Only as a quantifier

1 The meaning of *only*

Only is "focus-sensitive": its semantics depends on the placement of *focus* elsewhere in the sentence. In other words, *only* "associates" with focus.

(1) a. Alex *only* took the TURTLE to school.
   i. Alex took the turtle to school, and
   ii. Alex did not take the {pig, dog,...} to school.
   b. Alex *only* took the turtle to SCHOOL.
   i. Alex took the turtle to school, and
   ii. Alex did not take the turtle to {soccer practice, his friend's house,...}.

Horn (1969) gives the first semantic description of *only*. Let x be the focused constituent and f be the predicate corresponding to the rest of the sentence, such that $f(x)$ is the prejacent. (Horn did not use these terms at the time.) Then:

(2) **Semantics for *only* from Horn (1969):**
Only(x, f) presupposes $f(x)$ and asserts $\neg\exists y(y \neq x \wedge f(y))$

Three things to note:

- Horn says the (i) meanings in (1) are presuppositions, wheras the (ii) meanings are asserted (truth-conditional). This is motivated by data like (3):

  (3) It's *not* the case that [Alex *only* took the TURTLE to school].
  a. # ...he didn't take the turtle to school.
  b. ✓ ...he also took the PIG to school.

  The negation in (3) only negated the (ii) meaning. So (3) roughly means:

  (3′) i. Alex took the turtle to school, ← *unaffected by the negation!*
  ii. It's not the case that [Alex did not take the {pig, dog,...} to school].
  $\iff$ Alex did take one of the {pig, dog,...} to school.

- The meaning for *only* above is called the "exclusive" use. Horn notes that *only* can also have a "scalar" meaning, that the focused constituent is somehow low relative to its alternatives on some scale. Some uses of *only* are arguably exclusively scalar:

  (4) Marcenia not only married a sailor, she married the love of her life who was a good husband and father.
  `http://www.legacy.com/obituaries/statesman/obituary.aspx?pid=172206183`

  We'll concentrate on the exclusive *only*, with a semantics like in (2).

- The assertion of *only* is given by Horn as "not > exists":

  $\neg\exists y(y \neq x \wedge f(y))$ "there does not exist a y such that $y \neq x$ and $f(y)$"

  This can be rewritten as "every > not":

  $\forall y(y \neq x \rightarrow \neg f(y))$ "for every y, if $y \neq x$, then $f(y)$ is false"

  We can then further rewrite this as:

  $\forall y(f(y) \rightarrow y = x)$ "for every y, if $f(y)$ is true, then $y = x$"

(5) **Some questions we could (should) ask about *only*:**
  a. (The alternatives in (1a) and (1b) are different. Where do they come from?)
  b. Where can *only* appear in a sentence?
  c. Where can the focus be that *only* associates with?
  d. *Only* quantifies over a set of alternatives. What scope does *only* take?

Note: The relation between the placement of focus and pitch accent (in CAPS) is indirect, so here we will annotate the focused constituent with $[...]_F$. Assume a subpart of the F-marked constituent is prosodically prominent.

2 Two *only*s in English

(6) a. John *only* bought $[\text{paneer}]_F$ at Lobo.
  b. John bought *only* $[\text{paneer}]_F$ at Lobo.
  Claim: (6a) and (6b) are semantically equivalent.

Call the *only* in (6a) "adverb *only*" and call the *only* in (6b) "constituent *only*."

We might imagine that *only* in (6a–b) are the same lexical item (maybe an adverb) but somehow linearized in different positions. Rooth (1985, pp 88–94) summarizes three arguments that they are two very different beasts. Let's review two here first, together with one cross-linguistic data point which supports this view.

2.1 What they can associate with

Jackendoff (1972) shows that, given a fixed position of *only*, the possible constituents it can associate with vary greatly between these two types of *only*s:[1]

(7) **Possible associates of adverb *only*:**

a. * JOHN had *only* given his daughter a new bicycle.
b. ✓ GIVEN
c. ✓ HIS
d. ✓ DAUGHTER
e. ✓ NEW
f. ✓ BICYCLE

Some other positions for *only*:

(8) a. ✓ *Only* JOHN had given his daughter a new bicycle.
b. * GIVEN
c. * HIS
d. * DAUGHTER
e. * NEW
f. * BICYCLE

(9) a. * JOHN had given *only* his daughter a new bicycle.
b. * GIVEN
c. ✓ HIS
d. ✓ DAUGHTER
e. * NEW
f. * BICYCLE

(10) a. * JOHN had given his daughter *only* a new bicycle.
b. * GIVEN
c. * HIS
d. * DAUGHTER
e. ✓ NEW
f. ✓ BICYCLE

☞ Adverb *only* can associate with anything it c-commands. Constituent *only* must associate with the constituent it precedes, or a subpart thereof.

[1] Examples here are based on Jackendoff (1972, ex 6.89–6.92) but not exactly what's there. Jackendoff's (1972) explicitly presents the data for *even* and then describes the difference between *even* and *only* later.

