Only

Luka Crnič, HUJI

University of Göttingen

December 7, 2021

Slides: `http://bit.ly/3Dwzrcy`

Only and its positive inference

(1) Only Gali$_F$ arrived on time.

a. Negative inference: No one who is not Gali arrived on time.

b. Positive inference: Gali arrived on time.

There are substantive arguments that the positive inference is weaker ...

- Existential (*Someone arrived on time*). See, e.g., Horn 1996, Klinedinst 2005, Wagner 2006, von Fintel & Iatridou 2007, Beaver & Clark 2008.
- Conditional (*If someone arrived on time, Gali did*). See Ippolito 2007.

... and that its projective status is not presuppositional.

- Assertion. See Atlas 1982, Del Pinal 2021.
- Implicature. See van Rooy & Schulz 2007.
- 'Backgrounded' or 'inertial'. See Horn 2002, Roberts 2011.

The Five-Step Plan

1. Our starting point are the observations that the behavior of *only* vis-à-vis the nature of its positive inference is largely mirrored by that of exceptives:

(2) No one but Gali arrived on time.

a. 'Negative' inference: No one who is not Gali arrived on time.

b. 'Positive' inference: Gali arrived on time.

2. We show that the behavior of exceptives can be captured on a distributed analysis: the import of exceptives is distributed between an exhaustivity and a subtraction component (Gajewski 2013, Hirsch 2016, Crnič 2018).

(3) [exh [no student but Gali arrived on time]]

The Five-Step Plan

3. The distributed analysis is subsequently extended to *only*, revising a proposal of von Fintel & Iatridou 2007: *only* has a simple subtraction meaning.

(4) [exh [only Gali_F arrived on time]]

This decomposition will allow us to capture both the apparently weak and non-presuppositional behavior of *only* discussed at our starting point.

4. We show that on an appropriate, presuppositional analysis of exhaustivity, we also capture the original arguments for the presuppositional behavior of *only* and exceptives. Thus, we provide a new type of support for presuppositional *exh* (Bassi et al. 2021, Del Pinal 2021, Del Pinal et al. 2021, Fox 2021).

5. Finally, we conclude by accounting for some puzzling cases that support existential semantics for the positive inferences (e.g., Horn 1996, Klinedinst 2005).

Table of contents

The initial paradigm

Weak projection: episodic sentences

Presupposed and asserted meanings are not suspendable

(5) Gali stopped smoking.

a. Presupposition: Gali used to smoke.

b. Assertion: Gali does not smoke (anymore).

(6) Gali stopped smoking *presupposition*

a. #... and, in fact, she never smoked.

b. #... and perhaps she never smoked.

(7) Gali stopped smoking *assertion*

a. #... and, in fact, she still smokes.

b. #... and perhaps she still smokes.

Weak projection: episodic sentences

The positive inference of *only* can behave differently (e.g., Ippolito 2007)

(8) Only Gali$_F$ arrived on time

a. #... and, in fact, (even) she didn't.

b. ... and perhaps even she didn't/no one did.

Lesson: $\Diamond$(Gali arrived on time) *as the positive inference*

The positive inference of exceptives can behave differently as well

(9) No student but Gali arrived on time

a. #... and, in fact, (even) she didn't.

b. ... and perhaps even she didn't/no one did.

Lesson: $\Diamond$(Gali arrived on time) *as the positive inference*

Weak projection: modals and attitude ascriptions

Presupposed and asserted meanings are not suspendable in modal sentences

(10) Gali has to stop smoking.

a. Presupposition: Gali used to smoke.

b. Assertion: Gali has to not smoke (anymore).

(11) Gali has to stop smoking *presupposition*

a. #... and, in fact, she never smoked.

b. #... and perhaps she never smoked.

(12) Gali has to stop smoking *assertion*

a. #... and, in fact, she has to continue to smokes.

b. #... and, in fact, she may continue to smokes.

Weak projection: modals and attitude ascriptions

The positive inference of *only* can be inherited differently

(13) Gali has to only dance with Tali_F

a. #... and, in fact, she has to not dance with her either.

b. ... and she doesn't even have to dance with her.

Lesson: $\Diamond$(Gali arrived on time) *as the inherited positive inference*

The inheritance of the positive inferences of exceptives can be different as well *(the same facts obtain if we fix the scope of the negative quantifier)*

(14) Gali has to dance with no one except Tali

a. #... and, in fact, she has to not dance even with her.

b. ... and she doesn't even have to dance with her.

