The morphosyntax of exclusives and the underspecificity of *just*[1]

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1 Overview

1.1 Main goals

- Present a morphosyntactic framework representing the variation among exclusive operators
  - Formalizes these differences as morphological restrictions on the alternative set
- Use this framework to represent known variations between operators like *merely* and *only*
  - Morphosyntactic operator [M]: present with *merely*, but absent with *only* and *just*
- Introduce some new data for *just* as an exclusive operator: **unexplanatory *just***
- Re-examine the view of *only* as 'basic'
  - Encode the Focus Principle (Rooth 1992) as a lexical restriction for *only*
- Argue that *just* is underspecified for the two morphosyntactic restrictions discussed here
  - Accounts for its wider range of uses without positing fine-grained polysemy in the lexicon

1.2 Roadmap

§2: Discussion of previous observations and analyses
- §2.1: Overview of basic meaning and behavior common to exclusive operators
- §2.2: Variation in scale type among some exclusives (*only* vs. *merely*)

§3: Introduction to the morphosyntactic framework & its applications for scale type restrictions

§4: Comparison of *just* with other exclusives
- §4.1: When *just* acts like the other exclusives (overt association)
- §4.2: Description of broader use of *just*: unexplanatory *just*
- §4.3: Argument & analysis of unexplanatory *just* as an exclusive (covert association)

§5: Implementation of morphosyntactic framework to account for new data

§6: Summary and concluding remarks on remaining issues and future work

A: Appendix detailing some other uses of *just* and how they fit in to this framework

[1]Special thanks to my committee chairs Mats Rooth and Dorit Abusch, as well as to Sarah Murray and my friends and colleagues in the Cornell Semantics Reading Group for their comments, advice and support at various stages of this project. And thanks to audience members at my related presentation at the LSA earlier this year for their valuable questions and feedback.

2 Previous observations & analyses

2.1 Basic meaning & properties of exclusives

- Exclusives can generally be paraphrased by "X and no more than X"
  - The prototypical example usually given is English *only*

(1) Bill only has 2 dogs. → "Bill has 2 dogs and no more than 2 dogs."

- They exhibit a two-part meaning (Rooth 1985, 1992; Beaver & Clark 2008; Coppock & Beaver 2011a; Orenstein 2015):
  - The prejacent/'positive' meaning: The implication that the sentence (without the exclusive) is true at w, the world of evaluation
    - For (1), this would be 'Bill has 2 dogs'
  - The quantificational/'negative' meaning: The implication that every (stronger) salient alternative proposition is false at w
    - For (1), this is loosely 'for all $x > 2$, it is not true that Bill has x dogs'
- The quantificational part of the meaning is what I'm concerned with here[2]
- I posit the following lexical entry for the quantificational part of exclusives (including *just*), following Rooth 1985, 1992; Beaver & Clark 2008; Chierchia 2013, among others

(2) $[\![\textsc{excl}]\!] = \lambda C_{\leq}.\lambda p.\lambda w.\forall q[(q \in C_{\leq} \wedge w \in q) \rightarrow p \leq q]$ (Rooth 1992; Chierchia 2013)

- $C_{\leq}$ represents an ordered pair $\langle C, \leq \rangle$ of an alternative set C, along with an ordering $\leq$ on C
  - In this framework, alternative sets always come with an ordering

2.2 Variation in scale type

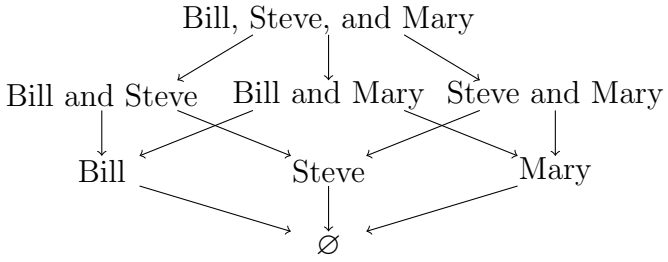
- Different exclusive operators associate with alternatives ordered by different relationships (Coppock & Beaver 2011a,b; Beaver & Clark 2008; Orenstein 2015)
- For example, *only* can be used for two different readings (Beaver & Clark 2008)

(3) It was only Bill on the phone.
  a. Bill was the only person on the phone. (Entailment)
  b. It was not someone more important/relevant on the phone. (Nonentailment)

- A sentence like (3) can be used to assert (3a), where the alternatives are ordered by entailment
  - This results in the typical $\subseteq$ relationship, modeled as an entailment lattice

[2]The status of the prejacent as asserted/presupposed/implicated has been widely discussed in the literature. See Roberts 2011 for relevant discussion.