2.2 Comparison to adverbs

Rooth (1985, p. 89) notes that adverbs are "marginal when intervening between V and NP, except when set off by intonational breaks."

(11) **Adverbs can't easily come after the main verb:** Rooth (1985, p. 89)
- a. ? John strummed quietly the guitar.
- b. ? John insulted recently his history teacher.
- c. ?* John likes very much himself.
- d. ?* John's mother ridiculed, recently, him.

However, *only* (and *even*) can precede any DP/PP constituent within the VP.

(12) a. John likes *only* [himself]$_F$. (Rooth, 1985, p. 89)
b. John's mother despises *even* [him$_{\text{John}}$]$_F$.

(13) a. John had given his daughter *only* a [new]$_F$ bicycle.
b. * John had given his daughter recently/suddenly/yesterday a [new]$_F$ bicycle.

2.3 A language with two different *only*s

Vietnamese has an adverb *only* and a constituent *only* which are pronounced differently (Hole, 2013, data from mitcho).

(14) Nam *chỉ* mua [cuốn sách]$_F$.
Nam *only*$_1$ bought [CL book]$_F$
'Nam *only* bought [the book]$_F$'

(15) Nam mua *mỗi* [cuốn sách]$_F$.
Nam bought *only*$_2$ [CL book]$_F$
'Nam bought *only* [the book]$_F$' (14 = 15)

In fact, we can use both *only*s at the same time, associating with the same constituent, and we just semantically interpret one *only*.

(16) Nam *chỉ* mua *mỗi* [cuốn sách]$_F$.
Nam *only*$_1$ bought *only*$_2$ [CL book]$_F$
'Nam bought *only* [the book]$_F$'

Interesting question: why can't we have both *only*s for a single associate in English?

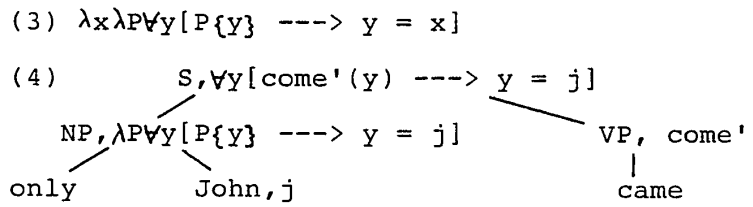
(17) * Nam *only* bought *only* [the book]$_F$.
Intended: Nam *only* bought [the book]$_F$.
(It's possible that this sentence has another, grammatical parse.)

We'll return to this question later.

3 Rooth's (1985) proposal for constituent *only*

Constituent *only* forms a constituent with the XP it precedes. Here this is the DP "John." Call this an "*only*-phrase."

(18) Rooth (1985, p. 28):



The semantics should look pretty familiar. With types:

(19) $[\![only]\!]_{\langle e,\langle\langle e,t\rangle,t\rangle\rangle} = \lambda x_e.\lambda P_{\langle e,t\rangle}.\forall y_e.\,(P(y) \rightarrow y = x)$

A few things to notice:

- This formulation looks different than Horn's, but it is equivalent, as we saw above. (The prejacent presupposition is not illustrated here.)
- This is not the normal type of a quantificational determiner ($\langle\langle e,t\rangle,\langle\langle e,t\rangle,t\rangle\rangle$), but close. This corresponds to the fact that *only* seems to take a DP (here assumed to be type e) as its sister, rather than an NP ($\langle e,t\rangle$).
  - Something would have to change if we wanted to take a DP of type $\langle\langle e,t\rangle,t\rangle$.
  - Something would have to change if we wanted to take a PP of type ???.
- This works when *only*'s sister is the F-marked constituent. But it's not sensitive to the placement of F-marking *within* the sister of *only*.

  (20) **The choice of focus within the sister of *only* matters too:**
  a. [*Only* [$_{DP}$ [Mary's]$_F$ sister]] likes John.
  b. [*Only* [$_{DP}$ Mary's [sister]$_F$]] likes John.
- Non-subject *only*-phrases will require QR. For example:

  (21) John likes [*only* [Mary]$_F$].

4 Taglicht (1984) ambiguities

As noted in Rooth, Taglicht (1984) notes that constituent *only* in non-subject position introduces scope ambiguities:

(22) I knew (that) he had learnt [*only* [Spanish]$_F$] (Taglicht, 1984, p. 150)

a. knew > *only*:
I knew he *hadn't* learnt any other language.

b. *only* > knew:
I *didn't* know he had learnt any other language.

(23) We are required to study [*only* [syntax]$_F$]. (Rooth, 1985, p. 90)

a. required > *only*:
We are required to *not* study {semantics, phonology,...}.
$\Longleftrightarrow$ we are not allowed to study {semantics, phonology,...}.

b. *only* > required:
We are *not* required to not study {semantics, phonology,...}.

Recall that quantifiers could theoretically QR to different heights (always adjoining to a propositional node—type t) and that this could be the source of scope ambiguities. We can model the ambiguities above in this way.