Lesson: $\Diamond$(Gali arrived on time) *as the inherited positive inference*

Stronger projection under negation: episodic sentences

In contrast, under negation, we only get strong inferences! (e.g., Ippolito 2007)

(15) Not only Gali$_F$ arrived on time

a. #... (and,) in fact, she didn't.

b. #... (and) perhaps (even) she didn't.

Lesson: (Gali arrived on time) *as the inherited positive inference*

(16) I doubt that no student but Gali arrived on time.

a. #... (and,) in fact, she didn't.

b. #... (and) perhaps (even) she didn't.

Lesson: (Gali arrived on time) *as the inherited positive inference*

(exceptives are marked under clausemate negation, hence 'doubt')

Strengthening of projection under negation: modal sentences

But in negated modal sentences, the weaker projection might be accessible again

(17) Gali doesn't have to only dance with Tali$_F$

a. #... and, in fact, she has to not dance with Tali.

b. %... and she may even skip dancing with Tali.

Lesson: $\Diamond$(Gali dances with Tali) *as the inherited positive inference*?

(18) Gali doesn't have to dance no one but Tali

a. #... and, in fact, she has to not dance with Tali.

b. %... and she may even skip dancing with Tali.

Lesson: $\Diamond$(Gali dances with Tali) *as the inherited positive inference*?

Summary: positive inferences

Exclusive and exceptive sentences with negative quantifiers give rise to parallel positive inferences (p). These exhibit identical projection behavior.

	Plain sentences	Modal/attitude sentences
Positive sentence	p / ~~◇p~~	p / ~~□p~~ / ~~◇p~~
Negated sentence	p / ~~◇p~~	p / ~~◇p~~

Table 1: Predicted inferences if the postulated positive inference p is a presupposition.

	Plain sentences	Modal/attitude sentences
Positive sentence	p / ◇p	p / □p / ◇p
Negated sentence	p / ~~◇p~~	p / %◇p

Table 2: Observed inferences in relation to the postulated positive inference p.

A distributed analysis of exceptives

An argument for a distributed analysis (Gajewski 2008)

Any theory of (connected) exceptives is required to account for their distribution – acceptability with (negative) universal quantifiers, unacceptability with existential quantifiers (e.g., Hoeksema 1986, von Fintel 1993, Vostrikova 2021).

(19) #Gali danced with [a student but Tali].

(20) Gali danced with [no student but Tali].

If both negative and positive inference were sourced in *but* (cf. von Fintel 1993), the sentence in (21) should be as unacceptable as (19) as NPIs denote existential quantifiers (cf., e.g., Ladusaw 1979, Gajewski 2008, Chierchia 2013).

(21) Gali didn't dance with [any student but Tali].

A distributed analysis of exceptives

Two components to exceptives (following Gajewski 2013):

(22) [exh [no one but Gali arrived on time]]

Subtraction component

(23) $[\![\text{but Gali}]\!]^w = \lambda P.\ P \backslash \{\text{Gali}\}$

(24) $[\![\text{no one but Gali arrived on time}]\!]^w = 1$ iff
no one that is not Gali arrived on time

Exhaustivity component (cf., e.g., Fox 2007)

(25) $[\![\text{exh S}]\!]^w \Rightarrow$
(i) $[\![\text{S}]\!]^w = 1$, and
(ii) $\forall \text{S'} \in \text{Excl(S)}: [\![\text{S'}]\!]^w = 0$.

We remain agnostic wrt the projective status of these entailments for now.

A distributed analysis of exceptives

(26) [exh [no one but Gali arrived on time]]

Alternatives[1]

(27) Excl(no one but Gali arrived on time) =

{no one but X arrived on time | $[\![X]\!]^w \in D_e$}

Simple computation

(28) $[\![$ [exh [no one but Gali arrived on time]] $]\!]^w \Rightarrow$

(i) no one that is not Gali arrived on time, and

(ii) $\forall X$: Gali$\not\sqsubseteq X \rightarrow \neg$(no one that is not X arrived on time)

= someone that is not X arrived on time

Together, (i) and (ii) entail that Gali arrived on time (and no one else did).

[1] Note that a pointwise closure under conjunction of alternatives is effectively assumed (e.g., *Gali and Tali* as an alternative to *Gali*), or at least a more complex syntax of proper names as definites.

