

# Letting negative polarity alone for *let alone*

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## 1. Introduction

One of the core questions in the literature on polarity sensitivity is what Ladusaw (1996: 326) calls the Status Question: ‘[W]hat is the theoretical status of a structure containing an unlicensed polarity item?’ The traditional answer has been that, when a polarity item does not cooccur with an appropriate licenser, as with the classic negative polarity item *any* in (1b), the result is ungrammaticality — the sentence is either syntactically or semantically ill-formed. (For now, I use the asterisk as a general mark of unacceptability; a larger dossier of judgment marks will be introduced in §5.)

- (1) a. Max didn’t see any aliens.  
b. \* Max saw any aliens.

Ladusaw (1980), for example, argues that (1b) is semantically uninterpretable; a polarity licensing requirement disallows the interpretation of this sentence since *any* does not occur within the scope of a monotone decreasing function, such as the negation in (1a).<sup>1</sup> Linebarger (1980, 1987) treats (1b) as syntactically ungrammatical, since it violates a constraint on the Logical Forms (LFs) of sentences containing negative polarity items.

More recently, a different view has become influential, one in which the distribution of negative polarity items is derived from a combination of their lexical semantics and general pragmatic principles, e.g. Kadmon and Landman 1993, Krifka 1991, 1995, Israel 1998, 2001, Lahiri 1998, Chierchia 2004, 2006. While these accounts differ in their details, they agree in analyzing a negative polarity item like *any* as scalar in some way or another; it either makes reference in its denotation to the bottom of a scale (Israel, Krifka, Lahiri) or it widens the domain of quantification (Chierchia, Kadmon and Landman). *Any* only occurs in downward entailing environments, then, because its use must have a purpose: it must make a stronger, or more informative, statement.<sup>2</sup> Since, as Ducrot (1973) and Fauconnier (1975) show, inference patterns flip when the scale they are based on occurs in

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I thank Annahita Farudi, Andrew Garrett, Anastasia Giannakidou, Hannah Haynie, Michael Houser, Russell Lee-Goldman, Yaron McNabb, Jason Merchant, Line Mikkelsen, Chris Potts, Osamu Sawada, and audiences at CLS 44, SALT 18, and the Berkeley Syntax & Semantics Circle for their thoughtful questions and suggestions.

<sup>1</sup>A function  $F$  is MONOTONE DECREASING iff, for arbitrary elements  $X$  and  $Y$ , if  $X \leq Y$ , then  $F(Y) \leq F(X)$ .

<sup>2</sup>Being in the scope of a monotone decreasing function must be distinguished from being in a downward entailing environment — a global calculation that takes into account the entire sentence.

a downward entailing environment, only there will a statement containing *any*, the lower member of a scale, be more informative than the parallel statement containing a higher member of the scale.

Under the scalar approach, the ill-formedness of unlicensed *any* in (1b) comes out as a type of pragmatic infelicity, specifically a failure to be informative enough. But, as Giannakidou (to appear) argues, this is not the status that such sentences actually have. They instead seem to be flat-out ungrammatical, an intuition shared even by advocates of the scalar approach (see, for instance, Israel 1998: 249–250, Krifka 1991: 180, Chierchia 2006: 557). Thus, while a scalar analysis may be appropriate for some negative polarity items, it cannot be a *universal* explanation for their distribution. Instead, Giannakidou (2007) proposes to distinguish between more hard-wired polarity items — which must be licensed grammatically — and expressions whose restriction to some of the same environments is epiphenomenal of how their scalar semantics interact with pragmatic principles (informally, we can say that these are pragmatically licensed).

In this paper, I explore the semantics and pragmatics of *let alone*, an expression whose distribution parallels that of *any* in many respects. Removing the negation from the *let alone* sentence in (2a) results in ill-formedness, as shown in (2b).

- (2) Q: What (mountains) has Oswald climbed?  
 A1: Oswald hasn't climbed the Berkeley hills, **let alone** Mt. Everest.  
 A2: \*Oswald has climbed the Berkeley hills, **let alone** Mt. Everest.

I argue that the distribution of *let alone* in downward entailing environments can be derived from its lexical semantics — which crucially make reference to a scale — and Gricean principles of cooperative conversation. For *let alone*, then, in contrast to *any*, the answer to the Status Question is that unlicensed occurrences are pragmatically infelicitous. The existence of such a negative polarity item thus provides support for a distinction between grammatically-licensed and pragmatically-licensed polarity items.

## 2. The distribution of *let alone*

*Let alone* was first identified as a potential negative polarity item by Fillmore et al. (1988) in their original description of the expression. They do not provide a comprehensive list of the contexts in which it shows up, but, drawing on naturally-occurring examples, I show that *let alone* occurs only in downward entailing environments.

