Exclusive Quantification without Focus Alternatives

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Topics of Discussion

- This talk will provide a broad sketch of the research project associated with my dissertation: *Alternatives, Exclusivity and Underspecification*
  - This research project is mostly concerned with exclusive operators and their range of uses
  - Includes English operators like *only*, *just*, *merely*, *simply*, *solely*, as well as the even wider range of exclusive behavior cross-linguistically

Main Points

- Today I will argue two main points:
  1. Exclusive operators always operate over alternatives, but those alternatives should not be crucially tied to focus
  2. We need a structured proposition analysis of exclusivity in order to both account for all the data and address some serious formal flaws in the propositional approach

'Locus Semantics'

- I argue for a modification of the theory of alternative semantics as it relates to exclusivity
  - Focus is viewed as a sub-type of a more general phenomenon of alternative set generation, which I have chosen to call 'locus' semantics
- The locus can be a traditional focus, but it can also be a covert operator or enter the semantics via pragmatic enrichment

Roadmap

§2: Background on Focus Semantics, Exclusivity, and the Zimmermann Problem

§3: Data: Non-canonical Exclusives and Exclusivity without Focus

- Overview of Various Uses of *just*
- Covert Alternatives/Covert Focus
- Morphosemantic Decomposition: Evidence from Ch'ol
- Quantification over Core Events: Evidence from Serbian

§4: Analysis and Consequences

- Existential Entailments
- Type-Neutral Exclusivity & Generalized Entailment
- Application to Zimmermann Problem

§5: Concluding Remarks and Open Questions

Background: Focus & Exclusive Operators

- Historically, focus and the semantics of exclusives have been very tightly linked (Rooth, 1985, 1992)
  - This is mostly due to the fact that prototypical exclusives are focus-sensitive

(1) a. Mary only introduced [Bill]$_F$ to Sue.
b. Mary only introduced Bill to [Sue]$_F$.

(Rooth, 1992: 3)

Standard Lexical Entry

- Many assume a lexical entry for the quantificational part of exclusives as in (2) (Rooth, 1985, 1992; Beaver & Clark, 2008; Chierchia, 2013; Wiegand, 2018)

(2) $[\![\text{EXCL}]\!] = \lambda p.\lambda w.\forall q[(q \in C \wedge w \in q) \rightarrow p \subseteq q]$
(Rooth, 1992; Chierchia, 2013)

- C represents an alternative set to prejacent p, and is standardly assumed to be generated by the focus structure of the sentence

Beyond Entailment Scales

- However, given the range of uses of exclusives, even within the focus-sensitive group, this lexical entry will need to be complicated
- For example, Coppock & Beaver 2011 have argued successfully that *merely* does not operate on an entailment scale
  - Similar arguments have been made for Hebrew unstressed *stam* (Orenstein & Greenberg, 2010; Orenstein, 2015)

(3) 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)

Evaluative Scales

- So at minimum, it will be necessary to allow for ordering relations over C other than entailment
- To do this, I propose a general notion of a "stronger than" relation $\rhd$, as well as a notion of an evaluatively ordered set
  - The $\rhd$ symbol is used as a variable over orderings, and should in general be read as 'is at least as strong as'

(4) An ordered alternative set $C_\rhd$ is an EVALUATIVE SCALE if the set is ordered such that given a relevant question in the context, for every $\psi_1, \psi_2 \in C_\rhd$ such that $\psi_1 \rhd \psi_2$, ψ_1 is valued as equally or more relevant than ψ_2 according to a ranking of worlds modelable as an ordering source (in the sense of Kratzer (2002)).

Parameterizing the Alternative Set Ordering

- We can formalize an updated general lexical entry for exclusivity as follows:

(5) $[\![\text{EXCL}]\!] = \lambda C_{\rhd}.\lambda p.\lambda w.\forall q[(q \in C_{\rhd} \wedge w \in q) \rightarrow p \rhd q]$