Two things to note:

- For regular quantifiers, it is generally believed that QR is bound by finite clause boundaries.

  (24) * A different student thought/knew [$_{CP}$ that he had studied every language].

  (25) ✓ A different student is required [$_{\text{nonfinite}}$ to study every language].

  If the wide-scope reading of *only* in (22) is due to QR of the *only*-phrase, this QR would be exceptional in some way.

- The ambiguities above (and other examples given by Taglicht and Rooth) all have an *only*-phrase in non-subject position. Bayer (1996, pp 59–61) claims that *only* on subjects of finite clauses do not lead to these types of ambiguities, and instead only have surface scope.

  (26) ***Only* on subjects of finite clause embeddings do not take wide scope:**
  They believe [(that) *only* [John]$_F$ is stupid].

  a. ✓ believe > *only*:
  They believe that {Mary, Sue,...} are *not* stupid.

  b. * *only* > believe:
  They do not believe that {Mary, Sue,...} are stupid.

An interesting possibility is that this is because an *only*-phrase in subject position does not need to QR for type reasons, *therefore it cannot QR at all*. However, this doesn't seem to be the general solution. *Only* on subjects of nonfinite clauses (ECM embeddings and small clauses), which (probably) don't have to QR for type reasons, is able to take wide scope:

(27) ***Only* on subjects of nonfinite embeddings can take wide scope:** (Bayer, 1996, p. 60)
   a. They find [*only* [John]$_F$ stupid].
   b. They believe [*only* [John]$_F$ to be stupid].

(Bayer (1996) attributes this difference to the ECP.)

5 Back to adverb *only*

As noted by Taglicht (1984); Rooth (1985) and others, in contrast to constituent *only*, adverb *only* always takes surface scope:[2]

(28) a. I knew (that) he had *only* learnt [Spanish]$_F$. knew > *only*
   b. I *only* knew (that) he had learnt [Spanish]$_F$. *only* > knew

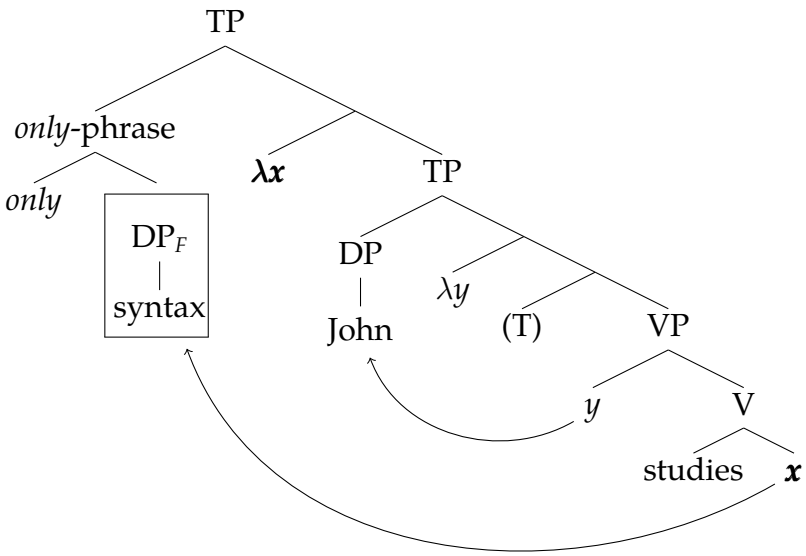
(29) a. We are required to *only* study [syntax]$_F$. required > *only*
   b. We are *only* required to study [syntax]$_F$. *only* > required

One approach to adverb *only* is to *turn it into a constituent only*:

(30) **Rooth's (1985) "scope theory":**[3]
Only is always a two-place operator, as in (19). *Only* covertly moves the F-marked constituent to become its *first argument*. The movement will introduce a lambda-binder on the sister of the *only*-phrase:

[2]Except in environments where negation systematically takes non-surface scope with respect to certain modals. Adverb *only* patterns with negation in these cases. For example, "John can *only* speak [Spanish]$_F$" = "John cannot speak other languages" (not > can).

[3]Recently adopted as part of the proposal in Wagner (2006).



- A precursor to this idea is Kuroda (1965), who suggests the opposite: that *only* is always base-generated as a constituent *only* and then optionally moves (an attachment transformation), fixing its scope.
- Bayer (1996, p. 79) entertains an interesting idea which could be thought of as a modern Copy Theory treatment of Kuroda's attachment transformation: *only* is base-generated as a constituent *only*, then the *only*-phrase moves to its LF interpreted position via copying. Then there is an option (at PF?) to interpret the *only* in the higher copy but the DP in the lower copy.

All of these approaches—Rooth's (1985) scope theory, Kuroda's (1965) attachment transformation, and Bayer's (1996) Copy Theory veresion—have the virtue of explaining why a sentence with both an adverb *only* and constituent *only* associating with the same constituent (17) is impossible.

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