A PRESUPPOSITIONAL ANALYSIS OF *ONLY* AND *EVEN*

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For the benefit of all those who missed the semantics festival at Columbus this year and therefore still don't know what a presupposition is, we shall begin by differentiating presupposition from entailment, although the relevance of this distinction will not become apparent for some time. Austin attributes the anomaly of

(1) a. *All John's children are bald, but John has no children.
    b. *All the guests are French, but some of them aren't.

to violation of presupposition and violation of entailment respectively (Austin 1958). In the (a) but not the (b) sentence, the left conjunct can have a truth value only if the right conjunct does not hold. Formalizing Austin's criteria, we impose the following convention:

(2) a. If $(S \rightarrow S')$ and $(-S \rightarrow S')$, then S *presupposes* S'.
    b. If $(S \rightarrow S')$ and $(-S' \rightarrow -S)$, then S *entails* S'.
    (to be read "If from S we can conclude S'...")

An elaboration of (2a) is the notion 'presupposition of a question', defined by Katz & Postal (1964) as "a condition that the asker of a question assumes will be accepted by anyone who tries to answer it". This is illustrated by the question-presupposition pairs

(3) a.	Who saw Harry?	Someone saw Harry.
b.	Where did Harry go?	Harry went somewhere.
c.	When did Harry go?	Harry went sometime.
d.	Why did Harry go?	Harry went for some reason.

The set of possible responses to each of the questions in (3) can then be defined as the set of permissible existential instantiations of the appropriate presupposition. A typical instantiation in the case of (3a) might be *John saw Harry*.

Presuppositions are thereby distinguished from assertions by their invariance under both question and negation.

In a recent paper, Lakoff (1968) reiterates the position followed by McCawley (in a 1968 lecture at UCLA), Kuroda (1966), and generations of logicians since Peirce, the position that

(4) Only Muriel voted for Hubert.

has as its source

(5) Muriel voted for Hubert and no one other than Muriel voted for Hubert.

(4) is derived from (5) through the intermediary stage

(6) Muriel and only Muriel voted for Hubert.

Closer inspection, however, reveals that the conjuncts of (5), although related to (4), are related as presupposition and assertion respectively. (6) *is* a full paraphrase of (5), as Lakoff indicates, but (4) is not. Consider the signification of the negations in (7), which I take to be mutual paraphrases:

(7) a. It's not true that only Muriel voted for Hubert.
    b. Not only Muriel voted for Hubert.

Now consider the natural continuation of (7), or the form of a negative response to (8)

(8) Did only Muriel vote for Hubert? No,...

Possible and impossible candidates for such a continuation include

(9) a. Lyndon did too.
    b. Somebody else did as well, but I forget who.
    c. *She didn't.
    d. *The election never took place.

(9c) is as inappropriate a continuation of a discourse begun by (7) or (8) as is the old standby (9d). That is to say, we are left with the uneasy feeling in the pit of our stomach which is symptomatic of the 'unhappiness' produced by a violated presupposition, as described by Austin, Katz & Postal, and others.

Limiting our attention for the moment to the *only* which takes NP scope, we can describe *only* as a two-place predicate taking as arguments the term within its scope and some proposition containing that term:

(10) Only $(x{=}a, Fx)$
    P: Fx
    A: $-(\exists y)(y \neq x \ \&\ Fy)$

In the case of (4), the appropriate substitutions result in

(11) P: $V(m,h)$
    A: $-(\exists y)(y \neq m \ \&\ V(y,h))$

As indicated by (11), the sentence in (4) presupposes that Muriel voted for Hubert and asserts that

(12) No one other than Muriel voted for Hubert.

and, consequently, any denial of (4) will be an instantiation of (13)

(13) Someone other than Muriel voted for Hubert.

which is the negation of (12). Just such an instantiation is given by the legitimate continuation (9a) above.

To take another example, the sentences

(14) a. Only Lucifer pities himself.
b. Only Lucifer pities Lucifer.
c. Lucifer pities only $\left\{\begin{array}{l}\text{himself}\\ \text{Lucifer}\end{array}\right\}$.

share the presupposition that Lucifer pities Lucifer--P(L,L)--but assert

(15) a. $-(\exists y)(y \neq L \ \& \ P(y,y))$
b. $-(\exists y)(y \neq L \ \& \ P(y,L))$
c. $-(\exists y)(y \neq L \ \& \ P(L,y))$

respectively.