(4) Entailment Scale for alternatives varying over individuals:



(adapted from (Rooth 1992: 9))

- In (3b) reading, the alternatives are ordered by a normative scale given in the context
  - *Just* exhibits the same pattern as *only* with respect to this parameter
  - *Merely*, however, is restricted to the second reading
    - So, *merely* is restricted to a nonentailment scale (Coppock & Beaver 2011a)
- The restriction of *merely* to evaluative scales is sometimes difficult to tease apart
  - Usually, an entailment scale can be directly transformed into an evaluative scale, resulting in the same order among the elements but a different reason for that order
  - So we need more specific contexts to tease the scale types apart
- It seems that when the context values the low end of an entailment/numerical scale more highly than the high end, the distributions of *merely* and *only* come apart

(5) Colleges will only look at people who have fewer than five disciplinary infractions, which is great for me, because I #merely/✓only have two!

(6) Those guys will only let you join their club if you have more than five disciplinary infractions, which is bad for me, because I ✓merely/✓only have two.

- This kind of distinction has been observed cross-linguistically as well
  - (Orenstein 2015; Orenstein & Greenberg 2010) discuss exclusive variability in Hebrew, and among them emerge the distinction between *rak* 'only' and unstressed *stam* 'merely'[3]
- The *merely*-like exclusive, *stam*, resists combination with evaluatively maximal elements

(7) hu rak/#stam zaxa [be-pras Nobel]$_F$
he only/stam won [in.prize Nobel]$_F$
"He only/stam won the Nobel Prize." (Orenstein 2015: 101)

  - We can see a similar restriction with *merely* (*#He merely won the Nobel Prize*)
  - Note that the Hebrew exclusives do not match up perfectly with the English
    - However, the pattern certainly emerges that some exclusives are restricted to a particular scale while others are more free

[3]We will come back to Hebrew *stam*, as it also shares some interesting distributional similarities with *just*.

3 Framework: Encoding the scale parameter

- The distinctions described are formalized as a morphosyntactic constraint on the scale type
  - These presuppositions are present for exclusives that require a particular type of scale
  - E.g., *merely* comes with a presuppositional requirement for an evaluative scale

(8) $[\![\text{EXCL}]\!] = \lambda C_{\leq}.\lambda p.\lambda w.\forall q[(q \in C_{\leq} \wedge w \in q) \rightarrow p \leq q]$ (Rooth 1992; Chierchia 2013)

- Recall that an alternative set must correspond to an ordering/scale
  - From there, we can define more specifically what it means to be an evaluative scale

(9) An ordered alternative set $C_{\leq}$ is an evaluative scale if the set is ordered such that given a relevant question in the context, for every $\psi_1, \psi_2 \in C_{\leq}$ such that $\psi_1 \leq \psi_2$ (where $\psi_1 \neq \psi_2$), ψ_1 is valued as more relevant than ψ_2 according to the normative ordering source in the context (Kratzer 2002).

- I now posit the following presupposition restricting alternative sets to these scales[4]

(10) $[\![\text{M}]\!] = \lambda F.\lambda K[F(K) \wedge \partial(\text{K is an evaluative scale})]$

- The lexical entry for *merely* is the result of composing the core [EXCL] meaning with [M]

(11) *Merely*: Composition of [EXCL] and [M]:

$\lambda w.\forall q[(q \in C_{\leq} \wedge w \in q) \rightarrow \phi \leq q] \wedge \partial(\text{C}_{\leq} \text{ evaluative scale})]$

$\lambda p.\lambda w.\forall q[(q \in C_{\leq} \wedge w \in q) \rightarrow p \leq q] \wedge \partial(\text{C}_{\leq} \text{ evaluative scale})] \quad \phi$

$\lambda K.\lambda p.\lambda w.\forall q[(q \in K \wedge w \in q) \rightarrow p \leq q] \wedge \partial(\text{K evaluative scale})] \quad C_{\leq}(\phi)$

$\text{EXCL}{:=}\ \lambda C_{\leq}.\lambda p.\lambda w.\forall q[(q \in C_{\leq} \wedge w \in q) \rightarrow p \leq q] \quad \text{M}{:=}\ \lambda F.\lambda K[F(K) \wedge \partial(\text{K evaluative scale})]$

- I remain open to the idea that other presuppositional operators on scale type could exist
  - For example, it's possible that we may find an exclusive restricted to entailment scales
  - A candidate for this in English is the exclusive *solely*, which seems to be in a non-overlapping distribution with *merely* (in terms of interpretation)

4 How does *just* fit in?

4.1 Ordinary exclusive meaning

- With respect to the scale type parameter, *just* patterns like *only*
  - It may associate with either an entailment or a nonentailment scale
  - It associates with prosodic focus

[4] I use the ∂ notation from (Beaver 2001) to represent presuppositional content.