Gajewski's example

Recall the initial sentence that motivated the distributed analysis

(29) Gali didn't dance with [any student **but Tali**]

Split scope of *exh* and subtraction

(30) [**exh** [neg [Gali danced with any student **but Tali**]]]

(31) (i) ¬(Gali danced with a student that is not Tali), and

(ii) ∀X: Tali⋢X → Gali danced with a student that is not X

Together, (i) and (ii) entail that Gali danced with Tali (and no one else).

Weak projection

Weak projection: modals and attitude ascriptions

Recall the projection facts under modals

(32) Gali has to dance with no one but Tali,

a. #... and, in fact, she has to not dance even with her.

b. ... and she doesn't have to dance even with her.

Two possible parses are available: one yields strong, the other weak projection.

(33) [□ [exh [Gali dances with no one but Tali]]]

(34) (i) □(Gali dances with no one that is not Tali, and
(ii) □∀X: Tali⋢X → ¬Gali dances with no one that is not X)

= Gali dances with someone that is not X

The meaning entails the strong positive inference: □(Gali dances with Tali). The strong positive inference seems default, in the absence of continuations.

(this obtains on the assumption that both entailments of exh are assertive)

Weak projection: modals and attitude ascriptions

(35) [exh [□ [Gali dances with no one but Tali]]]

(36) (i) ¬□(Gali dances with no one that is not Tali), and
(ii) ∀X: Tali⋢X → ¬□(Gali dances with no one that is not X)
= ◇(Gali dances with someone that is not X)

The meaning entails the weak positive inference: ◇(Gali dances with Tali).

The meaning in (36) is compatible with the modalized continuation in (37-b), but not the non-modalized continuation in (37-a), accounting for the pattern.

(37) Gali has to dance with no one but Tali,

a. #... and, in fact, she has to not dance even with her. ✓
b. ... and she doesn't even have to dance with her. ✓

Weak projection: episodic sentences

Recall the similar projection facts in episodic sentences

(38) No student but Gali arrived on time

a. #... and, in fact, she didn't either. ✓

b. ... and perhaps even she didn't/no one did. ✓

If we assume a speech act operator ASSERT/K in syntax (e.g., Meyer 2014, Krifka 2014, Fox 2016), two possible parses are again available: low and high *exh*. The latter parse induces the weak positive inference and thus admits the continuation in (38-b), but not (38-a).

(39) [ASSERT [exh [no one but Gali arrived on time]]]

$\Rightarrow \Box$(Gali arrived on time) *strong positive inference*

(40) [exh [ASSERT [no one but Gali arrived on time]]]

$\Rightarrow \Diamond$(Gali arrived on time) *weak positive inference*

A distributed analysis of *only*

Only as an exceptive

Only contributes the same meaning as some exceptives, and can be analyzed analogously (von Fintel & Iatridou 2007; but see Alonso-Ovalle & Hirsch 2021).

(41) Only Gali arrived on time. ≈ No one but Gali arrived on time.

We propose that there are two components to *only* (as with exceptives):

- (simple) subtraction: encoded in *only*
- exhaustivity: encoded in *exh*

(42) [exh [only Gali arrived on time]]

Only as an exceptive

(43) [exh [only Gali_F arrived on time]]

Subtraction

(44) $[\![\text{only S}]\!]^w = 1$ iff $\neg\exists \text{S'} \in \text{F(S)}$: $\text{S'} \in \text{Excl(S)} \wedge [\![\text{S'}]\!]^w = 1$

Alternatives

(45) Excl(only Gali_F arrived on time) =

$\{\text{only } \text{X}_F \text{ arrived on time} \mid [\![\text{X}]\!]^w \in \text{D}_e\}$

Only as an exceptive

(46) [exh [only Gali$_F$ arrived on time]]

Computation

(47) $[\![\text{only Gali}_F \text{ arrived on time}]\!]^w = 1$ iff

$\neg\exists S \in \{X \text{ arrived on time} \mid [\![X]\!]^w \in D_e \wedge [\![\text{Gali}]\!]^w \not\sqsubseteq [\![X]\!]^w\}$: $[\![S]\!]^w = 1$ iff

$\forall X$: Gali $\not\sqsubseteq X \rightarrow \neg$(X arrived on time)

(48) $[\![[\text{exh } [\text{only Gali arrived on time}]]]\!]^w \Rightarrow$

(i) $\forall X$: Gali $\not\sqsubseteq X \rightarrow \neg$(X arrived on time), and

(ii) $\forall Y$: Gali $\not\sqsubseteq Y \rightarrow \neg\forall X$: $Y \not\sqsubseteq X \rightarrow \neg$(X arrived on time)

$= \exists X$: $Y \not\sqsubseteq X \wedge$ X arrived on time

$\Rightarrow$ Gali arrived on time

Weak projection

Recall a weak projection fact from the intro (the same derivation for others):

(49) Only Gali$_F$ arrived on time

a. #... and, in fact, she didn't. ✓

b. ... and perhaps even she didn't/no one did. ✓

As in the case of exceptives, different readings (weak, strong) are obtained by assigning different scope of *exh* relative to the subtraction component.

