh (p.c.) for this example.

- (17) Tom has a date with someone he met online. He gets back home to find his roommate Jim.  
 Jim: How was dinner?  
 Tom: I don't know...  
 Jim: What did she look like?

In principle, out of context, there are many ways we could answer Jim's question regarding dinner in (17). However, it's clear that the possible answers Jim envisions do not refer to the quality of the wine or the perfection of the steak that was served. Certainly, Jim is considering alternatives that would present an evaluation of Tom's date regarding whether she was good-looking, funny or smart (for example). Understanding the question amounts to understanding the goals of the speaker when asking the question and hence identifying what are the possible answers (Hamblin 1958). A cooperative participant's utterance will try to answer that question by identifying the right answer:

- (18) Jim: How was dinner?  
 Tom: It was ok, at least she was smart.

In a CON for *at least*, Tom's utterance indicates that he has understood that Jim's question refers to his companion and points out that, all things considered, "dinner" could have been better (his date could have had other qualities), but it could also have been worse (for example, if she hadn't been smart). *At least* hence takes into account discourse alternatives and orders them according to some contextually provided order-relation (based on known preferences, world knowledge, etc.). In order to formalize this intuitions we need to make use of a discourse model. Here I make use of Roberts's (1996) discourse model (see also Büring 2003, Beaver and Clark 2008). I'm not aiming to argue in favor of this particular model over others. The proposal in this paper can be implemented in any model that considers a similar notion to Roberts's I(mediate) Q(uestion) (U)nder D(iscussion).

This discourse model assumes that discourse is driven and structured by (implicit) questions that the participants are trying to answer.<sup>9</sup> Questioning happens against the background of a Stalnakerian Common Ground/ context set type representation. Semantically, questions are sets of alternative propositions corresponding to answers (Hamblin 1958). Let us assume that the contextually available alternatives for dinner are chicken, fish or pasta:

- (19)  $\llbracket \text{What did Sam have for dinner?} \rrbracket = \{ \text{Sam had chicken, Sam had fish, Sam had pasta} \}$

The possible answers to the question are the set of propositions resulting from substituting the variable pronoun by the contextually available alternatives.

A more complicated example is found in evaluative-*how*-questions.

- (20)  $\llbracket \text{How was dinner?} \rrbracket = \{ \text{Dinner was bad, Dinner was ok, Dinner was good, Dinner was great} \}$

Certainly, the evaluation of the dinner as *bad*, *ok*, *good* and *great* is the result of evaluating the different relevant aspects of the dinner. Hence, these answers really involve evaluating the different ways the dinner could have been and assigning to each of them a score indicating where on the scale the outcome lies.<sup>10</sup> In giving an answer evaluating dinner, Tom is going to identify "what counts" for any of the possible answers regarding the aspects that he infers Jim is interested in. For the sake of simplicity let's assume that Jim is only interested in knowing whether Tom's date was funny, smart or beautiful, and Tom knows it. Let's assume the possibilities are ordered as in (21):<sup>11</sup>

<sup>9</sup>In this sense, the purpose of discourse is a communal inquiry, following much work in the philosophy literature (see Grice 1975, Stalnaker 1978 and Lewis 1979 a.o.).

<sup>10</sup>The case of evaluative *how*-questions is complicated and I am only offering a very simplified discussion here. Answering *It was good* alone, or using any other evaluative term, could make the other participants request further elaboration in the response that would explain what the speaker considers corresponds to that evaluation. But this seems to be different from plainly describing that, for example, *She was smart*. Given this response, the addressee could still inquire about the final evaluation, hence indicating that the response did not constitute a complete answer.

<sup>11</sup>Much needs to be said regarding how we "agree" on what the ordering is and how to recognize the relevant alternatives. I leave that discussion open here for space reasons.



(21)

<b>great</b>		She was funny, smart and beautiful
<b>good</b>		She was smart and beautiful or She was smart and funny or She was beautiful and funny
<b>ok</b>		She was smart or She was beautiful or She was funny
<b>bad</b>		She was not smart and She was not beautiful and She was not funny

The example above illustrates that in generating the relevant alternatives it seems to be crucial to understand the goal of the utterance. It also illustrates that no lexical induced scale is needed to use *at least* in a CON. We can still generate the relevant alternatives without the help of any lexical item inducing scales. What is necessary for a CON to arise is that the context provide an evaluative order in which the relevant alternatives (the possible answers to the QuD) are ordered.