(12) It was just Bill on the phone.
   a. Bill was the only person on the phone. (Entailment)
   b. It was not someone more important/relevant on the phone. (Nonentailment)

- In both interpretations, like *only*, *just* associates with focus

(13) a. Bill only introduced John to [Sue]$_F$. (Rooth 1992)
   b. Bill just introduced John to [Sue]$_F$.
   → Bill did not introduce John to anyone other than Sue.

(14) a. Bill only introduced [John]$_F$ to Sue.
   b. Bill just introduced [John]$_F$ to Sue.
   → Bill did not introduce anyone other than John to Sue.

- *Just* does not resist evaluatively maximal elements

(15) He just won the [Nobel Prize]$_F$. (→ He won nothing/no prize besides the Nobel Prize)

- In general, with respect to this parameter, *just* patterns more like *only* than *merely*
  - So, we can conclude that like *only*, *just* lacks the [M] presupposition
  - However, *just* has a much wider distribution than *only*
    - One of these broader uses is discussed more in §4.2

4.2 Unexplanatory *just*

- One interesting use of *just* not available to *only* I have labelled **unexplanatory** *just*
- Used to distance the speaker from explanation, cause or reason for the eventuality described

(16) Unexplanatory *just*
   a. I was sitting there and the lamp just broke!
   b. I walked into the store, saw the necklace, and just took it. I don't know what came over me.
   c. He just stopped texting me. (I don't know why).

- The intuition here is that for (16a) the speaker does not know what caused the lamp to break
  - This can be used for a variety of effects (suddenness, denial of fault, etc.)
- This use contrasts with 'ordinary' *just*, where it behaves like *only*/*merely*
  - The meaning is significantly different (does not mean "the lamp broke and nothing more")
  - This is shown in the infelicity of *only* and *merely* in these contexts (with same reading)

(17) a. # I was sitting there and the lamp only/merely broke!
   b. # He only/merely stopped texting me (I don't know why).

- Unexplanatory *just* does not associate with prosodic focus the way ordinary exclusives do
  - Focus Principle (Rooth 1992): alternative sets must be subsets of focus alternatives
    - Without the presence of prosodic focus with this use of *just*, it cannot adhere to this principle when generating its alternative set
- Despite these issues I argue that unexplanatory *just* can still be represented as an exclusive

4.3 Unexplanatory *just* is still exclusive

- Unexplanatory *just* can still be reduced to a quantificational denial via the semantics of [EXCL]
- Consider the simplified sentence in (18)

(18) The lamp just broke.

- Under the unexplanatory reading, the asserted content of the utterance is that the speaker is unaware of the cause of the lamp breaking
  - This can be seen in the fact that this implication can be targeted with negation
  - Consider the following exchange between, for example, a parent (A) and child (B), where the parent has walked into a room and discovered a broken lamp on the floor

(19) A: What happened here?
B: The lamp just broke!
A: The lamp didn't just break, Timmy. Did you break the lamp?

  - It seems clear that the question this discourse addresses is how/why the lamp broke
  - In the last line, speaker A is negating the implication that the lamp broke for no reason
- Similar effect: interaction with propositional anaphors targeting unexplanatory propositions

(20) If the electronic device just stops working, bring it back and we will repair or replace it. Otherwise, you'll have to buy a new one.

  - Here, *otherwise* refers to the proposition 'the electronic device just stops working'
  - The meaning of (20) is that if the electronic device stops working for no apparent reason, the customer may bring it back, but if the customer is responsible, they cannot
- It also seems that unexplanatory *just* can be used in contrastive topic/focus constructions[5]

(21) I damaged the space heater by spilling water on it. The lamp just broke.