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An expression  $\alpha$  contained in a sentence  $\phi$  is in a DOWNWARD ENTAILING ENVIRONMENT iff, for any  $\beta$ , such that  $\llbracket \beta \rrbracket \subseteq \llbracket \alpha \rrbracket$ ,  $\phi$  logically entails  $\phi[\alpha/\beta]$  (replacing  $\alpha$  with  $\beta$  in  $\phi$ ). Thus, in the sentence *Liz rarely does not eat any fish for lunch*, *any* occurs in the scope of a monotone decreasing function, the negation expressed by *not*, but it is not in a downward entailing environment (because of the higher monotone decreasing function *rarely*). From this sentence, we cannot infer that *Liz rarely does not eat any trout for lunch*. She may hate trout, and so eat some other kind of fish for lunch almost every day.

Like *any*, *let alone* occurs in the scope of negation (3). It also shows up in the scope of a variety of antiadditive functions (in the sense of Zwarts 1998), which are, of course, also monotone decreasing: the negative adverb *never* (4), the negative adjective *difficult* (5), the negative quantifier *no one* (6), the quantificational determiner *every* (7), *before* (8), *without* (9), and the degree modifier *too* (10).<sup>3</sup>

- (3) Like any self-respecting academics, the Brookings authors do **not** agree on what the problem is, **let alone** how to cure it. (ABJ 835)
- (4) Where Musgrove and John Hopkins, who put it all together, got lucky was that they chronicled a period of success that may **never** have been equalled, **let alone** exceeded, by any British golfer. (AAN 70)<sup>4</sup>
- (5) Indeed, the only way in which a society can come to terms with its conflicting values is to prefer one value in some circumstances and another in different conditions. It is **difficult** enough for an individual to be consistent, **let alone** a society. (A5A 124)
- (6) **No one** had even heard of Pat Weaver, **let alone** seen him. (CE5 1737)
- (7) What irks the Brits, and irks far more their Unionist fellow-citizens in Northern Ireland, is that foreigners — in pursuit of domestic votes, not Irish welfare — are using economic pressure to tell them how to behave. **Every** American ‘fact-finding’ visit to Ulster, **let alone** those of overt IRA propagandists, rubs salt into this irritation. (HSF 1104)
- (8) Little attention was paid to it, and 10 years passed **before** the existence, **let alone** the exact functions of these receptors, non-committally named alpha and beta, was recognized. (ARF 1230)
- (9) I have now lived in the same place through nine general elections **without** once seeing, **let alone** being accosted by, a parliamentary candidate. (AK2 1028)
- (10) Diana was sympathetic, but did not fully understand his unrest, nor his frantic soul-searching. She was twenty-three and simply **too** young to comprehend the feelings of middle age — **let alone** those of a middle-aged Prince. (A7H 997)

Since these expressions are the only monotone decreasing functions in these sentences, this means that, in each, *let alone* occurs in a downward entailing environment. *Let alone* can also appear in the scope of quantifiers like *few Asian adults* (11) and *at most 20 people* (12), which are monotone decreasing but not antiadditive.

- (11) In Southall now, particularly since the murder in summer 1976 of a young man, Gurdeep Singh Chaggar, by racist thugs, **few Asian adults** even think about integration, **let alone** want it. (A6V 1961)

<sup>3</sup>A function  $F$  is ANTIADDITIVE iff, for arbitrary elements  $X$  and  $Y$ ,  $F(X \vee Y) = F(X) \wedge F(Y)$ .

<sup>4</sup>This example, and others with reference numbers of the same form, are from the British National Corpus (version 2).

- (12) By 1928, **at most ten people** had ever swum the Channel, **let alone** the Atlantic.

There are a number of other contexts where *let alone* appears that are not straightforwardly downward entailing, e.g. in the scope of *only* (13) and *barely* (14), in the antecedent of a conditional (15), and in the complement of factive predicates like *surprised* (16).

- (13) Although Indians had been allowed to join the ICS since 1858, **only** a handful had actually sat its fiercely competitive examinations, **let alone** passed. (AKR 957)
- (14) And to think, he wrote, that with all my previous work I **barely** knew what step to take first, **let alone** what step to take second, let us not talk about the third. (A08 82)
- (15) Mrs. Clinton once had a big lead among the party elders, but has been steadily losing it, in large part because of her negative campaign. **If** she is ever to have a hope of persuading these most loyal of Democrats to come back to her side, **let alone** win over the larger body of voters, she has to call off the dogs.<sup>5</sup>
- (16) However, I'm **surprised** that Apple would even announce, **let alone** bring online, a new system until it was as capable and bug-free as the old.<sup>6</sup>

The fact that these expressions also license *any* has been the object of much attention in the literature, which, for reasons of space, I cannot review here. I would, however, like to point out some of the progress that has been made in treating these expressions as monotone decreasing.<sup>7</sup> Horn (2002), for instance, argues that *only* and *barely* are indeed monotone decreasing if we ignore the contribution of what he calls assertorically-inert entailments. For *only*, the antecedent of conditionals, and factive predicates, von Stechow (1999) provides a similar solution by defining a notion of Strawson downward entailing that factors out the presuppositional component of these expressions' meanings.<sup>8</sup>

<sup>5</sup>'The Low Road to Victory', Editorial, *The New York Times*, April 23, 2008. Retrieved from <http://www.nytimes.com/2008/04/23/opinion/23wed1.html>.

<sup>6</sup><http://discussions.apple.com/thread.jspa?threadID=230549&tstart=3702>, June 27, 2008.

