

Polarity phenomena and even

1. *Even* in negative polarity items

Overt *even* in polarity sensitive indefinites

In some languages, a morpheme that in other contexts can mean *even* combines with an indefinite or indeterminate form into a negative polarity item.

- (1) a. Kooi aayaa. [Hindi]
someone came
b. * [Kooi bhii] aayaa.
someone even came
c. [Kooi bhii] **nahiiN** aayaa.
someone even not came
'No one came.'
- (2) a. [Dare -ka -ga] ki -ta. [Japanese]
some Indef Nom come Pst
b. * [Dare -mo] ki -ta.
someone even come Pst
c. [Dare -mo] ko- **-nakat** -ta.
someone even come Neg Pst
'No one came.'
- (3) a. [amwu-kay -ka] o -ass -ta. [Korean]
some Indef Nom come Pst Dec
b. * [amwu -to] o -ass -ta.
some even come Pst Dec
c. [amwu -to] **an** o -ass -ta.
some even not come Pst Dec
'No one came.'

Even ONE

- (4) a. ONE student attended.
b. # Even ONE student attended.
c. Not even ONE student attended.
- (5) a. I broke ONE glass
b. # I even broke ONE glass.
c. I didn't even break ONE glass.

Implicit *even* in English strong negative polarity items

In English, adding *even* to certain negative polarity items has no noticeable effect on interpretation, suggesting that these NPIs have a silent *even* built in (Schmerling 1971).

- (6) a. Sam didn't (even) lift a finger to help us.
- b. None of us knows (even) the first thing about mutual funds.
- c. Sam didn't have (even) a single bite.
- d. No one (even) spent so much as a dime.

Rullmann (1996) calls such negative polarity items *even-NPIs*. Not all NPIs are *even-NPIs*. In particular, *even* cannot be added to polarity sensitive *any*.

- (7) a. Sam didn't (**even*) do anything to help us.
- b. None of us knows (**even*)anything about sonorants.
- c. Sam didn't have (**even*) any food.
- d. No one (**even*) payed any money.

Even-NPIs consistently differ from *any-NPIs* in at least two more interesting ways.

Even-NPIs in questions

First, *even-NPIs* but not *any-NPIs* create a negative bias in *yes/no*-questions (e.g. Ladusaw 1979, Heim 1984, Guerzoni 2003).

- (8) a. Did Charlie have a single bite of the salad?
- b. Did Charlie have any salad?

Even-NPIs in restrictive clauses

Second, in certain cases *even-NPIs* require that their host sentences express non-accidental generalizations (Linebarger 1980, Heim 1984, Guerzoni 2003)

- (9) a. Every student who had a single bite of the salad got sick.
- b. !! Every student who had a single bite of the salad is taller than me.

In contrast, *any-NPIs* are said not to introduce such a requirement.

- (10)a. Every student who had any of the salad got sick.
- b. Every student who had any of the salad is taller than me.

2. What *even* might mean

Association with focus

As noted in Jackendoff (1972), the particle *even* (like *only* and *too*) associates with focus, that is, its meaning contribution is sensitive to stress placement.

- (11)a. Sam even knows ITALIAN.
- b. SAM even knows Italian.

Jackendoff suggests that stress is reflected as F(ocus) marking at the syntactic level that feeds semantic interpretation.

- (12)a. Sam knows ITALIAN.
- b. SAM knows Italian.

- (13)a. [*Sam knows [Italian]_F*]
- b. [*[Sam]_F knows Italian*]

Rooth (1985) proposes that apart from its normal semantic value, every sentence has a special focus value. F marking affects focus values but not ordinary semantic values.

- (14)a. [[*Sam knows [Italian]_F*]] = that Sam knows Italian
- b. [[*[Sam]_F knows Italian*]] = that Sam knows Italian

- (15)a. [[*Sam knows [Italian]_F*]]^f =
{that Sam knows **Romanian**, that Sam knows **French**}
- b. [[*[Sam]_F knows Italian*]]^f =
{that **Theodore** knows Italian, that **Vincent** knows Italian}

Even as a presupposition trigger

In the sentence *Sam even knows ITALIAN*, *even* seems to contribute the suggestion that Italian is a hard language to learn. The sentence *SAM even knows Italian* seems to imply that Sam is not very good at languages.

These implications are preserved under embedding, suggesting that they are presupposed, rather than asserted.