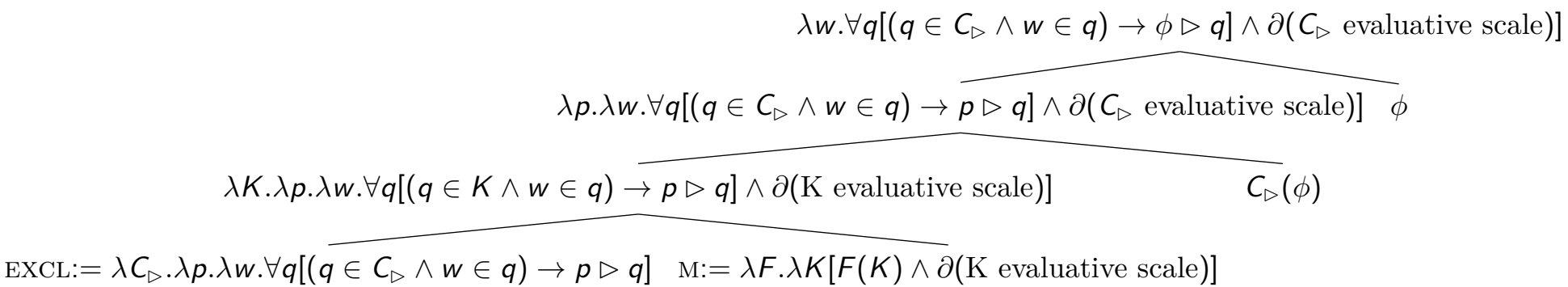
- Here C is again an alternative set, but it is conceptualized as an argument of [EXCL]
- $\rhd$ is an ordering on C, which can be either entailment ($\subseteq$) or a contextually relevant evaluative scale

Evaluativity Parameter

- I have proposed the following presupposition restricting alternative sets to these scales (Wiegand, 2018)
  - I use the ∂ notation from Beaver (2001) to represent presuppositional content.

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

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



The Focus Principle

- Both lexical entries given for exclusives are compatible with the standardly assumed focus principle
- **Focus Principle** (Rooth, 1992): alternative sets must be subsets of focus alternatives
  - I will argue that the data from non-canonical exclusives show that this principle is too strong
  - Alternative sets *may* be subsets of focus alternatives, but they can be derived by other means as well
- Following my treatment of evaluativity as a parameter, I have similarly proposed a parameter for restriction to focus alternatives

Focus Restriction Paramter

- I have reformulated the Focus Principle as a lexical requirement of words like *only*
- This is shown below in (7) as a focus restriction (FR) constraint for certain exclusives

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

$$\lambda w.\forall q[(q \in C_{\triangleright} \wedge w \in q) \rightarrow \phi \leq q] \wedge \partial(C_{\triangleright} \subseteq [\![\phi]\!]^F)]$$

$$\lambda r.\lambda w.\forall q[(q \in C_{\triangleright} \wedge w \in q) \rightarrow r \triangleright q] \wedge \partial(C_{\triangleright} \subseteq [\![r]\!]^F)] \quad \phi$$

$$\lambda K.\lambda r.\lambda w.\forall q[(q \in K \wedge w \in q) \rightarrow r \triangleright q] \wedge \partial(K \subseteq [\![r]\!]^F)] \qquad C_{\triangleright}(\phi)$$

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

Parametric Variation of Exclusives

- *Merely* would then be the result of EXCL composed with both [FR] and [M], since it also associates with focus
- *Just*, on the other hand, is underspecified for both
  - This underspecification is what allows *just* to quantify over a wider range of alternative structures than other exclusives
- These two parameters vary independently, as shown in the following typology fragment

	[M]	−[M]
[FR]	*merely*	*only*, *rak*
−[FR]	*stam*	*just*

Table: Mini Typology of [M] and [FR] for Hebrew & English

Exclusives as Propositional Operators

- Lastly, another assumption generally made in theories of alternative semantics is that alternatives are propositions
  - Thus, exclusive operators are propositional operators
  - This was reflected in the semantic entries provided in both (2) and (5) for exclusivity
- However, this assumption has been challenged in recent work by Ede Zimmermann

The Zimmermann Problem

- Zimmermann (2017) notes that the assumption that exclusives take a proposition yields some counterintuitive truth conditions for a restricted set of sentences
  - In particular, sentences involving necessarily true prejacents and sentences in 'degenerate' models

(8) Only three is an odd number — Expected: FALSE

a. Individual quantification:
$\forall x[\text{Odd}(x) \rightarrow x = 3]$ — FALSE✓

b. Propositional quantification:
$\forall p[w \in p \rightarrow p = \lambda w'.\text{Odd}(3)(w')]$ — TRUE✗

- Note: These formulas are simplified here for exposition, but demonstrate the problem