(50) [ASSERT [exh [only gali$_F$ arrived on time]]]

$\Rightarrow \Box$(Gali arrived on time) *strong positive inference*

(51) [exh [ASSERT [only gali$_F$ arrived on time]]]

$\Rightarrow \Diamond$(Gali arrived on time) *weak positive inference*

Where are we at?

Splitting exceptives and *only* into *exh* and subtraction allowed us to capture weak (and some stronger) positive inferences by assigning them two different scope.

(52) [ASSERT/□ [exh [subtraction ...]]]

(53) [exh [ASSERT/□ [subtraction ...]]]

	Plain sentences	Modal/attitude sentences
Positive sentence	p / ◇p	p / □p / ◇p
Negated sentence	p / ~~◇p~~	p / %◇p

Table 3: Observed inherited inference in relation to prejacent p. Green boxes mark what has been discussed & captured so far. Red boxes mark to-dos.

Strong projection

What about strong projection?

Recall, first, that we obtain only strong projection under negation!

(54) Not only Gali$_F$ arrived on time

a. #... and, in fact, she didn't.

b. #... and perhaps even she didn't/no one did.

Second, there's tons of tests that motivate treating the positive inference as a presupposition (starting with Horn 1969)!

(55) Tali regrets that only Gali$_F$ arrived on time.

a. Negative attitude: People other than Gali not arriving on time.

b. Belief/fact: Gali arrived on time.

(56) Tali regrets that no one but Gali arrived on time.

a. Negative attitude: People other than Gali not arriving on time.

b. Belief/fact: Gali arrived on time.

Presuppositional exhaustivity

Recall the characterization of *exh* from above:

(57) $[\![\text{exh S}]\!]^w$ has two entailments:
(i) $[\![\text{S}]\!]^w = 1$, and
(ii) $\forall \text{S'} \in \text{Excl(S)}$: $[\![\text{S'}]\!]^w = 0$.

Following Bassi et al. 2021, Del Pinal et al. 2021, Fox 2021, we assume the following division of projective content: *exh* is truth-conditionally vacuous.

(58) $[\![\text{exh S}]\!]^w$ is defined only if $\forall \text{S'} \in \text{Excl(S)}$: $[\![\text{S'}]\!]^w = 0$. *presupposition*
If defined, $[\![\text{exh S}]\!]^w = 1$ iff $[\![\text{S}]\!]^w = 1$. *assertion*

The reader/listener may check that nothing changes for our above derivations (modulo potential local accommodation of presuppositions, cf. Bassi et al. 2021).

Projection under negation

(59) Not only Gali$_F$ arrived on time. ⇒ Gali arrived on time.

Parse #1: *exh* above negation ✗

(60) #[exh [NEG [only gali$_F$ arrived on time]]]

⇒ Only one alternative is excludable in the domain of *exh* !

⇒ The meaning we obtain is the same as when we drop *exh*, *only*.

⇒ Redundancy violation! (e.g., Meyer 2013, Mayr & Romoli 2016)

Parse #2: negation above *exh* ✓

(61) [NEG [exh [only gali$_F$ arrived on time]]]

(62) a. Assertion: $\exists X$: Gali$\not\sqsubseteq X \wedge X$ arrived on time

b. Presupposition: $\forall Y$: Gali$\not\sqsubseteq Y \rightarrow \exists X$: $Y \not\sqsubseteq X \rightarrow X$ arrived on time

⇒ Gali arrived on time

Projection under negation and modals

Recall that a weaker meaning seems to be accessible in negated modalized sentences, for at least some speakers:

(63) Gali doesn't have to only dance with Tali$_F$

a. #... and, in fact, she has to not dance with Tali.

b. %... and she may even skip dancing with Tali.