<sup>7</sup>An alternate strand of research, represented by Giannakidou 1998, denies the relevance of monotone decreasingness and downward entailingness for polarity licensing altogether, and instead characterizes the class of licensors in terms of (non)veridicality. This move is perhaps justified for *any* since it can occur in some (nonveridical) upward entailing and nonmonotonic contexts, such as those in (18–21), but *let alone* has a more restricted distribution.

<sup>8</sup>*Let alone*, like *any*, also appears in polar questions (i) and wh-questions (ii).

- (i) If the caller's funny and amusing does it really matter whether they're genuine or not? Does the average listener even notice, **let alone** care?  
(<http://www.digitalspy.co.uk/forums/showthread.php?t=348637>, June 27, 2008)
- (ii) **How many** modern Prime Ministers could recall such exploits in their past, **let alone** dare to boast about them? In a liberal democracy 'non-violence' is a cherished value, perhaps

So far, we have seen that *let alone* can occur in a downward entailing environment created by a variety of monotone decreasing functions. Now, it remains to be shown that it can occur *only* in this context. When *let alone* occurs in a positive episodic sentence, an upward entailing environment, the sentence is ill-formed, as shown in (17). Similarly, it cannot appear in the scope of a nonmonotonic quantifier like *exactly three Iranians* (18) or of the modal *want* (19), in an imperative (20), or in a generic statement (21).

- (17) \* Oswald climbed the Berkeley hills, **let alone** Mt. Everest.
- (18) Q: Have a lot of Iranians climbed Mt. Everest?  
A: \* **Exactly three Iranians** have climbed the Berkeley hills, **let alone** Mt. Everest.
- (19) Q: Did they expect Oswald to climb Mt. Everest?  
A: \* They **wanted** Oswald to climb the Berkeley hills, **let alone** Mt. Everest.
- (20) Q: Do you want me to climb Mt. Everest?  
A: \* Climb the Berkeley hills, **let alone** Mt. Everest!
- (21) Q: Do tourists generally climb Mt. Everest?  
A: \* Tourists climb the Berkeley hills, **let alone** Mt. Everest.

The generalization thus seems to be that *let alone* only occurs in downward entailing environments: it is disallowed in upward entailing environments (17) and in contexts where inferences are not allowed in either direction (18–21).

### 3. A scalar semantics for *let alone*

The first step towards deriving *let alone*'s distribution in downward entailing environments is to give it a meaning. I argue elsewhere (Toosarvandani, to appear) that the sentence in (22) expresses a pair of entailments, one of which is an at-issue entailment, while the other is backgrounded:<sup>9</sup>

- (22) Oswald hasn't climbed the Berkeley hills, let alone Mt. Everest.
- a. *At-issue entailment*:  $\neg$ **climb(the-berkeley-hills)(oswald)**
  - b. *Background entailment*: **the-berkeley-hills**  $<_S$  **mt-everest**

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the most cherished of all values, for violence is perceived as the negation of democracy. (AHG 587)

These are, of course, among the hardest environments to characterize as downward entailing.

<sup>9</sup>This meaning can be derived compositionally using a scheme like the ones that Karttunen and Peters (1979) and Potts (2005) propose for conventional implicatures. Again, see Toosarvandani, to appear for details.

The at-issue entailment is conveyed by the full clause preceding *let alone*. The background entailment (what Karttunen and Peters (1979) would call a conventional implicature, Bach (1999) a background entailment, or Horn (2002) an assertorically-inert entailment) expresses a scalar ordering between the constituent immediately following *let alone*, which I will call the REMNANT, and the parallel constituent in the clause preceding *let alone*, which I will call the CORRELATE.

The precise scale involved depends on the context, as it varies with the assignment function that values  $S$ , a free variable over scales. In an out-of-the-blue context, the default is a scale of mountains ordered by height or climbing difficult. But this can change: imagine that Oswald is the member of a climbing club that ascends mountains in alphabetical order — first the Berkeley hills, followed probably by a number of other mountains, and then Mt. Everest. In such a scenario, (22) would be felicitous, since the Berkeley hills are again ordered below Mt. Everest (the letter B precedes the letter E). Reversing the order of the correlate and remnant in the same context is not possible:

(23) \* Oswald hasn't climbed Mt. Everest, let alone the Berkeley hills.

The ill-formedness of (23) follows from the semantics of *let alone*. The background entailment comes out false since Mt. Everest is higher on the contextually-salient alphabetical scale of mountains than the Berkeley hills.

The reader might have the intuition that (22) also asserts (24) — or, in other words, that Oswald hasn't climbed Mt. Everest.<sup>10</sup>

(24)  $\neg\text{climb}(\text{mt-everest})(\text{oswald})$

At an intuitive level, however, the proposition in (24) seems to follow from the at-issue entailment in (22a): if Oswald hasn't climbed the Berkeley hills (which are quite short), we can infer that he hasn't climbed Mt. Everest (which is much taller). This inference is, of course, not a logical entailment since it is easy to come up with countermodels.<sup>11</sup> If Oswald is an expert mountaineer from Nepal who has never been to North America, then Oswald will not have climbed the Berkeley hills, though he may very well have ascended Mt. Everest. Nonetheless, the proposition in (24) can be derived as a contextual entailment of the Common Ground after it has been updated with the at-issue and background entailments in (22). It thus does not have to be included as part of *let alone*'s asserted content.