  - In (21), what is being contrasted is how each object has been damaged.
    - The speaker indicates that she knows the cause for the space heater (spilling water), but cannot explain the cause for the lamp

[5]It should be noted that there is some ambiguity in (21). It could be an evaluative reading where breaking is ranked lower than having water spilled on it. However the unexplanatory reading is also available.

  - Indicates that the use of unexplanatory *just* is somewhat independent of focus structures

- If we encode causation/explanation relationships as accessible entities for quantification, unexplanatory *just* can be analyzed as a negation of causes
  - This requires allowing covert internal modification of the prejacent
  - The alternative set for (18) would be triggered by a covert *because*-clause
- Unlike the alternative sets for ordinary exclusives, the causal relationship is often not explicitly denoted in the sentence, much less marked with focus intonation
  - I have argued elsewhere that causation relationships are available for quantification due to the information structure of conversations
  - In particular, when the question of *why* is part of the current question of inquiry
  - This correlates with the felicity of unexplanatory *just* in answers to *why* questions

(22) a. A: Why did Alison walk backwards all day?
B: She just did!
b. A: Why do you like Buffy the Vampire Slayer so much?
B: I just do! (I don't care to tell you/I don't know)

  - Without the *just*, these responses are quite anomalous, as they are uninformative

(23) a. A: Why did Alison walk backwards all day?
B: #She did!
b. A: Why do you like Buffy the Vampire Slayer so much?
B: #I do!

  - However, the responses in (22) actually are informative, in that they negatively quantify over reasons for the questioned content

- When they are available, a covert minimal cause, which I label $\textsc{cause}_0$ is filled in as the trigger for the alternative set
  - This minimal cause is necessary to avoid undesirable results like asserting that something has no cause, contrary to most views of how the physical world works
  - (And there is evidence that redundant information can be included in these constructions)

(24) I'm not just saying this because I'm saying it. There's evidence behind it.

  - So, seems logical to conclude that this cause could be as minimal as the prejacent itself

- A similar account has been proposed in (Orenstein 2015) for Hebrew accented *stam* 'merely/just'
  - Unlike unaccented *stam*, which patterns much like *merely*, accented *stam* has been argued to quantify over 'internal alternatives' (Orenstein 2015)
    - Internal alternatives can be thought of as variants of the prejacent

(25) kibalti Saon, ha-beaya hi Se-ze *STAM* Saon!
Got.I watch the.problem she that.it *STAM* watch
"I got a watch. The problem is that it's *STAM* a watch!" (Orenstein 2015: 103)

- Orenstein argues that *STAM* combines with alternatives including covert modifiers of 'watch'
  - Resulting paraphrase: 'it's just a plain watch, and not a better kind of watch'
- Crucially, Orenstein does require a covert 'minimal' or 'standard' modifier in the prejacent
  - NOTE: (Orenstein 2015) maintains that *STAM* still requires a nonentailment scale
    - This makes sense empirically for *stam*, but not for *just*
    - In fact, I see no reason that the unexplanatory use of *just* specifically could not make use of an alternative set ordered by entailment
- The covert modifier approach seems promising for unexplanatory *just*
- However, some modification required: quantification not a flat denial of a cause existing
  - Utterances using unexplanatory *just* can be followed up with proposed causes

(26) He just stopped texting me. Maybe it's because I made that quip about his mother.

- Importantly, it does seem that modalized answers like (26) are better than pure assertions

(27) He just stopped texting me. ??It's because I made that quip about his mother.

- So, I propose that the causation relationships are modalized with an epistemic necessity modal
  - So the alternative set for (18) would look like the following:

(28) C = {The lamp broke $\Box$CAUSE$_0$, The lamp broke $\Box$(because the cat knocked it down), The lamp broke $\Box$(because the wind knocked it over), ...}

  - Again, I remain agnostic about whether the $\leq$ is entailment or evaluative
  - Either ordering would result in the correct truth conditions here
    - Furthermore, *just* can associate with either in other environments, so it is possible that there would be some ambiguity here that we could tease apart

- So, given an utterance of (18), we get the following derivation and resulting paraphrase

(29) Utterance: The lamp just broke.
e: the event of the lamp breaking
C = {e $\Box$because x | x is a contextually salient potential cause for e}
ϕ = e $\Box$because CAUSE$_0$, where CAUSE$_0$ is some "minimal cause"
$[\![\text{EXCL}(\phi)]\!] = \lambda w.\forall q(q \in C \ \wedge \ w \in q) \rightarrow \phi \leq q]$
Resulting Paraphrase: "For all explanations q=*The lamp broke necessarily because* x that are not entailed by ϕ=*The lamp broke necessarily because* CAUSE$_0$, $q \notin w$."

