PLIN0056 Semantics Research Seminar

Focus

Lecture 9
Minimal sufficiency

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The canonical use of exclusive particles (*only, just, merely,* etc.) is to exclude:

(1) a. **Only** one$_F$ cat is in the room.
b. I will send **just** a letter$_F$ to him.

But they seem to have uses where they include instead, by expressing what is minimally necessary.

(2) a. **Only** one$_F$ cat is enough to make Patrick happy.
b. **Just** a letter$_F$ from her will make my day.

(3) In order to get good cheese, you **only** have to go to the North End.

Both of these cases are called **minimal sufficiency**, but they arguably require different analyses.

- For reasons of time, we will only discuss cases like (2), based on Panizza & Sudo 2020.
- See von Fintel & Iatridou 2007, Alonso-Ovalle & Hirsch 2022, 2023, Crnič 2024, 2025 the other notion of minimal sufficiency.

1 Previous theories

1.1 Grosz 2012

Grosz 2012 postulates that an exclusive particle is ambiguous:

(4) a. ONLY$_1$: the prejacent is true, the alternatives are false
b. ONLY$_2$: most alternatives are higher ranked than the prejacent (according to a salient scale)

ONLY$_2$ is responsible for the minimal sufficiency reading.
Note that the meaning of ONLY$_2$ is similar to the meaning of *even*.

- This is desirable given that the following mean roughly the same thing.

(5) a. Only one$_F$ cat is enough to make Patrick happy.
b. Even one$_F$ cat is enough to make Patrick happy.

- However, the account overgenerates. The following should be able to mean similar things.

(6) a. Only Patrick is in the room.
b. Even Patrick is in the room.

(7) a. Patrick wrote a paper just with a postdoc.
b. Patrick wrote a paper even with a postdoc.

1.2 Coppock & Beaver 2014

Coppock & Beaver 2014 pursue a uniform analysis

- An exclusivity particle presupposes minimality and asserts maximality, with respect to some ordering $\leqslant$ on the current QuD Q.

(8) $[\![\texttt{ONLY}]\!](p) = \lambda w_s\colon \mathrm{MIN}_{\leqslant}(p)(w).\ \mathrm{MAX}_{\leqslant}(p)(w)$
a. $\mathrm{MIN}_{\leqslant}(p) = \lambda w_s.\ \exists q \in Q[q(w) = 1 \wedge p \leqslant q]$
b. $\mathrm{MAX}_{\leqslant}(p) = \lambda w_s.\ \forall q \in Q[q(w) = 1 \rightarrow q \leqslant p]$

- An exclusive reading arises when $\leqslant$ is (contextual) entailment, and *only* takes sentential scope.

According to Coppock & Beaver, a minimal sufficiency reading arises when ONLY takes a non-sentential scope and $\leqslant$ is understood as a scale based on noteworthiness.

(9) only [$_{\mathrm{DP}}$ one$_F$ cat]

- MIN presupposition: $[\![\texttt{one cat}]\!]$ is at most as remarkable as what is 'true' (among $[\![\texttt{one cat}]\!]$, $[\![\texttt{two cats}]\!]$, $[\![\texttt{three cats}]\!]$).
- MAX assertion: everything that is more remarkable is not true. So the assertive meaning of (9) is 'one and only one cat', or more precisely:

(10) $\lambda P_{\langle e,t\rangle}.\lambda w_s.\ \exists x[[\![\texttt{one cat}]\!](w)(x) \wedge \neg[\![\texttt{two cats}]\!](w)(x) \wedge \neg[\![\texttt{three cats}]\!](w)(x) \wedge \cdots \wedge P(x)]$

(11) Only one$_F$ cat is enough to make Patrick happy.

- MIN presupposition: $[\![\texttt{one cat}]\!]$ is at most as remarkable as what is 'true' (among $[\![\texttt{one cat}]\!]$, $[\![\texttt{two cats}]\!]$, $[\![\texttt{three cats}]\!]$).
- MAX assertion: Something that is one cat but not two or more cats is enough to make Patrick happy.