The background entailment, when added to the Common Ground, can do more than just state a scalar relationship. It can trigger a restriction of the context set to obey the scale, if doing so is relevant to the issue at hand. This follows from the maxim of relevance, which directs the speaker and hearer to make utterances maximally relevant. When the background entailment in (22b) is added, the speaker and hearer draw on world knowledge, in particular the commonsense fact that, if somebody is not able to climb a very easy mountain, they will not have climbed a

<sup>10</sup>This was the proposal of Fillmore et al., who analyze *let alone* as asserting the conjunction of two propositions, the first of which (22a) is more informative than the second (24).

<sup>11</sup>A sentence  $\phi$  LOGICALLY ENTAILS a sentence  $\psi$  iff  $\psi$  is true in every model in which  $\phi$  is true.

more difficult one. Since the background entailment states that the Berkeley hills are shorter, and hence easier to climb, than Mt. Everest, the following statement will be included in the Common Ground: if somebody has not climbed the Berkeley hills, they also have not climbed Mt. Everest. Subsequently, when the at-issue entailment in (22b) is added to the Common Ground, it will entail that Oswald has not climbed Mt. Everest. This type of reasoning crucially makes use of the scalar ordering conveyed by the background entailment.<sup>12</sup>

#### 4. The pragmatics of *let alone*

With a semantics for *let alone* in hand, we can now move on to how it is used in actual discourse. As Fillmore et al. observe (pp. 532–533), *let alone* sentences frequently occur in a particular context, one in which the preceding discourse raises an issue corresponding (at an intuitive level) to the remnant:

- (25) You'd have thought your Brian could have found you somewhere a bit more comfortable, interposed Mrs. Harper, seeing her opportunity of introducing Brian to his disadvantage, 'he must know a few folk, it's not only money that counts...' and her voice trailed away, as she simultaneously managed to imply that Brian had the Town Hall in the palm of his hand, and that he had enough money to buy his father a comfortable bungalow in a nice suburb whenever he felt like it. Shirley watched Fred return Mrs. Harper's grease-smearred, red-nosed gaze: affable, broad, patient, he stared at her, and wiped his mouth on his table napkin. She could see his decision not to bother to try to explain that Brian hardly knew anybody in Northam Town Hall, and that **Brian's salary as Head of Humanities at an Adult Education College hardly rose to paying his own mortgage, let alone to buying a house for his ageing father.** (FB0 1086)

<sup>12</sup>When the scale involved is ordered by logical entailment, as in (i), none of this is necessary.

- (i) Oswald hasn't climbed one mountain, let alone ten.  
 a. *At-issue entailment*:  $\neg \mathbf{one}(\mathbf{mountain})(\lambda x[\mathbf{climb}(x)(\mathbf{oswald})])$   
 b. *Background entailment*:  $\mathbf{one}(\mathbf{mountain}) <_S \mathbf{ten}(\mathbf{mountain})$

Given a lower-bounding 'at least' meaning for the cardinal quantificational determiner, the at-issue entailment is going to entail any parallel statement containing a number higher than one: e.g.  $\neg \mathbf{ten}(\mathbf{mountain})(\lambda x[\mathbf{climb}(x)(\mathbf{oswald})])$ . Again, we can see the effect of the background entailment by reversing the order of the correlate and remnant, which makes the sentence ill-formed:

- (ii) \*Oswald hasn't climbed ten mountains, let alone one.

Pragmatic scales, like the scale of mountains, and logical entailment scales can be unified formally, as shown by Hirschberg (1985), by treating them as partially ordered sets (a set ordered by a relation that is transitive, reflexive, and antisymmetric). This relation can either be logical entailment or a context-specific relation.

The context the *let alone* sentence occurs in here is a discussion about whether Brian has the money to buy a house for his aging father, an issue that was raised by Mrs. Harper's comment.

This discourse can be modeled formally in Roberts' (1996) question under discussion (QUD) framework, in which the information in a discourse is structured by a QUD STACK — a set of questions ordered by their relative informativeness. The QUD stack for the discourse in (25), just before the *let alone* sentence is proffered, looks like (26).

(26) Q1: What does Brian's salary rise to?

Q1a: Does Brian's salary rise to buying a house for his aging father?

The IMMEDIATE QUD, the topmost question on the QUD stack, is the polar question Q1a, which asks whether Brian's salary is enough to buy a house for his father. There is a higher superquestion, the wh-question Q1, that is partially answered by an answer to one of its polar subquestions.

Looking now at the at-issue entailment of the *let alone* sentence in (25) — that Brian can hardly pay his own mortgage — it does not (directly) address the immediate QUD. Instead, it is the answer to another polar question, Q1b: *Does Brian's salary rise to paying his own mortgage?* When the *let alone* sentence is asserted, Q1b will be added to the top of the QUD stack.<sup>13</sup> But this new immediate QUD is not completely unrelated to Q1a. Because of the scalar relationship between the correlate and the remnant conveyed by the background entailment — Brian must pay his own mortgage *before* he can buy his father a house — answering Q1b in the negative also answers Q1a in the negative.