- Note: This phenomenon of covert modification seems much broader than causes
  - There are times when the covert element could be analyzed as a consequence

(30) You can't just hit someone.

  - Unexplanatory reading: could be paraphrased 'You can't just hit someone for no reason'
  - However, could also be used for, e.g., 'You can't just hit someone and get away with it'
    - Either follow-up felicitous; the second would require different kind of covert modifier
  - See Appendix A for more discussion of other kinds of covert modification with *just*

5 Implementation of the morphosyntactic framework

- There is a robust distinction in the distribution of *just* compared to *only* and *merely*
  - It seems that *only* and *merely* (and likely other exclusives) are restricted to contexts where the alternative set is derived via focus association
  - I.e., *only* requires the trigger for the alternative set to be overt (and under focus)
- We can capture this distinction by positing another morphosyntactic restriction which requires overt alternative set triggers/association with focus
  - The simplest way to encode this is to leave the focus machinery alone, but reformulate the Focus Principle as a lexical requirement of words like *only*
  - This is shown below in (31) as a focus restriction (FR) constraint

(31) $[\![\text{FR}]\!] = \lambda F.\lambda K.\lambda q[F(K)(q) \wedge \partial(K \subseteq [\![q]\!]^F)]$

- So we get the following morphosyntactic representations of *only* and *merely*, respectively

(32) *Only*: Composition of [EXCL] and [FR]:

$$\dfrac{\dfrac{\dfrac{\text{EXCL}:= \lambda C_{\leq}.\lambda p.\lambda w.\forall q[(q \in C_{\leq} \wedge w \in q) \rightarrow p \leq q] \quad \text{FR}:= \lambda F.\lambda K.\lambda r[F(K)(r) \wedge \partial(K \subseteq [\![r]\!]^F)]}{\lambda K.\lambda r.\lambda w.\forall q[(q \in K \wedge w \in q) \rightarrow r \leq q] \wedge \partial(K \subseteq [\![r]\!]^F)} \quad C_{\leq}(\phi)}{\lambda r.\lambda w.\forall q[(q \in C_{\leq} \wedge w \in q) \rightarrow r \leq q] \wedge \partial(C_{\leq} \subseteq [\![r]\!]^F)} \quad \phi}{\lambda w.\forall q[(q \in C_{\leq} \wedge w \in q) \rightarrow \phi \leq q] \wedge \partial(C_{\leq} \subseteq [\![\phi]\!]^F)]}$$

(33) *Merely*: Composition of *only* and [M]:

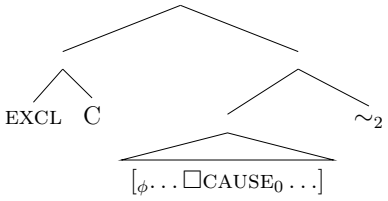
$$\dfrac{\dfrac{\dfrac{\dfrac{\text{EXCL}:= \lambda C_{\leq}.\lambda p.\lambda w.\forall q[(q \in C_{\leq} \wedge w \in q) \rightarrow p \leq q] \quad \text{FR}:= \lambda F.\lambda K.\lambda r[F(K)(r) \wedge \partial(K \subseteq [\![r]\!]^F)]}{\lambda K.\lambda r.\lambda w.\forall q[(q \in K \wedge w \in q) \rightarrow r \leq q] \wedge \partial(K \subseteq [\![r]\!]^F)} \quad \text{M}:= \lambda G\lambda S[G(S) \wedge \partial(S \text{ an evaluative scale})]}{\lambda S.\lambda r.\lambda w.\forall q[(q \in S \wedge w \in q) \rightarrow r \leq q] \wedge \partial(S \subseteq [\![r]\!]^F) \wedge \partial(S \text{ an evaluative scale})} \quad C_{\leq}(\phi)}{\lambda r.\lambda w.\forall q[(q \in C_{\leq} \wedge w \in q) \rightarrow r \leq q] \wedge \partial(C_{\leq} \subseteq [\![r]\!]^F) \wedge \partial(C_{\leq} \text{ an evaluative scale})} \quad \phi}{\lambda w.\forall q[(q \in C_{\leq} \wedge w \in q) \rightarrow \phi \leq q] \wedge \partial(C_{\leq} \subseteq [\![\phi]\!]^F) \wedge \partial(C_{\leq} \text{ an evaluative scale})}$$