Similarly to Grosz 2012, this account over generates for (12).

(12) Only/Just one$_F$ cat is in the room.

This should be able to mean:

- MIN presupposition: ⟦one cat⟧ is at most as remarkable as what is 'true' (among ⟦one cat⟧, ⟦two cats⟧, ⟦three cats⟧).
- MAX assertion: Something that is one cat but not two or more cats is in the room. (and there might be more cats in the room)

2 Panizza & Sudo 2020

Claim: Minimal sufficiency readings arise with *even*, which can be covert or overt.

Key observation: In all examples of minimal sufficiency readings, *even* can be overtly realized without changing the meaning.

(13) a. (Even) **only** one$_F$ cat makes Patrick happy.
b. (Even) **just** a letter$_F$ from her will make my day.

(14) a. (*Even) **only** one$_F$ cat is in the room.
b. I will (*even) **just** send a letter$_F$ to him.

It's possible to drop both *even* and *only/just*.

(15) (Even) (only) one$_F$ cat is enough to make Patrick happy.

Unsurprisingly, when *even* is dropped, there is a reading without a covert *even* too. Similarly when *only/just* is dropped, there is a reading without exclusivity.

Analysis: *Even* (overt or covert) provides the scalar meaning (cf. Grosz's ONLY$_2$); *just/only* expresses exclusivity at the DP level (cf. Coppock & Beaver 2014). They associate with the same focus.

(16) even [[$_{\text{DP}}$ just one$_F$ cat] makes Patrick happy]

The examples that lack minimal sufficiency readings do not allow the exclusive to take narrow scope. When it takes wide scope, *even* will be incompatible.

(17) a. *even [[$_{\text{DP}}$ just one$_F$ cat] is in the room]
b. #even [just [[$_{\text{DP}}$ one$_F$ cat] is in the room]]
c. just [[$_{\text{DP}}$ one$_F$ cat] is in the room]

We claim that (17b) is contradictory because of the additivity of *even*.

Generally, a minimal sufficiency reading is available in the following configuration (provided that the scalar inference of *even* is coherent):

(18) (even) ... [OP ... [just/only ... α_F

OP can be a modal like *enough*, a non-distributive predicate like *cost*, *everyone*, etc.

(19) a. (Even) just the teapot$_F$ costs £100.

b. (Even) everyone who only solved one$_F$ problem passed.

Distributive predicates don't allow a narrow scope reading of *just/only*.

(20) a. Just the teapot$_F$ costs £1.
b. Just the teapot$_F$ is on the table.

(21) a. $\exists x[[\![\texttt{this teapot}]\!] \sqsubseteq x \wedge [\![\texttt{the cups}]\!] \sqsubseteq x \wedge \cdots [\![\texttt{costs £1}]\!](x)]$
b. *$\exists x[[\![\texttt{this teapot}]\!] \sqsubseteq x \wedge [\![\texttt{the cups}]\!] \sqsubseteq x \wedge \cdots [\![\texttt{on the table}]\!](x)]$

2.1 Deriving minimal sufficiency

(22) even [[$_{\text{DP}}$ just one$_F$ cat] makes Patrick happy]

The adjectival analysis of *one*:

(23) [$\exists$ [one cat]]

The exclusive particle *just* takes scope below $\exists$ (which requires type generalization; see Panizza & Sudo 2020):

(24) $[\![\exists$ $\texttt{just one}_F$ $\texttt{cat}]\!]$
$= \lambda w.\lambda P_{\langle e,t\rangle}.\ \exists x[[\![\texttt{one cat}]\!](x) \wedge \neg[\![\texttt{two cats}]\!](x) \wedge \neg[\![\texttt{three cats}]\!](x) \wedge \cdots \wedge P(x)]$

The VP *makes Patrick happy* is generic and causative, both of which involve modality. Omitting the compositional details, it will mean something like:

(25) There being 'exactly one$_F$ cat' (i.e. (24) applied to a tautological predicate P) causes Patrick's happiness.