It is also possible for the QUD corresponding to the at-issue entailment to have already been raised explicitly.<sup>14</sup> Consider, for instance, the following example:

(27) Several commentators have claimed that on this expedition Gould's party was the first ever to reach the great western bend of the Murray overland from Adelaide. But we cannot be certain that Gould even got as far as the river at all. He himself says he 'spent five weeks entirely in the bush in the interior, partly on the ranges and partly on the belts of the Murray.' Although he had a magnificent view from the top of the Mount Lofty range of the Murray River, winding its course across the flats through a belt of dense dwarf eucalypti, **there is no mention of his ever having**

<sup>13</sup>I have so far ignored the role that focus plays in the semantics and pragmatics of *let alone*. There are pitch accents located on both the correlate and remnant (which I notate with capitalization): e.g. *Oswald hasn't climbed the Berkeley HILLS, let alone Mt. EVerest*. In Roberts's QUD framework, focus helps to structure the discourse by presupposing that the immediate QUD is congruent to the sentence containing the focus. Thus, since the polar question corresponding to the focussed correlate in (25) — namely, *Does Brian's salary rise to paying his own mortgage?* — has not been explicitly mentioned, in order to satisfy the presupposition of focus, it is added to the top of the QUD stack.

<sup>14</sup>Fillmore et al. propose (pp. 532–533) that *let alone* is a construction that requires the immediate QUD to correspond to the remnant (rephrasing their analysis in QUD terminology). The fact that it is possible for the QUD answered by the at-issue entailment to already be topmost on the QUD stack suggests that this is too strong a requirement.



**reached its banks, let alone the remote western bend 100 miles away.**  
(HRB 1133)

At the beginning of the paragraph, the author introduces the issue of how far Gould and his party got towards the western bend of the Murray River, and then goes on to discuss whether they even reached the banks of the river (presumably, they would have followed the river to their destination). Thus, by the time the *let alone* sentence is used, the at-issue entailment — that there is no mention of Gould's having reached the banks of the Murray river — corresponds to the immediate QUD:

(28) Q1: What did Gould reach?

Q1a: Did Gould reach the western bend of the Murray River?

Q1b: Did Gould reach the banks of the Murray River?

Again, while the at-issue entailment only directly answers Q1b, because of the scalar relationship between the correlate and remnant — the banks of the Murray River precede the western bend in the path Gould is traveling — it also answers Q1a: if Gould didn't reach the banks of the Murray River, then he didn't get to its western bend.

In sum, because the background entailment conveys a scalar relationship between the correlate and remnant, the overall effect of a *let alone* sentence will be, for a given wh-superquestion, to entail answers to more than one of its polar subquestions. In contrast, the simple sentence in (29) places a much more limited requirement on its discourse context.

(29) Oswald hasn't climbed the Berkeley hills.

It only answers the corresponding polar question, *Has Oswald climbed the Berkeley hills?*

## 5. Putting together the pieces

The pieces we need to derive *let alone*'s distribution in downward entailing environments are now in place. Recall that, in the downward entailing examples of §§3–4, the at-issue entailment of *Oswald hasn't climbed the Berkeley hills, let alone Mt. Everest* gives rise to contextual entailments based on the scalar relationship between the correlate and remnant expressed by the background entailment. This is because inferences reverse when the scale they are based on occurs in the scope of negation — or, more generally, in a downward entailing environment (Ducrot 1973, Fauconnier 1975). Thus, in an appropriate context, the statement *Oswald didn't climb the Berkeley hills* (the at-issue entailment) implies *Oswald didn't climb Mt. Everest*, because the Berkeley hills are *lower* on the scale of mountains than Mt. Everest.

In an upward entailing environment, however, the direction of entailment follows the direction of the scale. Consider the infelicitous *let alone* sentence in (30), repeated from (2), which conveys the pair of entailments in (31).

- (30) Q: What (mountains) has Oswald climbed?  
 A: # Oswald has climbed the Berkeley hills, let alone Mt. Everest.
- (31) a. *At-issue entailment*: **climb(the-berkeley-hills)(oswald)**  
 b. *Background entailment*: **the-berkeley-hills** <<sub>S</sub> **mt-everest**

The background entailment here, as in the downward entailing case, states that the Berkeley hills are lower than Mt. Everest; but the at-issue entailment is different. (31a) states that Oswald *did* climb the Berkeley hills. Since *the Berkeley hills* is the lower member of a scale in an upward entailing environment, it does not give rise to any further inferences. (Instead, it is the statement containing a higher scalar member, *Oswald has climbed Mt. Everest*, that implies the statement containing a lower member, *Oswald has climbed the Berkeley hills*.) As a result, the contribution of the *let alone* sentence in (30) towards answering the QUD is equivalent to the simple sentence in (32).

- (32) Q: What (mountains) has Oswald climbed?  
 A: Oswald has climbed the Berkeley hills.