Potential Solution: Multiple Entries

- As shown, viewing *only* as a propositional operator causes incorrect truth conditions
- One avenue would be to define a different entry for *only* depending on whether it associates with a focused NP, VP, V, etc.
  - This has been used and proposed at various points (Rooth, 1985; Zimmermann, 2017)
- However, this is not a desirable solution because
  - 1) it complicates the lexicon, and
  - 2) it does not capture the common meaning in different uses of *only* (and other exclusives)

Proposed Solution: Variable Type & Structured Prejacent

- Instead, I will propose a variable type $\langle \alpha, \langle \alpha, t \rangle \rangle$ entry for exclusives that follows a structured proposition framework
  - It quantifies over elements of type α (i.e., mimics individual quantification as above when α is type e)

(9) $[\![\text{EXCL}]\!]^w = \lambda A_\alpha \lambda B_{\alpha st} . \forall A'_\alpha [B(A')(w) \rightarrow A \rhd_K A']$

- Exclusives therefore take the *components* of a proposition
  - A is the 'locus' of the alternative set (focus)
  - B is the background question
  - Together $B(A)$ represents the ordinary prejacent p
- The entry in (9) raises some questions:
  - In particular, ensuring that the strength relationship $\rhd$ is defined over varying types
- First, I will show that this entry is motivated by several sources of data involving quantification without focus

Non-canonical Exclusives

- Most of the data presented here will involve English *just* and its wide range of uses
  - *Just* is a good candidate for illustration of exclusive quantification without focus due to its extreme variability
- I will also give an overview of some data from two collaborative projects
  - Ch'ol: with Carol-Rose Little (Little & Wiegand, 2018)
    Morphosemantic decomposition of exclusivity and focus
  - Serbian: with Miloje Despić (Despić & Wiegand, 2018; Despić & Windhearn, In revisions)
    Morphological agreement and event-internal quantification

Uses of *just*

- *Just* can be used in ways parallel to *only*
  - In those cases, which I'll call 'canonical exclusive' uses, *just* is sensitive to prosodic focus in the usual way
  - The alternatives can be ordered by entailment (10a) or a contextually provided evaluative scale (10b)

(10) Focus-sensitive *just*:

a. Carl just has [two]$_F$ degrees. (Entailment)

b. Carl is just a [philosopher]$_F$. (Evaluative)

- We can distinguish these from those that follow in the availability of replacement by *only*

(11) a. Carl only has [two]$_F$ degrees.

b. Carl is only a [philosopher]$_F$.

Unexplanatory *just*

- However, the other uses of *just* that are not obviously linked with any kind of focus cannot be replaced by *only* (while retaining their intended interpretation)
- First, *just* can have the so-called 'unexplanatory' interpretation (Wiegand, 2017, 2018)

(12) Unexplanatory *just*

a. I was sitting there and the lamp just broke! (all by itself)

b. I just feel that it's going to rain.

c. He just stopped texting me.

- Here, *just* does not associate with a focused element
- Furthermore, we see an anti-causal interpretation for *just*

Unexplanatory *just*

- This anti-causal quantification is demonstrably truth-conditional and at-issue:

(13) *Context: Parent has walked into a room to discover a broken lamp*
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 specifically negating the implication that the lamp broke for no reason

Unexplanatory *just*

- These unexplanatory uses cannot be replaced with *only*

(14) a. # I was sitting there and the lamp only broke! (all by itself)

b. # I only feel that it's going to rain.

c. # He only stopped texting me.

- While the data in (14b) and (14c) could be felicitous in the presence of a prosodic focus, they would not retain the meaning of (12)
  - Furthermore, as (12a) contains more contextual clues about the intended unexplanatory meaning, (14a) is nonsense when *just* is replaced by *only*

Emphatic *just*

- Additionally, *just* can be used 'emphatically'

(15) Emphatic *just*

a. It was just impossible!

b. That spider was just gigantic!

c. That roller coaster was just incredible!

- These likewise cannot be replaced with *only*:

(16) a. # It was only impossible!

b. # That spider was only gigantic!

c. # That roller coaster was only incredible!

Emphatic *just*

- Beltrama (2016) argues that the data in (15) should be grouped with the 'extreme degree modifiers' (e.g., *downright*), as they operate at the extreme end of a scale in a similar way
  - However, I argue that while the semantic effect of emphatic *just* may be indistinguishable from typical EDMs, it should still be given an exclusive semantics
  - The emphatic effect comes from the type of object that the exclusivity is operating on
- I argue that *just* can quantify over the degree of pragmatic slack of a predicate

Emphatic *just*: Borderline Cases

- Beyond the argument from simplicity of the lexicon, some evidence that we should be including emphatic *just* (and *simply*) in a study of exclusivity comes from borderline cases like the following:

(17) I just know it's going to rain.