The examples above also make it clear that for a CON to arise it is necessary that (i) the speaker know that no higher alternatives are true<sup>12</sup> (which agrees with N&R's truth conditions for concessive *at least*, in which the preajcent is taken to be true) and (ii) that there be a *valorative* scale (a scale in which higher alternatives are taken to be better).<sup>13</sup> If one of these two requirements is not fulfilled, the CON does not arise. Wit respect to EPs, they are compatible with a valorative scale, although for an EP to arise it is necessary to assume that higher alternatives may be true (i.e., not to know that all higher alternatives are false).<sup>14</sup>

#### 4.2.2 A Single Denotation

Considering the discussion above, I propose a single denotation for *at least*. I follow Geurts and Nouwen (2007) in that *at least* can take arguments of a wide range of semantic types ((22a) provides the denotation for *at least* associating with a proposition whereas (22b) addresses association with other types). However, I consider that alternatives do not need to be derived from the presence of a scalar item. All this is consistent with the alternatives in a scale being the answers to the current question under discussion (QuD). Following much of the literature, I take alternatives to be focus alternatives. This consideration is embedded in the QuD discourse model by requiring questions and answers to be congruent.

- (22) a. Let  $\alpha$  be a proposition, and  $[\alpha]_{A,i}$  the set of alternatives of  $\alpha$  ordered according to  $\leq_i$ , where  $\leq_i$  is a contextually salient order of alternatives and  $\forall \gamma \in [\alpha]$ ,  $\gamma \in \text{QuD}$ .
- $$\llbracket \text{at least } \alpha \rrbracket = \lambda w. \exists \beta, \gamma \in [\alpha]_{A,i}. s.t. \gamma <_i \alpha <_i \beta \ \& \\ [\alpha(w) \vee \beta(w)] \ \& \\ \forall \mu \in [\alpha]_{A,i}, \mu <_i \alpha, [\neg \mu(w) \vee \alpha \text{ entails } \mu]$$
- b. If  $\alpha$  in  $\llbracket \text{at least } \alpha \rrbracket$  is not a proposition,  $\alpha$  is of type  $\langle a, \langle s, t \rangle \rangle$ , where  $a$  is any type,
- $$\llbracket \text{at least } \alpha \rrbracket = \lambda X_{\langle a \rangle}. \lambda w. \exists \beta, \gamma \in [\alpha]_{A, \leq_i}. s.t. \gamma <_i \alpha <_i \beta \ \& \\ [\alpha(X)(w) \vee \beta(X)(w)] \ \& \\ \forall \mu \in [\alpha]_{A, \leq_i}, \mu <_i \alpha, [\neg \mu(X)(w) \vee \alpha(X) \text{ entails } \mu(X)]$$

<sup>12</sup>There are cases in which this claim gets complicated. These are cases in which the response is given at a time in which things may still change, and hence no definitive answer can be provided: John is watching a tennis game and Tim enters the room and asks *How is Nadal doing?* John's response *At least he won a set* may refer to what is true at the time of utterance. This does not mean that Nadal cannot win another set.

<sup>13</sup>In most cases, valorative scales are contextually provided, explaining why CONs are much easier when alternatives are derived contextually and not lexically. However, we can sometimes find valorative scales lexically induced, such as *gold > silver > bronze*

<sup>14</sup>The distinction between EPs and CONs is sometimes difficult to tease apart. The most difficult case involves what would have to be considered an EP (we don't know whether higher alternatives are true) but in which world knowledge also adds different values to the scalar alternatives. The use of the scale *gold > silver > bronze* presents such ambiguity.

In the denotation above, the order relation according to which the alternatives are organized in a scale can both be induced by a lexical item or be contextually provided. Furthermore, this denotation allows alternatives to correspond to the alternatives in the lexically induced scale (if there is a lexical item inducing them), or to be contextually derived (it depends on the reference provided to the index). With or without the presence of a lexical item inducing scales, it is discourse (and discourse structure) what ultimately determines the alternatives and whether the ordering is lexically induced or not. Under this account, the CON arises when we know that other scalar alternatives are not true (compatible with the denotation in (22)) and when the ordering is purely valorative. Since CONs are only available when higher alternatives are known not to be true, there is no scalar implicature in CON readings. Also, since there are worse alternatives in the scale as well as better alternatives, the CON distills the sense that “it could have been worse, but it could also have been better”.<sup>15</sup> The CON is in this sense a special case in the interpretation of utterances including *at least*.

In sum, the denotation offered above provides an account of *at least* in which the presence of this focus particle indicates that the prejacent is to be placed in a scale, which can be lexically or contextually provided. It states that there are higher alternatives in that scale. Furthermore, the denotation is compatible with situations in which higher alternatives are true and situations in which higher alternatives in the scale are false. Alternatives ranked lower than the prejacent are either false or else entailed by the prejacent (in the case of entailment scales). The difference between EPs and CONs arise due to contextual/discursive factors.

The denotation offered above is in line with the pragmatic approach to *at least* to derive the epistemic reading (see discussion in Section 2). In particular, Cummins and Katsos (2010) (following Büring 2008 on the pragmatic approach) argue that the EP reading of *at least* arises as a consequence of psychological complexity and pragmatic implicature. According to Cummins and Katsos (2010), this psychological complexity is the result of *at least* involving not strict comparison (exactly  $\alpha$  or more than  $\alpha$ ). Since *at least* involves disjunction, the use of *at least* triggers the same implicatures arising in disjunctive statements (in particular, quantity implicatures). The reader is referred to Cummins and Katsos (2010) for details.