The answer in (32) also conveys that Oswald has climbed the Berkeley hills, but without the additional background entailment.

The additional content of a *let alone* sentence, when compared with the corresponding plain sentence in (32), must serve some sort of conversational purpose — the background entailment must be relevant somehow — or else it will be too informative. This would violate the maxim of quantity, which enjoins conversational participants to make their contributions as informative as required but no more than that (Grice 1975: 45).<sup>15</sup> It should now be apparent why I have marked the answer in (30) with a #. In such an upward entailing environment, the background entailment does not serve any conversational purpose, since it cannot license any additional contextual entailments. The *let alone* sentence of (30) thus ends up being pragmatically infelicitous because it violates the maxim of quantity. (From now on, I reserve the asterisk for syntactic or semantic ill-formedness.)

We can compare this account of *let alone* to Kadmon and Landman's (1993) classic scalar analysis of *any*. Their account, while not making explicit reference to scales, does make use of the effect of negation, and other monotone decreasing functions, on patterns of inference. The two ingredients of their analysis are a widened meaning for *any* (33) and a strengthening requirement (34).

- (33) *Meaning of any*  
 In an NP of the form *any* CN, *any* widens the interpretation of the common noun phrase (CN) along a contextual dimension.

(Kadmon and Landman 1993: 361)

<sup>15</sup>As Horn (2001: 195) discusses, the maxim of relevance is essentially built into Grice's second maxim of quantity: 'Do not make your contribution more informative than is required.' A given utterance is thus overinformative when it is not relevant to the issue at hand.

- (34) *Strengthening requirement*  
*Any* is licensed only if the widening that it induces creates a stronger statement, i.e. only if the statement on the wide interpretation  $\Rightarrow$  the statement on the narrow interpretation.

(Kadmon and Landman 1993: 369)

Kadmon and Landman propose that *any*, which they take to express existential quantification, widens the domain of quantification beyond what it would be with an existential quantifier like *a(n)*. By talking about *any* as widening the domain of quantification, they are essentially ranking *any* below *a(n)* on a scale ordered by the subset relation. This is different from *let alone*, which orders the correlate and remnant on any scale provided by the context.<sup>16</sup>

The strengthening requirement that Kadmon and Landman place on *any* ensures that its widened meaning produces a statement that is stronger than the corresponding one without widening — a constraint which they say ‘...reflects a plausible pragmatic function’ (p. 371). This requirement does the same work that the maxim of quantity does in my account of *let alone*, since unlicensed occurrences of *any* result in violations of the strengthening requirement: a sentence containing *any* in an upward entailing environment does not result in a stronger interpretation.<sup>17</sup>

To see why, consider the unlicensed occurrence of *any* in (35), where it occurs in an upward entailing environment.

- (35) \* I have any potatoes.
- a. Wide: We have potatoes of SOME kind (cooking or other).  $\nRightarrow$
  - b. Narrow: We have cooking potatoes.

(Kadmon and Landman 1993: 370)

The narrow interpretation of (35), corresponding to a sentence without *any*, expresses existential quantification over a contextually-restricted set. In an everyday situation, this might be the set of cooking potatoes: there is a cooking potato and we have it. The wide interpretation of (35) is one in which the domain of quantification is larger: there is a potato (that is a cooking potato or another kind of potato) and we have it. The wide interpretation does not entail the narrow interpretation, and so the strengthening requirement is not satisfied. This contrasts with the parallel sentence containing negation, where *any* occurs in a downward entailing environment:

<sup>16</sup>Thinking about things in this way highlights a crucial difference between *any* and *let alone*. While *any* can be construed as forming a scale with *a(n)*, and thus competing with it, *let alone* itself is never on a scale: it evokes a scale that contains the correlate and remnant.

<sup>17</sup>Kadmon and Landman state explicitly (pp. 371–373) that the strengthening requirement is not derived from the maxim of quantity and is lexically associated with *any*. It is not entirely clear to me, then, what status an unlicensed occurrence of *any* would have in their system, whether it would be outright ungrammatical or just pragmatically ill-formed.

- (36) I don't have any potatoes.
- a. Wide: We don't have potatoes, cooking or otherwise.  $\Rightarrow$
  - b. Narrow: We don't have cooking potatoes.
- (Kadmon and Landman 1993: 370)

Now, the wide interpretation entails the narrow one, since if we don't have cooking potatoes or any other kind of potatoes, it follows that we don't have cooking potatoes.

The analysis I have proposed to account for why *let alone* is ill-formed in nondownward entailing contexts is similar to that proposed for *any* by Kadmon and Landman. They both rely on some notion of scalarity and a pragmatic principle that requires that the utterance containing the negative polarity item be stronger or more informative. There is some reason to think, however, that *let alone* and *any* do not deserve such similar treatment.