- Here, *just* seems to be in part serving to dismiss the need for an explanation or justification for the speaker's belief (unexplanatory), while simultaneously strengthening the belief (emphatic)

Spactiotemporal *just*

- *Just* is also used frequently to denote temporal or spatial nearness (together dubbed 'specificatory' in Lee 1987)

(18) Temporal *just*

a. Ana has just gone to get her car.

b. I just finished my homework.

c. I've just heard that you are leaving us.

(Lee, 1987: 390, ex. 72–73)

(19) Spatial *just*

a. There's a spider just above your head.

b. You have something just below your eye.

c. The car is just behind the house.

Spatiotemporal *just*

- Again, these cannot be replaced with *only*

(20) # Ana has only gone to get her car.
(*intended: Ana has recently gone . . .*)

(21) # There's a spider only above your head. (*intended: . . . right above your head*)

- These spatiotemporal uses can be formalized as quantificational negations as well
  - The degree of temporal or spatial nearness, formalized in terms of degree semantics, is being restricted by *just*

Exact & Comparative *just*

- Lastly, there are two more categories of *just* identified in Lee 1987 and Kishner & Gibbs 1996: exact and comparative
  - I argue that these are simply other instances of degree quantification

(22) 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.

(23) 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*.

Interim Recap

- There are many uses of *just* that do not have the canonical exclusive semantic interpretation prototypical of *only*
- Non-canonical exclusives do not associate with prosodic focus
  - But according to the Focus Principle, alternative sets must be subsets of focus alternatives
  - Without the presence of prosodic focus, exclusives cannot adhere to this principle when generating their alternative sets
    - (Unless we adopt a covert focus approach)
- Before discussing the source of alternatives for non-canonical exclusives, I will first provide a case study of Ch'ol supporting the idea that exclusivity should not be tied to focus

Ch'ol Focus Marking

- Ch'ol is a Mayan language which expresses focus through particles and syntactic movement
  - In particular, Ch'ol uses *jiñ* to mark focus structures in the morphosyntax

(24) **Jiñ** x-ch'ok tsa' jul-i-Ø.
FOC NC-girl PRF arrive-IV-B3
'[*FOC* The girl] arrived.' (Little & Wiegand, 2018)

Distribution of Ch'ol Focus Marker

- The focus marker *jiñ* has some distributional requirements
  - In particular, it is restricted to definite NPs, so is infelicitous with numerals and PPs

(25) * **Jiñ** juñ-k'ej k-om-Ø waj.
FOC one-CL A1-want-B3 tortilla.
Intended: 'I want [$_{\text{FOC}}$ one] tortilla.'

(26) * **Jiñ** tyi Palenque tsa' k'oty-i-Ø.
FOC PREP Palenque PRF arrive-IV-B3
Intended: 'He arrived [$_{\text{FOC}}$ to Palenque].'

Exclusivity in Ch'ol

- When *jiñ* occurs alongside another morpheme *=jach*, it forms bimorphemic *jiñ=jach* 'only'
  - The resulting meaning is standard canonical exclusivity

(27) **Jiñ=jach** x-ch'ok tsa' jul-i-Ø.
FOC=EXCL NC-girl PRF arrive-IV-B3
'Only the girl arrived.'

- Interestingly, this second morpheme *=jach* is also an exclusive when it occurs by itself (as a second-position clitic)

(28) X-ch'ok=**jach** tsa' jul-i-Ø.
NC-girl-CL=EXCL PRF arrive-IV-B3
'Only a girl arrived.'

Distribution of Exclusive Markers in Ch'ol

- However, only the bimorphemic *jiñ=jach* mirrors the definiteness restrictions we saw with bare *jiñ*

(29) a. * **Jiñ=jach** juñ-k'ej k-om-Ø waj.
FOC=EXCL one-CL A1-want-B3 tortilla
Intended: 'I want only one tortilla.'

b. * **Jiñ=jach** tyi Palenque tsa' k'oty-i-Ø.
FOC=EXCL PREP Palenque PRF arrive-IV-B3
Intended: 'He arrived only to Palenque.'