Contrary to the categorical unacceptability of sentences like

(16) Only John eats only rice.

which is alleged by Kuroda (1966), many English speakers accept two occurrences of *only* with overlapping scope within the same sentence. For these speakers, the presupposition of (16) is given by

(17) John eats only rice.

which, in turn, is composed of

(18) P: $E(j,r)$
A: $-(\exists y)(y \neq r \ \& \ E(j,y))$

The assertion of (16), on the other hand, is found to be

(19) $-(\exists z)(z \neq j \ \& \ -(\exists y)(y \neq r \ \& \ E(z,y)))$
Nobody but John eats $\left\{\begin{array}{l}\text{only rice.}\\ \text{nothing but rice.}\end{array}\right.$

That the first *only* in (16) must be outermost is apparently a function of topicalization rather than of any deep semantic consideration, as indicated by the facts in (20):

(20) a. It's only John who eats only rice.
b. *It's only rice that only John eats.
c. *It's only by John that only rice is eaten.
d. It's only rice that's eaten by only John.

Consider now the following sentences:

(21) a. Only Muriel voted for Hubert.
b. Muriel only voted for Hubert.
c. Muriel voted $\left\{\begin{array}{l}\text{only for}\\ \text{for only}\end{array}\right\}$ Hubert.

The evident ambiguity of (21b) disappears if stress is indicated. Spoken with a normal contour, (21b) is a paraphrase of (21c) and

is in fact derived from it, by an optional adverb-movement rule of the type discussed in Kuroda (1966). If the verb is stressed, the resultant reading has the sense

(22) Muriel only *voted* for Hubert, she didn't campaign for him.

There is an additional possibility, brought out by VP focus:

(23) Muriel only *voted for Hubert*, she didn't do the laundry.

The use of *only* with a predicate as scope (two-place in (22) and three-place in (23)) differs contentively from the term-scope *only* we have considered so far. To represent it, we employ "variable predicates" which may be quantified, as permitted by second-order logic, and tentatively adopt the formula

(24) Only (F, Fx)
P: Fx
A: $-(\exists G)(G \neq F \ \& \ Gx)$

There is a sense in which the *only* of (24) involves the notion of expectation rather than the mere exclusion proposed by the above formulation. Assuming that there is some set E of scales of degree of strength such that each member $E_i \in E$ is a two-place relation which partially orders a (semantic) class of predicates, we can rewrite (24) in the form

(25) Only (F, Fx, $E_i \in E$)
P: (i) Fx
(ii) $(\exists G)(G \neq F \ \& \ E_i(G,F))$
A: $-(\exists G)(G \neq F \ \& \ E_i(G,F) \ \& \ Gx)$

(25) describes this *only* as a three-place predicate taking as arguments a predicate, a proposition containing that predicate, and a scale of degree. This predicate-scope *only* is furthermore purported to *presuppose* that the property *F* hold for some object *x*, and that there is another property *G* which is ranked "stronger" than *F* on the scale E_i; it *asserts* that no such property *G* holds for *x*. The availability of such scales explains why both (22) and

(26) Muriel only *campaigned* for Hubert, she didn't vote for him.

are far better than (23), at least in isolation. Similarly, the existence of the relations

(27) a. E_{love}(love,like)
b. E_{loathe}(hate,dislike)

and the nonexistence of the corresponding converse relations (e.g., any scale which ranks *like* as stronger than *love*) explains the facts of (28):

(28) a. John only likes rice (...he doesn't love it).
b. John only dislikes rice (...he doesn't hate it).
c. ?John only eats rice (...?).
d. *John only loves rice, he doesn't like it.
e. *John only hates rice, he doesn't dislike it.

Scales, unfortunately, can overlap, as in

(29) a. Brigitte Bardot is only pretty,
b. (...she isn't beautiful).
c. (...she isn't intelligent).

The claim developed here is that the two possible continuations indicated in (29) define a true ambiguity in (29a), rather than merely a vagueness of the only clause. It is uncertain whether any evidence more powerful than this intuition can be applied to such a question. FN

Note, incidentally, that the sentences in (21) have related forms

(30) a. Only Muriel voted for her husband.
b. Muriel only voted for her husband.
c. Muriel voted {only for / for only} her husband.

Given that Hubert = Muriel's husband, (30b,c) are paraphrases of (21b,c) respectively. This is not the case in the (a) sentences: a possible reading, and for me the unique reading, of (30a) is with a variable index on her, the reading paraphrasable as

(31) Muriel was the only one who voted for her (own) husband.

(cf. the contrast of (14a) and (14b) alongside the synonymy of the sentences in (14c) above). Turning now to (32), which can be decomposed like (16) and similar two-only sentences, consider

(32) Only Muriel voted only for her husband.
P: Muriel voted only for her husband.
A: No one other than Muriel voted for only her husband.

It is evident that the variable-index interpretation of the pronoun in (32) cannot follow from the presupposition of (32), since the equivalent (30c) permits only constant index, but must rather follow from the variable-index interpretation of the assertion.