## 6. Grammatical versus pragmatic licensing

As discussed in §1, even though the scalar approach was originally proposed for *any*, recent work suggests that this produces the wrong answer to the Status Question. Giannakidou (to appear) writes (p. 23) that '[p]ositive sentences with *any*, however, (and the other kinds of NPIs we saw here), are ungrammatical. The intuition has been that grammar does not generate these sentences, and context manipulation does not have an effect on the NPI: \**Any boy kissed Amy* remains bad even though we can still imagine a possible meaning of it (either *some boy* or *every boy*).' The scalar approach predicts that sentences with unlicensed *any* are pragmatically infelicitous, but such sentences seem somehow to be more strongly ill-formed. I am not as confident as Giannakidou that I have intuitions about whether a given sentence is a \* or a #, but there are clear distributional differences between *let alone* and *any* that, I think, can tell us whether the scalar approach makes the right predictions for unlicensed occurrences of *let alone*.

First, there are lexically-specific restrictions on what can license *any*. As shown in (37), it cannot occur in the scope of the quantificational determiner *each*, even though it is monotone decreasing.

- (37) \* **Each** student who saw **anything** spoke to the police.
- (Giannakidou 1998: 12)

In contrast, *let alone* is not subject to arbitrary lexical gaps in the class of licensors. It can occur inside of *each*'s argument, as in (38).

- (38) **Each** shot that is fired, **let alone** seen to hit its mark, in one zone is expected to bring victory across the whole front.<sup>18</sup>

<sup>18</sup>John Forrester: 1997, *Dispatches from the Freud Wars: Psychoanalysis and its Passions*, Harvard University Press, Cambridge, MA.

This makes sense if *let alone* is pragmatically licensed, since it is only predicted to be infelicitous in environments that are not downward entailing.

Second, as pointed out by Ladusaw (1980: 206–207), *any* cannot precede the expression that licenses it. Consider, for instance, the examples in (39a) and (39b) where *any* occurs within the scope of negation and a negative quantifier *nothing* respectively. Nonetheless, the sentences are ill-formed since *any* precedes its licenser in linear order.<sup>19</sup>

- (39) a. \* **Anyone** did **not** talk to me.  
 b. \* **Anyone** said **nothing** to me.

(de Swart 1998: 178)

*Let alone*, in contrast, very frequently precedes its licenser, as, for example, with negation in (40a) and the negative adjective *impossible* in (40b).

- (40) a. Beecher's reputation as a preacher, **let alone** as a Man of God, was **not** universally accepted. (AE6 1421)  
 b. Direct comparisons of effectiveness, **let alone** cost effectiveness, are therefore **impossible**. (ALN 513)

Again, this makes sense because the maxim of quantity, which only cares about the informativeness of an utterance, does not make reference to the linear order of the subconstituents of a sentence.

Third, the licensing of *any* is subject to intervention effects (Linebarger 1980, 1987). An intervening universal quantifier can disrupt the relationship between the licenser and *any*, as shown in (41b).

- (41) a. I doubt that Sue has any potatoes.  
 b. \* I **doubt** that **every housemate** of Sue has **any** potatoes.

(Chierchia 2004: ex. 109d)

Similar intervention effects do not exist for *let alone*, which is fine even when *every housemate* intervenes between it and the negative predicate *doubt*:

- (42) a. I doubt that Sue has vegetables, let alone potatoes.  
 b. I **doubt** that **every housemate** of Sue has vegetables, **let alone** potatoes.

All that matters is that *let alone* occur in a downward entailing environment, which, in (42), it does (*I doubt that every housemate of Sue has vegetables*  $\Rightarrow$  *I doubt that every housemate of Sue has potatoes*). The fact that there is an intervening universal quantifier is irrelevant.

<sup>19</sup>The relevant relation between the licenser and *any* might in fact be c-command at some level of syntactic structure, in which case it might not be necessary to make reference to linear order. This is orthogonal to the issue at hand since c-command would still be a *grammatical* constraint on the distribution of *any*, one that does not affect *let alone*.

Finally, as observed by Schmerling (1971), *any* need not occur in a downward entailing environment as long as it occurs in the immediate scope of a monotone decreasing function. Such occurrences of *any* are ‘doubly-licensed’, since this kind of situation is created by the presence of a higher monotone decreasing function (see also fn. 2):

- (43) a. She **rarely** eats **anything** at all for lunch.  
 b. She very **rarely** **doesn’t** eat **anything** at all for lunch.  
 (Dowty 1994: ex. 46)

In (43b), *any* occurs in an upward entailing environment (*She very rarely doesn’t eat salmon*  $\Rightarrow$  *She very rarely doesn’t eat fish*), but it is still licensed since it occurs in the scope of negation. The use of *let alone* in a parallel sentence is infelicitous, however:

- (44) Q: Does Max eat squid for lunch?  
 A1: Max **rarely** eats fish for lunch, **let alone** squid.  
 A2: # Max very **rarely** **doesn’t** eat fish for lunch, **let alone** squid.

This follows straightforwardly from the pragmatic account I have provided here. Even though, in the second answer of (44), *let alone* is contained in the scope of a monotone decreasing function, it occurs in an upward entailing environment. Its use is thus infelicitous for the reasons discussed in §5, namely that it violates the maxim of quantity.

While these formal restrictions on the distribution of *any* do not make for an aesthetically appealing analysis, they are at least storable if it is licensed grammatically. *Let alone*, in contrast, does not show any of the same formal restrictions, suggesting that its distribution in only downward entailing environments derives from a different source, namely whether a given utterance of *let alone* is informative enough.