(30) a. Juñ-k'ej**=jach** k-om waj.
one-CL=EXCL A1-want tortilla.
'I want only one tortilla.'

b. Tyi Palenque**=jach** tsa' k'oty-i.
PREP Palenque=EXCL PRF arrive-IV
'He arrived only to Palenque.'

Non-canonical Exclusivity in Ch'ol

- While both *jiñ=jach* and *=jach* are exclusives, *jiñ=jach* is restricted to canonical exclusivity, similar to English *only*
- On the other hand, *=jach* exhibits a wider range of uses, more similar to English *just*

(31) a. Uts'aty**=jach** aw-otyoty.
nice=EXCL A2-house
'Your house is so nice.' Emphatic

b. Che'**=jach** tsa' jul-i.
PART=EXCL PRF arrive-IV
'Just like that he arrived.' Unexplanatory/Mirative

Morphosemantic Decomposition in Ch'ol

- We can clearly see the morphological decomposition of *jiñ=jach* into focus marker + exclusive operator
  - The fact that *=jach* by itself exhibits non-canonical exclusivity is strong evidence that exclusivity is independent of focus
- The focus marker *jiñ* can be seen as an overt correlate of [FR]
  - Plus an added definiteness restriction

(32) $[\![jiñ]\!] = \lambda F.\lambda K.\lambda A.\lambda B[F(K)(A)(B) \wedge \partial([\![B(A)]\!]^F = B \wedge \underline{A \in D_e})]$

- Note that this formalization of definiteness *requires* the structured proposition analysis
  - We need to have access to the 'focused' element in order to restrict its type

Covert Sources of Alternatives

- A proposed source of variation among alternatives is the availability of covert elements as the source of variation in the alternative set
  - This has been described in Orenstein 2015 as 'internal' alternatives, and in Wiegand 2017, 2018 as lack of required association with a focused element
- The main evidence in Orenstein 2015 is from Hebrew accented *STAM*
  - Accented *stam* has been argued to quantify over 'internal alternatives' (variants of the prejacent) (Orenstein, 2015)

Covert Alternatives in Hebrew

(33) 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 requires a covert 'minimal' or 'standard' modifier in the prejacent

Covert Sources of Alternatives

- I have argued previously that unexplanatory *just* can be analyzed in a very similar way, as quantification over covert causes (Wiegand, 2017, 2018)
  - However, in this talk I will take a slightly different approach and argue that we do not even need a covert cause
  - Rather, we simply need a cause to be salient in the discourse and existentially entailed by the prejacent
  - This insight comes from research into the behavior of exclusives in Serbian (Despić & Wiegand, 2018; Despić & Windhearn, In revisions)

Serbian Exclusives

- Serbian shows an interesting pattern in its exclusives *samo* 'only' and (agreeing) *sam-o/a* 'by pro-self'
  - *Samo* is a canonical exclusive in every respect
  - *Sam-o/a*, on the other hand, exhibits a range of non-canonical meanings (though mostly distinct from those of *just*)

(34) Ana je juče **samo** plivala.
Ana is yesterday only swam
'Only Ana swam yesterday.'

(35) Ana je juče **sam-a** plivala.
Ana is yesterday sam-N.S.F swam
'Ana swam yesterday alone/(all) by herself.'

Serbian Agreeing *sam-*

- Like it's English translation 'Ana swam by herself', (35) has three distinct but related meanings:
  - No-company: Swimming was unaccompanied
    Sample Utterance Context: Ana is very social and prefers to swim with her friends. (But yesterday, . . .)
  - No-help: Swimming was unassisted
    Sample Utterance Context: Ana is 3 years old and usually needs help from her parents to stay afloat. (But yesterday, . . .)
  - No-other-cause: Swimming was unprompted
    Sample Utterance Context: Ana is a dog who is afraid of water. She will only swim if forced to. (But yesterday, . . .)

Connection to Unexplanatory *just*

- There is a striking similarity between the No-other-cause reading of *sam-o/a* and the unexplanatory use of *just*
  - This is especially clear when the subject is inanimate

(36) Lampa se **sam-a** pokvarila.
Lamp REFL sam-NOM.S.F broke
'The lamp broke by itself.'