Returning to the only with term-scope in un-only-embedded sentences, we shall consider the cases in which it precedes a cardinal number and thus forms a quantifier. The sentence

(33) I saw him only twice.

is derived from the pair

(34) P: I saw him (at least) two times.
A: I saw him no more than two times.

This is shown by our familiar 'possible discourse' test:

(35) a. {Didn't / Did} you only see him twice?
b. ?No, I didn't see him that often.
?No, I saw him once.
c. No, I saw him more often than that.
No, I saw him three (four, five,...) times.

Similarly,

(36) Only two girls (in the class) are clever.

asserts that the number of clever girls (in the class) does not exceed two, while presupposing that this number is at least two (if we ignore the notion of expectation in (36): 'surprisingly, no more than two').

Partee (1968) and Lakoff (1968), in the course of their dispute, discuss a relation obtaining between certain classes of sentences involving the effect of quantifiers and conjunction reduction upon entailment. (The indulgent reader will please recall condition (2b) above.) Consider the cases represented by the following:

(37) a. All girls are (both) clever and seductive.
b. Many girls are (both) clever and seductive.
c. Few girls are (both) clever and seductive.

(38) a. All girls are clever and all girls are seductive.
b. Many girls are clever and many girls are seductive.
c. Few girls are clever and few girls are seductive.

The crucial point to note here is that while the entailment proceeds in both directions between the (a) sentences--(37a) may be related to (38a) by an equivalence relation--this is not true for the others. In fact, as revealed by inspection of the appropriate truth conditions, (37b) entails (38b), but (38c) entails (37c). Let us formulate these facts about entailment and quantifiers by the rules

(39) a. $(x)(Fx \,\&\, Gx) \leftrightarrow (x)Fx \,\&\, (x)Gx$
b. $(\underline{M}x)(Fx \,\&\, Gx) \rightarrow (\underline{M}x)Fx \,\&\, (\underline{M}x)Gx$
c. $(\underline{L}x)(Fx \,\&\, Gx) \leftarrow (\underline{L}x)Fx \,\&\, (\underline{L}x)Gx$

While those quantifiers which are characterized by the bidirectional entailment of (39a) are indeed those which are the natural language equivalents to the universal quantifier of symbolic logic (for the purposes of these sentences), there is no representation provided by logic for the unidirectional entailment in (b) and (c), here marked by the 'super-quantifiers' M and L respectively. English quantifiers which can be assigned to these universal classes include

(40) a. (x): all, every, each
b. ($\underline{M}$x): many, a few, some, most, several, at least n, more than n
c. ($\underline{L}$x): few, not many, no/none, at most n, less than n

As Lakoff notes, *a few* has positive connotation and thus, unlike *few*, is subsumed under (40b).

Substituting cardinal numbers into the sentences of (37) and (38), we obtain a curious set of correspondences:

(41) a. $\left.\begin{array}{l}(N^{+}x)(Fx \ \& \ Gx) \\ (N^{=}x)(Fx \ \& \ Gx)\end{array}\right\} \dashrightarrow (N^{+}x)Fx \ \& \ (N^{+}x)Gx$ (a., b.)

c. $(N^{-}x)(Fx \ \& \ Gx) \not\dashrightarrow$

(42) a. $(N^{+}x)Fx \ \& \ (N^{+}x)Gx \not\dashrightarrow$

b., c. $\left.\begin{array}{l}(N^{=}x)Fx \ \& \ (N^{=}x)Gx \\ (N^{-}x)Fx \ \& \ (N^{-}x)Gx\end{array}\right\} \dashrightarrow (N^{-}x)(Fx \ \& \ Gx)$

The quantifier symbols in the (a), (b), and (c) sentences above are to be read "*n* or more (at least *n*)", "exactly *n*", and "*n* or less (at most *n*)" respectively. As seen by the above, cardinal numbers as quantifiers (interpreted in the "exactly *n*" sense) fall into none of the classes of (40), but behave like *M*-class quantifiers in (41) and *L*-class quantifiers in (42). As thereby predicted, neither sentence of the pair

(43) a. (Exactly) 13 girls are both clever and seductive.
b. (Exactly) 13 girls are clever and (exactly) 13 girls are seductive.

entails the other. (43a) does entail (44a), however, and (43b) entails (44b):

(44) a. At least 13 girls are clever and at least 13 girls are seductive.
b. At most 13 girls are both clever and seductive.

But now consider

(45) a. Only 13 girls are both clever and seductive.
b. Only 13 girls are clever and only 13 girls are seductive.