This reading is accessible on the second of the two parses of the sentence

(64) [NEG [□ [exh [only gali dances with tali$_F$]]]]

$\Rightarrow$ Gali will dance with Tali / □(Gali dances with Tali)

(65) [NEG [exh [□ [only Gali dances with tali$_F$]]]]

$\Rightarrow$ ◇(Gali dances with Tali)

Where are we at?

We added the assumption that *exh* is presuppositional to our earlier distributed analysis of *only*. This allowed us to capture the remaining facts.

	Plain sentences	Modal/attitude sentences
Positive sentence	p / ◇p	p / □p / ◇p
Negated sentence	p / ~~◇p~~	p / %◇p

Table 4: Observed inherited inference in relation to prejacent p. Green boxes mark what has been discussed & captured so far.

But there are still some outstanding prima facie problematic examples!

Existential presuppositions

Scalar *only*

There are examples where the positive inference of *only* seems to be merely existential – these are the so-called scalar readings of *only* (e.g., Horn 1996, Klinedinst 2005, Beaver & Clark 2008, von Fintel & Iatridou 2007).

(66) a. No faculty member here only graduated from [Cal State]$_F$.
b. John doubts that Bill only graduated from [Cal State]$_F$.
c. Did Bill only graduate from [Cal State]$_F$?

These are compatible with no one graduating from Cal State. Expectation/entailment of graduation from a more prestigous university.

(67) Gali isn't only an assistant$_F$ professor!

$\not\Rightarrow$ Gali is an assistant professor.
$\Rightarrow$ Gali is some kind of professor.

Scalar *only*: incompatible alternatives

Unlike the above alternatives, which form a distributive lattice (*Gali arrived on time, Tali arrived on time, Gali and Tali arrived on time*), the alternatives here do not – they are moreover mutually incompatible!

(68) Gali isn't only an assistant$_F$ professor!

(69) [NEG [exh [only Gali is an assistant$_F$ professor]]]

(70) a. Assertion: $\exists$X: X$\neq$assistant $\wedge$ Gali is an X professor

b. Presup.: $\forall$Y: Y$\neq$assistant $\rightarrow$ $\exists$X: X$\neq$Y $\wedge$ Gali is an X professor

$\Rightarrow$ Gali is some kind of professor ✓

Generalization: We obtain a (merely) existential positive inference (under negation) iff the alternatives are mutually incompatible. (cf. Klinedinst 2005)

Conclusion and outlook

Jack Delano, Pittsburgh, 1941

Thanks!

Selected references i

Alonso-Ovalle, Luis & Aron Hirsch. 2021.
Keep Only Strong.
Semantics and Pragmatics.

Bassi, Itai, Guillermo Del Pinal & Uli Sauerland, Uli. 2021.
Presuppositional exhaustification.
Semantics and Pragmatics 14.

Chierchia, Gennaro. 2013.
Logic in grammar.
Oxford University Press.

Crnič, Luka. 2018.
A note on connected exceptives and approximatives.
Journal of Semantics 35.
https://doi.org/10.1093/jos/ffy011

Selected references ii

von Fintel, Kai. 1993.

Exceptive constructions.

Natural Language Semantics 1.

https://doi.org/10.1007/BF00372560

von Fintel, Kai & Sabine Iatridou. 2007.

Anatomy of a modal construction.

Linguistic Inquiry 38.

https://doi.org/10.1162/ling.2007.38.3.445

Fox, Danny. 2016.

On Why Ignorance Might Be Part of Literal Meaning.

Commentary on Marie-Christine Meyer, MIT Workshop on Exhaustivity. Cambridge, MA.

Gajewski, Jon. 2008.

NPI any and connected exceptive phrases.

Natural Language Semantics 16.

Selected references iii

Gajewski, Jon. 2013.

An analogy between a connected exceptive phrase and polarity items.

In Beyond 'Any' and 'Ever': New Explorations in Negative Polarity Sensitivity. De Gruyter Mouton, Berlin, 262.

Hirsch, Aron. 2016.

An unexceptional semantics for expressions of exception.

In University of Pennsylvania Working Papers in Linguistics, vol. 221.

Mayr, Clemens & Jacopo Romoli. 2016.

A puzzle for theories of redundancy: exhaustification, incrementality, and the notion of local context.

Semantics & Pragmatics 9.

Meyer, Marie-Christine. 2013.

Ignorance and Grammar

PhD Dissertation, MIT.

Vostrikova, Ekatarina. 2021.

Conditional Analysis of Clausal Exceptives.

Natural Language Semantics 29.