- So if we were to posit a covert cause argument for unexplanatory *just*, we would likely be obliged to posit something similar for Serbian
  - This would then entail positing covert "helper" arguments or "other people in the same vicinity" arguments for the other two readings of agreeing *sam-o/a*
- But it seems clear that these elements *are* being quantified over in some way

Existential Entailment

- So instead, I propose that the three readings of agreeing *sam-o/a* can be derived via a specific kind of enrichment: existential entailment
- Non-focus alternatives can be triggered when the existence of some semantic object is entailed by the overt content in the prejacent
  - This requires a semantic ontology that includes events/states
- To derive the three readings of *sam-o/a/by pro-self*, this requires three separate existential entailment patterns

Existential Entailment

- No-company: All eventualities are contained within an "immediate vicinity", which is itself contextually determined
  - I take this contextual determination to be much like that of *pos* in degree semantics

(37) $\forall e \forall x[[swim(e) \wedge ag(e,x)] \rightarrow \exists \sigma[in\_vic(e,\sigma) \wedge th(\sigma,x)]$

- No-help: All events are composed of sub-events typically executed by the agent of the main event (e.g., a swimming entails: kicking, moving, staying afloat)

(38) $\forall e \forall x[[swim(e) \wedge ag(e,x)] \rightarrow \exists e'[e' \Subset e \wedge ag(e',x)]]$

- No-other-cause: All events are caused by something

(39) $\forall e \forall x[[swim(e) \wedge ag(e,x)] \rightarrow$
$\exists e'[\textsc{cause}(e',e) \wedge particpant(e',x)]$

(40) $\forall e[swim(e) \rightarrow \exists e'[\textsc{cause}(e',e)]]$

Event Composition Analysis

- Accounting for the no-help reading in particular requires a little extra machinery
  - Events need to be structured in a particular way that separates them into "core" properties of an event and "peripheral" properties of an event
- I propose that we can define a class of composition sub-events $\{e' \mid e' \Subset e\}$ as actions that must be (or usually are) present in order for their totality to be classified as an event e of the relevant sort
  - We will thus have a distinction between two kinds of these composition sub-events: core and peripheral
- Core (Lexical) Sub-events: always entailed
- Peripheral (Contextual) Sub-events: contextually entailed

Event Composition Example: *Eat*

- To illustrate, consider the verb *eat*:

(41) Prototypical entailments of *eat*:
$\forall e[\text{eat}(e) \rightarrow \exists e'.\text{swallow}(e') \wedge e' \Subset e]$
$\forall e[\text{eat}(e) \rightarrow \exists e'.\text{chew}(e') \wedge e' \Subset e]$
$\forall e[\text{eat}(e) \rightarrow \exists e'.\text{lift utensil}(e') \wedge e' \Subset e]$
...

- Which particular set of entailments are prototypical will also depend on things like subject, object, and setting
- E.g., different entailment pattern for human vs. dog eaters, for steak vs. soup foods, etc.

Default Rule for Identity of Agents

- I also propose that in the absence of any evidence to the contrary, we have the following default rule for identity of agenthood between events and their composition sub-events

(42) Default agent/sub-agent identity:
$\forall e[\exists x.ag(e,x) \rightarrow_{\text{default}}$
$\forall e'[\exists y.(ag(e',y) \wedge e' \Subset e) \rightarrow x = y]]$

Testing for Core Sub-Events

- We can use a standard felicity test for entailment to see which of these are lexical (core):

(43) Bill ate the lasagna but he didn't **chew** it. Peripheral

(44) Bill ate the lasagna without **lifting his fork**. Peripheral

(45) # Bill ate the lasagna but he didn't **swallow** it. Core

- It seems that, in order for an event *e* to be called 'eating':
  - 1) there must be a swallowing sub-event of *e*, and
  - 2) the agent of *e* must also be the agent of that swallowing sub-event of *e*
  - So the default identity rule is non-defeasible for 'core' sub-events

Quantifying over Peripheral Sub-events

- So, given this framework, it seems that one function of agreeing *sam-* (and English *by pro-self*) is to allow quantification over one or more peripheral sub-events
  - So, the no-help reading of 'Ana ate the lasagna by herself' could be paraphrased as 'Ana was the only agent of any of the sub-events of Ana's lasagna-eating'

General Exclusive Semantics

- To account for the data presented thus far, I argue for a structured propositional account of exclusivity
  - This is repeated from the lexical entry in (9)

(9) $[\![\text{EXCL}]\!]^w = \lambda A_\alpha \lambda B_{\alpha st}. \forall A'_\alpha [B(A')(w) \rightarrow A \rhd_K A']$

- $\langle A, B \rangle$ is the structured proposition traditionally consisting of a focus and background
  - A and B are not type-restricted
  - However, we do have a constraint on the relationship between A and B: B must be a question ranging over elements of the same type as A
- A is the 'locus' of the alternative set
- B is the question (which can be thought of in terms of background/QUD, a.o.)