As in (43), no entailment relation obtains in either direction between the (a) and (b) sentences; moreover, (45b)--like (43b)--strictly entails (44b). But (45a)--unlike (43a)--does *not* entail (44a), since (46b), the negation of the former, does not follow from (46a), the negation of the latter:

(46) a. Fewer than 13 girls are clever or fewer than 13 girls are seductive (or both).
b. More than 13 girls are both clever and seductive.

This happenstance results ultimately from the fact that in (47)

(47) a. Exactly 13...
b. Only 13...
c. At least 13...
d. At most 13...

(a) asserts both (c) and (d), whereas (b) *presupposes* (c) and *asserts* (d).

Further (and perhaps less murky) evidence of the 'negative assertion' of *only* is the reversing effect of *only* combined with the *M*-class quantifiers of (40b). *Only a few*, for example, behaves like an *L*-class quantifier (e.g. *few*) rather than an *M*-class quantifier (e.g. *a few*), as indicated by the direction of entailment in the sentences

(48) a. Only a few girls are clever and only a few girls are seductive. $\dashrightarrow$
b. Only a few girls are both clever and seductive.

This fact, too, follows from the presuppositional analysis of *only*, together with the claim that entailment relations are determined by assertions alone.

Turning now to an even more intractable problem, consider the following sentences and their proposed representations:

(49)	a.	Only Muriel voted for Hubert.	Only(m,V(m,h))
	b.	Not only Muriel voted for Hubert.	-Only(m,V(m,h))
(50)	a.	Even Muriel voted for Hubert.	Even(m,V(m,h))
	b.	Not even Muriel voted for Hubert.	Even(m,-V(m,h))

The superficial similarity between (49) and (50) conceals the fact that while (49b) *does* negate (49a) and is quite distinct from

(51) Only Muriel didn't vote for Hubert. Only(m,-V(m,h))

(50b) is *not* a true negation of (50a), but is instead derived from

(52) Even Muriel didn't vote for Hubert. Even(m,-V(m,h))

by an optional *neg*-transportation rule. What, then, *is* the negation of (50a)? As indicated by such discourses as

(53) a. $\left\{\begin{array}{l}\text{I understand even Muriel voted for Hubert.} \\ \text{Did even Muriel vote for Hubert?}\end{array}\right.$
b. No, only Lyndon and Hubert himself did.
No, she didn't.
c. *No, not even she did.

the negation of such sentences merely denies the proposition under question while maintaining the presupposition. These facts suggest an analysis of *even*:

(54) Even (x=a,Fx)
P: $(\exists y)(y \neq x \ \& \ Fy)$
A: Fx

Why the combination of the presupposition in (54) with the assertion *-Fx* has no surface realization as such, but must emerge as something like

(55) No, (others did but...) Muriel didn't.

is totally unclear (to me).

Comparison of (54) with the analysis of only proposed in (10) above discloses that even (like also) asserts what only presupposes and presupposes the negation of what only asserts. This accounts for the data in (56)-(59):

(56) Muriel, and $\left\{\begin{array}{l}\text{only}\\ \text{*even}\\ \text{*also}\end{array}\right\}$ Muriel...

(57) If and $\left\{\begin{array}{l}\text{only}\\ \text{*even}\\ \text{*also}\end{array}\right\}$ if...

(58) Muriel is the $\left\{\begin{array}{l}\text{only}\\ \text{*even}\\ \text{*also}\end{array}\right\}$ one who...

(59) It's $\left\{\begin{array}{l}\text{only}\\ \text{*even}\\ \text{*also}\end{array}\right\}$ Muriel who...

As pointed out by Bruce Fraser (presonal communication), the natural explanation for the facts of (59) is that clefting, like only, specifies uniqueness, while even and also presupposes non-uniqueness and thus cannot be clefted.

If anyone besides me accepts the judgments in (60)

(60) a. $\left\{\begin{array}{l}\text{Only}\\ \text{Even}\end{array}\right\}$ John only eats rice.

b. *$\left\{\begin{array}{l}\text{Only}\\ \text{Even}\end{array}\right\}$ John even eats rice.

he is welcome to suggest an explanation for them. I find that (60), and in fact all sentences with two evens, are far worse than they appear, as contrasted with two-only sentences, which are not. This is the phenomenon which confronts us when we try to find a reading for either of the attested sentences

(61) This has troubled more linguists for a longer time than any other problem.

(62) Wilt didn't show me anything that he can't do.

The difference between also and even is, of course, the notion of expectation presupposed by the latter, as discussed in Fillmore (1965). This treatment of even will not be undertaken here, the title of the paper notwithstanding, but it would be handled substantially like the expectational only already discussed.

Despite the limitations of this presentation, I trust that I haven't shown you anything that a presuppositional approach to only and even can't do.

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