- This alone is not sufficient to account for the behavior of unexplanatory *just*, however

  - Without the focus semantic machinery, we have no way of associating the covert elements with the variation in the alternative set
  - As such, I propose that these covert elements are licensed under very specific conditions, and are introduced so as to maintain question-answer congruence with the QUD (Roberts 2012; Simons *et al.* to appear)[6]
    - Assuming a QUD framework in the first place gives us the alternative set
    - Requiring covert elements to address the QUD ensures that they are the varying element of the alternative set

- We can formalize this congruence requirement such that prejacents with covert elements necessarily come with a $\sim$ operator ($\sim_2$) indexed to the QUD/alternative set

(34) Schema for introduction of covert causes



- We could also conceptualize this by fully dissociating grammatical focus from prosodic cues
  - If we did this, then we would simply need to allow focus to occur on covert elements, in which case it would not be realized prosodically
- In sum, *just* remains underspecified for the [FR] constraint, leaving it free to associate with covertly triggered alternative sets
  - This, along with the discussion of [M] in §3 results in *just* being the least morphosyntactically complex of the exclusives discussed

6 Concluding remarks

- I have proposed a morphosyntactic representation of exclusive operator variation
  - This framework allows us to describe all exclusives in terms of their common meaning
  - Also explains their distributional restrictions in terms of morphological presuppositions
- I have also demonstrated some broader uses of *just* as an exclusive operator
  - Shows that the (prosodically-oriented) Focus Principle may not apply to all exclusives
  - There is reason to believe that prosodic focus as described in the Focus Principle is a reflex of a larger constraint on alternative sets and discourse coherence
- Future work on this topic will include some other uses of *just*, as well as exclusives cross-linguistically, within this framework

[6]The QUD adherence principle applies to all discourse; however, it is especially relevant when determining the availability of elements not present in the overt representation of an utterance

  - Other parameters have been posited (Orenstein & Greenberg 2010; Orenstein 2015), and I am interested in how many of them we can encode in a framework like this
  - Other exclusives in English could also shed light on these parameters:
    - *Simply* occurs in the same places as the 'discourse-sensitive' *just* I have described
    - It is possible that *simply* is constrained to only occur with 'internal' alternatives
  - Furthermore, we will see if any typological patterns emerge between these parameters
    - E.g., could an operator be restricted to internal alternatives ordered by entailment?

- Additionally, once we have further researched the kinds of uses of exclusives that occur, we will need to go further in constraining the availability of covert elements for quantification

A Beyond unexplanatory *just*

- There are a number of other uses of *just* very similar to unexplanatory *just*
- Examples of those identified in the literature are given below:

(35) Specificatory *just*
  a. I'm just finishing my homework.
  b. I've just heard that you are leaving us. (Lee 1987: 390, ex. 72–73)
  c. You have something just below your eye.

(36) Exact *just*
  a. Just where do you think you're going? (Kishner & Gibbs 1996: 19, ex. 5)
  b. I want to know just how he got in here.

(37) Comparative *just*
  a. I love cookies, just as you love cake. (Kishner & Gibbs 1996: 19, ex. 6)
  b. Just like the previous example, this is an example of comparative *just*.

(38) 'Emphatic' *just*
  a. I just love your necklace!
  b. I had so much milk it was just incredible.
  c. The sisters just couldn't believe it.
  d. It was just impossible. (Lee 1987: 393–4)

- Of these, the use most similar to unexplanatory *just* is the 'emphatic' use
  - This use seems to be restricted to extreme predicates (Beltrama 2016)
  - But the line is blurry between this use and the unexplanatory use
    - (38a) could be used to express lack of (knowable/accessible) cause for the love
  - While this use has been called 'emphatic', I lean more toward analyzing this as quantifying over necessary elaborations
    - This would yield the implication that "this is all I need to say"
      - This could account for the pragmatic effect of emphasis

  - An alternative analysis could involve introducing covert slack regulators (Lasersohn 1999) over which *just* can quantify
    - This might explain the restriction to extreme predicates, since the exclusive would require some precise value that it could restrict the slack to
  - Even the 'specificatory'/spaciotemporal *just* could be analyzed as an exclusive
    - We could again posit a covert degree modifier specifying space or time

- Interestingly, the direction this takes us would collapse the semantic entries of exclusives and adverbs like *exactly* (which itself is similar to the etymology of *just*)

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