#### 4.3 Consequences of the Proposal

A prediction of this proposal is that CONs are very hard out of the blue. This seems to be on the right track according to speaker’s intuitions. In the present account this fact is easily derived: CONs require contextual information affecting the discourse structure and the availability of different discourse alternatives. All this information is hardly available in discourse-initial situations and hence CONs are hardly available out of the blue.

Another prediction is that EPs are much more easily available when the scale is induced lexically. In those cases it is harder to let in valorative considerations. However, a further prediction of this account is that EPs can be available even with valorative scales, as long as it is not known whether higher alternatives are true.

### 5 Speaker’s Preferences

We have seen above that pre-nominal *at least* may still give rise to a CON in particular contexts. However, it is true that to bring about an EP when *at least* is sentence initial seems far more difficult (although it is not completely impossible). The question then is: how can a unified account for *at least* explain these distribution facts? Here I want to offer a processing explanation.

During sentence comprehension, the human-language processor has pressure to interpret sentences as soon as possible. Therefore, proximity of *at least* to the lexical item inducing scales will matter. When *at least* is close to a scalar item, it immediately obtains everything it semantically needs to be interpreted (the index identifying the ordering relation finds its reference very easily) and an EP is easily available. The same is true when there is no lexical item inducing the scale but

<sup>15</sup>In both an EP and a CON, it is the case that the spelled out alternative is not the lowest alternative in the scale (which agrees with speaker’s intuitions).

*at least* is pre-nominal. In this case, a cardinality scale (see (13) above) is still easy to generate without the need to appeal to further contextual information. However, when *at least* is far away from a lexical item inducing scales (such is the case of utterances with sentence initial *at least* and a scalar item in object position), the processor is under pressure to search for other, contextual, values that may allow the interpretation to go forward. This leads to the search of contextually accessible scales. In contexts in which evaluations are made, such scales are easy to integrate and the CON is more easily available.

## 6 Conclusion

In this paper I have argued for a unified account of epistemic and concessive *at least*. I have argued that an account for *at least* needs to pay attention to discourse in order to both derive scalar alternatives and to order them. The particle itself is not responsible for any valorative meaning. Both structural (proximity to a scalar item) and discourse considerations (identifying the relevant alternatives) need to be considered in deriving CON.

Much work is still needed to further determine factors affecting the availability of the different readings and the particular mechanisms at play. It seems that the investigation of these facts is relevant not just to the investigation of particles like *at least*, but also to the investigation of scales overall. In this respect, questions regarding what are the mechanisms ordering the different alternatives and how they are tacitly agreed on are amongst the relevant questions that need to be addressed.

## References

- Barwise, Jon, and Robin Cooper. 1981. Generalized quantifiers and natural language. *Linguistics and Philosophy* 4:159–219.
- Beaver, David I., and Brady Z. Clark. 2008. *Sense and Sensitivity: How focus determines meaning*. Malden, MA: Wiley-Blackwell.
- Büring, Daniel. 2003. On D-Trees, Beans, and B-Accents. *Linguistics & Philosophy* 26:511–545.
- Büring, Daniel. 2008. The least *at least* can do. In *Proceedings of the 26th West Coast Conference on Formal Linguistics*, ed. Charles B. Chang and Hannah J. Haynie, 114–120. Somerville, MA: Cascadilla Proceedings Project.
- Cummins, Chris, and Napoleon Katsos. 2010. Comparative and superlative quantifiers: Pragmatic effects of comparison type. *Journal of Semantics* 27:271–305.
- Geurts, Bart, and Rick Nouwen. 2007. *At least et al.: The Semantics of Scalar Modifiers*. *Language* 83:533–559.
- Grice, Paul. 1975. Logic and conversation. In *Syntax and Semantics 3: Speech acts*, ed. Peter Cole and Jerry L. Morgan, 41–58. New York: Academic Press. (Originally from the William James Lectures, Harvard University, 1967).
- Hamblin, Charles Leonard. 1958. Questions. *Australian Journal of Philosophy* 36:159–168.
- Krifka, Manfred. 1999. At least some determiners aren't determiners. In *The Semantics/Pragmatics Interface from Different Points of View*, ed. K. Turner, 257–291. Oxford: Elsevier.
- Lewis, David. 1979. A Problem about Permission. In *Essays in Honor of Jaakko Hintikka*, ed. E. Saarinen and al. Dordrecht: Reidel.
- Nakanishi, Kimiko, and Hotze Rullmann. 2009. Epistemic and Concessive Interpretation of *at least*. In *CLA 2009*.
- Roberts, Craige. 1996. Information Structure in Discourse: Towards an Integrated Formal Theory of Pragmatics. In *OSU Working papers in linguistics 49: papers in semantics*, 91–136.
- Rooth, Mats. 1985. Association with Focus. Doctoral dissertation, UMass Amherst, Linguistics Department, Amherst, MA.
- Stalnaker, Robert. 1978. Assertion. In *Pragmatics*, 315–332. New York: Academic Press.