## 7. An aside on positive *let alone*

Before concluding, I would like to consider examples like (45), which given the semantics proposed in §3 expresses the propositions in (45a–b).

- (45) \* Oswald has climbed Mt. Everest, let alone the Berkeley hills.  
 a. *At-issue entailment*: **climb(mt-everest)(oswald)**  
 b. *Background entailment*: **mt-everest**  $<_S$  **the-berkeley-hills**

For many speakers, sentences like this one, in which *let alone* occurs in an upward entailing environment, are ill-formed. The explanation for this differs from the one I gave in §5. The positions of the correlate and remnant have been switched, so that it is *Mt. Everest* that is asserted to be lower on the scale of mountains. But since,

on the default scalar interpretation, Mt. Everest is higher or more difficult to climb than the Berkeley hills, the background entailment comes out false.

As Fillmore et al. observe (p. 519 fn. 13), however, some speakers, including myself, find sentences like (45) perfectly well-formed. They provide the example in (46); (47) is a corpus example.

(46) A: He was pleased.

B: He was **delighted, let alone pleased.**

(Fillmore et al. 1988: 519 fn. 13)

(47) For the Roman catholic social teaching of the day laid down certain things as of natural law which anyone who was reasonable and honest was supposed to be able to recognize. The advice of the church's moral experts and authoritative clerics was thus pertinent to **the entire population of the world, let alone that of Ireland.** (A07 802)

These positive occurrences of *let alone* have something in common: the correlate is located higher than the remnant on a contextually-salient scale. In (46), being delighted is a stronger emotion than being pleased; and, in (47), the population of the world is a superset of the population of Ireland.

Building on this generalization, I propose that, for those speakers for whom *let alone* can occur in both negative and positive polarity environments, *let alone* is ambiguous between high-scalar and low-scalar versions.<sup>20</sup> The background entailment of the high-scalar *let alone* sentence in (48) would thus convey that the correlate, *Mt. Everest*, is *higher* than the remnant, *the Berkeley hills*, as shown in (48b).

(48) Oswald has climbed Mt. Everest, let alone the Berkeley hills.

a. *At-issue entailment*: **climb(mt-everest)(oswald)**

b. *Background entailment*: **mt-everest ><sub>S</sub> the-berkeley-hills**

High-scalar *let alone* obeys the same pragmatic principles laid out in §5 for low-scalar *let alone*. In particular, we can see that (48) does not lead to a violation of the maxim of quantity because the background entailment is being put to good use. With the scalar ordering it expresses, the at-issue entailment will give rise to the additional contextual entailment that Oswald has climbed the Berkeley hills (since, if he has climbed a harder mountain, he has also climbed an easier one).

Moreover, the same pragmatic principle ensures that high-scalar *let alone* does not show up in downward entailing contexts. When, as in (49), it occurs in the scope of negation, the sentence is ill-formed.

(49) Q: What (mountains) has Oswald climbed?

A: # Oswald hasn't climbed Mt. Everest, let alone the Berkley hills.

<sup>20</sup>This recalls Rooth's (1985:139–163) analysis of *even*. In order to account for its different interpretations in positive and negative contexts, he proposes that it is lexically ambiguous between high-scalar and low-scalar versions.

The explanation here is the same as for low-scalar *let alone* in upward entailing contexts. Since the negative at-issue entailment contains *Mt. Everest*, the higher member of the scale of mountains, it is not going to license any additional contextual entailments, and so the background entailment is not relevant to the issue at hand. As a result, the utterance of *let alone* is overinformative when compared to the simpler alternative in (50).

- (50) Q: What (mountains) has Oswald climbed?  
A: Oswald hasn't climbed Mt. Everest.

In sum, the reason that high-scalar *let alone* only occurs in upward entailing environments is the same as for why low-scalar *let alone* only occurs in downward entailing environments: the *let alone* sentence would otherwise be too informative. It seems, then, that the polarity sensitivity of *let alone*, whether it be a negative polarity item or, as for some speakers, a positive polarity item as well, can be derived from its scalar semantics and their interaction with the maxim of quantity.

## 8. Conclusion

I have explored the semantics and pragmatics of *let alone*, an expression that for some speakers is restricted to downward entailing environments. I proposed that *let alone*'s distribution in these environments is epiphenomenal of its lexical semantics, which make reference to a contextually-provided scale, and more general pragmatic principles. This predicts that sentences in which *let alone* does not occur in a downward entailing environment will be pragmatically infelicitous.

While similar scalar accounts have been proposed for *any* by Chierchia, Israel, Kadmon and Landman, Krifka, and Lahiri, unlicensed occurrences of *any* seem to be ill-formed, not for pragmatic reasons, but grammatical ones. I identified four formal restrictions on the distribution of *any* — involving an arbitrary lexical gap in the class of licensors, a linear order restriction, intervention effects, and double licensing — that *let alone* does not share. This contrast supports a distinction between grammaticality-licensed negative polarity items, such as *any*, and those, which like *let alone*, are pragmatically licensed.

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