Application to Exclusive Operators

- This semantic entry can be used by a purely focus-sensitive operator like *only*
  - The result is that *only* takes the element under focus as its first argument, and the background question as its second argument
- However, $\langle A, B \rangle$ can also be filled in by a question/answer pair involving these existential entailment relationships

Alternatives without Focus

- Once we have this formal mechanism, I argue that exclusives are able to quantify over existential entailments of their overt prejacent
  - So for the Serbian data, the same event description 'Ana swims' could yield three different quantifications depending on the context of utterance

(46) $\exists e[swim(e) \wedge ag(e, a)]$
$\Rightarrow \exists\sigma.in\_vic(e, \sigma) \wedge participant(\sigma, a)$

a. $\exists e[swim(e) \wedge ag(e, a) \wedge [\![\textsc{excl}]\!](a)(\lambda x.\exists[\sigma.in\_vic(e, \sigma) \wedge participant(\sigma, x)])]$

b. $\exists e[swim(e) \wedge ag(e, a) \wedge \forall y[(\exists\sigma.in\_vic(e, \sigma) \wedge participant(\sigma, y)) \rightarrow a \rhd y]]$

Alternatives without Focus

(47) $\exists e[\mathit{swim}(e) \wedge \mathit{ag}(e,a)] \quad \Rightarrow \exists e'.e' \Subset e \wedge \mathit{participant}(e',a)$

a. $\exists e[\mathit{swim}(e) \wedge \mathit{ag}(e,a) \wedge [\![\textsc{excl}]\!](a)(\lambda x.\exists e'.e' \Subset e \wedge \mathit{participant}(e',x))]$

b. $\exists e[\mathit{swim}(e) \wedge \mathit{ag}(e,a) \wedge \forall y[(\exists e'.e' \Subset e \wedge \mathit{participant}(e',y) \rightarrow a \rhd y]]$

(48) $\exists e[\mathit{swim}(e) \wedge \mathit{ag}(e,a)]$
$\Rightarrow \exists e'.\textsc{cause}(e',e) \wedge \mathit{participant}(e',a)$

a. $\exists e[\mathit{swim}(e) \wedge \mathit{ag}(e,a) \wedge [\![\textsc{excl}]\!](a)(\lambda x.\exists e'.\textsc{cause}(e',e) \wedge \mathit{participant}(e',x))]$

b. $\exists e[\mathit{swim}(e) \wedge \mathit{ag}(e,a) \wedge \forall y[(\exists e'.\textsc{cause}(e',e) \wedge \mathit{participant}(e',y) \rightarrow a \rhd y]]$

Agreement: Restricting the Locus Type

- Note that in the above examples, the exclusive *sam-o/a* exhibits agreement with nominal argument
  - As such, it is reasonable to assume that *sam-o/a* requires its first argument to be of type *e* (similarly for English *by pro-self*)
- *Just*, on the other hand, is clearly not type-restricted to individuals
  - Therefore, the 'unexplanatory' *just* equivalent of (48) would likely be a quantification over events rather than individuals

Returning to *just*

- For example, to derive the unexplanatory interpretation of *just* in (49), we need to have available a minimal cause

(49) The lamp just broke.

- I argue, contrary to Wiegand 2018, that such a minimal cause is not covertly present in the semantics
  - Rather, it is only present in a pragmatically enriched semantics
- Again, the reason it is allowable to enrich with quantification with locus on a minimal cause is because the existence of an event entails that something caused it
  - Furthermore, it is the entailment itself that constitutes the actual prejacent of the exclusive quantification

Explaining Unexplanatory *just*

- So, for (49), we get the following quantification

(50) $\exists e.break(e) \wedge th(e, l) \wedge \forall e'.\textsc{cause}(e, e') \rightarrow e_{min} \rhd e'$

- Likewise, for the spatiotemporal quantification, degree quantification, and the emphatic quantification, which can be conceptualized as degree quantification over pragmatic slack (Wiegand, 2016)

Addressing the Zimmermann Problem

- Because [EXCL] has a variable type, it can still be used as a unified entry for focus on different types
  - So, the same entry can cover both (51) and (52) without the need for [EXCL] to quantify over propositions