Now, even operates on the following alternatives:

(26) a. [[$_{\text{DP}}$ just one$_F$ cat] makes Patrick happy]
b. [[$_{\text{DP}}$ just two$_F$ cats] make Patrick happy]
c. [[$_{\text{DP}}$ just three$_F$ cats] make Patrick happy]
d. [[$_{\text{DP}}$ just four$_F$ cats] make Patrick happy]
⋮

and introduces a scalar presupposition that (27a) is the least noteworthy, and an additivity presupposition that at least one of (27b-) is true + the assertion that (27a) is true.

(27) a. There being exactly one cat causes Patrick's happiness.
b. There being exactly two cats causes Patrick's happiness.
c. There being exactly three cats causes Patrick's happiness.
d. There being exactly four cats causes Patrick's happiness.
⋮

2.2 Blocking minimal sufficiency

If *just* takes scope right below *even*, there'll be a contradiction.

(28) $[\![\texttt{just [one}_F\ \texttt{cat}\ P\texttt{]}]\!]$ = 1 iff

a. $\exists x[[\![\texttt{one cat}]\!](x) \wedge P(x)] \wedge$
b. $\neg\exists y[[\![\texttt{two cats}]\!](y) \wedge P(y) \wedge$
c. $\neg\exists y[[\![\texttt{three cats}]\!](y) \wedge P(y) \wedge$
⋮

When *even* operates on the following alternatives:

(29) a. just [one$_F$ cat P]
b. just [two$_F$ cats P]
c. just [three$_F$ cats P]
⋮

it will assert (29a) is true and introduce an additive presupposition that one of (29b-) is true. But that'll be contradictory.

2.3 Economy condition

Why can't *just/only* take DP-scope with a distributive predicate?

(30) a. Just one$_F$ cat makes Patrick happy.
b. Just one$_F$ cat is in the room?

(31) a. Patrick drank just vodka$_F$.
b. Just Patrick$_F$ drank vodka.

We postulate an economy condition against vacuous uses of *just/only*.

(32) a. [∃ just [one cat]] is in the room.
b. [∃ [one cat]] is in the room.

(33) a. $\exists x[[\![\texttt{one cat}]\!](x) \wedge \neg[\![\texttt{two cats}]\!](x) \wedge \neg[\![\texttt{three cats}]\!](x) \wedge \cdots \wedge [\![\texttt{in the room}]\!](x)]$
b. $\exists x[[\![\texttt{one cat}]\!](x) \wedge \cdots \wedge [\![\texttt{in the room}]\!](x)]$

(34) a. [∃ just [one cat]] makes Patrick happy.
b. [∃ [one cat]] makes Patrick happy.

(35) a. $[\exists x[[\![\texttt{one cat}]\!](x) \wedge \neg[\![\texttt{two cats}]\!](x) \wedge \neg[\![\texttt{three cats}]\!](x)] \Rightarrow_{\text{cause}} [\![\texttt{happy}]\!](\text{Patrick})$
b. $[\exists x[[\![\texttt{one cat}]\!](x)] \Rightarrow_{\text{cause}} [\![\texttt{happy}]\!](\text{Patrick})]$

NB: Non-distributivity is neither a sufficient nor a necessary condition. It just provides one more scope possibility.

(36) (Even) everyone who only solved one$_F$ problem passed.

2.4 Food for thought

Variation among exclusivity particles (cf. Coppock & Beaver 2014: p. 374).

(37) a. **Just/merely/simply** the thought of food makes me hungry.
b. The **mere** thought of food makes me hungry.
c. **?only** the thought of food makes me hungry.
d. **#Exclusively/purely/solely** the thought of food makes me hungry.

(38) a. **Just** one cat will make Patrick happy.
b. **Only** one cat will make Patrick happy. (MS difficult)

(39) a. **Just** one cat is enough to make Patrick happy.
b. **Only** one cat is enough to make Patrick happy.

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