(51) Only $[\text{Ana}]_F$ swam $\Rightarrow [\text{only}](Ana)(\lambda x.swim(x)) \Rightarrow$
$\underline{\forall x[swim(x) \rightarrow Ana \rhd x]}$

(52) Ana only $[\text{swam}]_F \Rightarrow [\text{only}](\lambda x.swim(x))(\lambda g.g(Ana)) \Rightarrow$
$\underline{\forall g[g(Ana) \rightarrow \lambda x.swim(x) \rhd g]}$

Consequences for the Zimmermann Problem

- Structured propositions give us access to domain restrictions on things like semantic type and deconstructed events
- But the structured proposition approach also allows us to get away from the issues raised in Zimmermann 2017
  - If instead of "$A \rhd A'$" we had written "$B(A) \subseteq B(A')$", we would have had an identical semantics to the original propositional entry in (2)
  - This would have been subject to the same criticism, as, for example $\mathrm{Odd}(3) \subseteq \mathrm{Odd}(5)$
    - So "Only 3 is odd" would still come out true
- By defining the entailment relation over argument A rather than the composition of A and B, we avoid this, assuming we can find a way to mimic individual-level quantification in a type-general way

Strength Relation

- To do this, I provide a more rigorous notion of the strength relation $\triangleright$ used in the semantic entry for exclusivity
  - Thus, $x \triangleright y$ iff x is stronger than y on the relevant scale
- In most cases discussed here, one could replace 'is stronger than' with simply 'entails'
  - However, this will not map onto $\subseteq$ (which is defined on propositions) and will need to be defined for all types that can serve as the locus of alternatives
- If the scale is ordered according to an evaluative scale, then I assume that the ordering is already defined as a ranking of individuals or properties in a context

Generalized Entailment

- If the scale is ordered by entailment, then I propose the following definition:

(53) When ordered by entailment, the 'stronger than' $\rhd$ relation is defined as follows for (a) individuals and (b) properties in model $\mathcal{M}$:

a. For any $x, y \in D_e$, $\underline{x \rhd y \text{ iff}}$
$\forall w \in \mathcal{M}, \forall f$ such that $\text{dom}(f) \subseteq D_e$,
$f(x)(w) \rightarrow f(y)(w)$

b. For any n-ary functions f and g, $\underline{f \rhd g \text{ iff}}$
$\forall w \in \mathcal{M}, \forall x_1, \ldots, x_n \in \text{dom}(f)$,
$f(x_1, \ldots, x_n)(w) \rightarrow g(x_1, \ldots x_n)(w)$

Generalized Entailment and Zimmermann Models

- Defining this notion of generalized entailment allows us to avoid the problems brought up in Zimmermann 2017
  - The only way that "Only 3 is odd" would come out true is if, for example, 5 shared *every property* with 3
- This allows us to keep a general semantic entry for exclusivity across all of the parameters we have seen
  - Including source of alternatives
  - Kind of ordering
  - Semantic type of locus
  - Etc. ...

Conclusions

- I am proposing a wider notion of alternative semantics for exclusive quantification, which involves a type-neutral semantic entry and the allowance of pragmatic enrichment for quantification
  - This requires positing a new means of identifying a locus, which in turn requires adopting a structured propositional account
- The structured propositional account is motivated by empirical data and bypasses the issues raised in Zimmermann 2017

Remaining Questions

- There are several questions left open, one of the most important of which is how these alternatives beyond focus are constrained
- I do not believe that the examples provided here exhaust the set of logically possible existential entailments
- Yet, the range of possible meanings for exclusives seems relatively limited and consistent across languages (with different languages grouping/lexicalizing those meanings in different ways)

Future Research

- So how can we formally capture the available loci without overgenerating?
  - My preliminary thoughts are that we will find that the general space of possible loci corresponds roughly with the space of grammaticalized relations in language
- So, we will find quantification over degrees, time, causation, location, pragmatic slack, degree of confidence, manner
  - This is yet to be fully explicated or tested though, and constitutes an interesting line of further inquiry

Summary

- As is clearly evident, many of the uses of *just* that can be analyzed as a quantificational denial do not make use of focus in any sense resembling either Rooth 1992 or syntactic focus constructions
  - However, I argue that it is a desirable goal to include these kinds of quantifications within the realm of alternative semantics
  - With that goal in mind, I argue that it is necessary to analyze focus itself as an instantiation of a larger phenomenon of quantification over a pragmatic or semantic locus

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