- (16) a. It is possible that the cocktail bar in Calhoun Hall is open today.
- b. Unless the cocktail bar in Calhoun Hall is open today, we'll have tea.
- c. Is it true that the cocktail bar in Calhoun Hall is open today?

- (17) a. It is possible that Sam even knows ITALIAN.
b. Unless Sam even knows ITALIAN, they won't hire him.
c. Is it true that Sam even knows ITALIAN?

Existential and scalar presupposition

Karttunen and Peters (1979) suggest that *even* in general triggers a presupposition that can be thought of as having two different components. (Karttunen and Peters use the term “conventional implicature” rather than “presupposition”. The difference between the two notions is small though, and we can safely ignore it here.) They dub these *existential* presupposition and *scalar* presupposition, respectively.

- (18) *even* ϕ

Existential presupposition

that at least one proposition in $[[\phi]]^f$ is true

Scalar presupposition

that $[[\phi]]$ is less likely than any element of $[[\phi]]^f$

The following examples apply this rule to the particular cases considered above.

- (19) *even* [Sam knows [Italian]_F]

Existential presupposition

that Sam knows Romanian or French

Scalar presupposition

that Sam is less likely to know Italian than Romanian or French

- (20) *even* [[Sam]_F knows Italian]

Existential presupposition

that Vincent or Theodore knows Italian.

Scalar presupposition

that Sam is less likely to know Italian than Theodore or Vincent is

3. Lahirian explanation of even ONE cases

- (21)a. # I even broke ONE glass.
b. I didn't even break ONE glass.

The bad case

(22) *even* [*I broke* [*one*]_F *glass*]

Scalar presupposition

that I am less likely to have broken one glass than two or three glasses

(23) [[*I broke* [*one*]_F *glass*]]^f =
{that I broke **two** glasses, that I broke **three** glasses}

If numerals are taken to have *at least* interpretations, then this scalar presupposition is inconsistent. This is because in that case the ordinary semantic value of the scope of *even* is entailed by each of the alternatives and because likelihood and entailment relate as follows.

(24) **First likelihood principle**

If *q* is entailed by *p*, then *q* is at least as likely as *p*.

It is apparent, for example, that the likelihood of rain fall tomorrow is at least as great as the likelihood of heavy rain fall.

- (25)a. There will be rain fall tomorrow.
b. There will be heavy rain fall tomorrow.

The good case

It can be seen that in the negation example, the inconsistency does not arise, provided that *even* is assigned widest scope.

(26) [[*I didn't break* [*one*]_F *glass*]]^f =
{that I didn't break **two** glasses, that I didn't break **three** glasses}

(27) *even* [*not* [*I broke* [*one*]_F *glass*]]

Scalar presupposition

that I am less likely not to have broken one glass than not to have broken two or not to have broken three glasses

(28) **Second likelihood principle**

If *p* is less likely than *q*, then the negation of *p* is more likely than the negation of *q*.

For example, if John is less likely to have been present than Mary, then John is also more likely to have been absent than Mary. This principle allows us to rewrite the scalar presupposition of the negative *even* sentence in a more transparent way.

(29) *even [not [I broke [one]_F glass]]*

Scalar presupposition

that I am more likely to have broken one glass than two or three glasses

This scalar presupposition is not inconsistent. In fact, assuming the *at least* interpretation of numerals, the first likelihood principle almost makes it a tautology.

Entailment?

What if we didn't believe in the *at least* interpretation of numerals? If we take *one* to mean *exactly one* and likewise for *two* and *three*, then we can no longer say that the proposition expressed by the scope of *even* is entailed by its alternatives. And so we will no longer predict the bad case (21)a to carry an inconsistent presupposition.

The presupposition may still be unexpected though. After all, one could argue that breaking exactly one glass is usually assumed to be more, not less, likely than breaking exactly two or exactly three. Is this background assumption about breaking glasses sufficient to account for the judgment on (21)a?

4. Explaining *even*-NPIs in restrictive clauses

Heim (1984) suggests that the scalar presupposition for *even* proposed by Karttunen and Karttunen (1979) provides a plausible explanation for the behavior of *even*-NPIs in restrictive clauses.

- (30)a. Every student who had a single bite of the salad got sick.
b. !! Every student who had a single bite of the salad is taller than me.

A possible account

Suppose again that numerals have an exactly interpretation. Suppose also that a single means *exactly one*. And suppose that *even* takes maximal scope.

- (31)a. $[[\text{every student who had [a single]}_F \text{ bite of the salad got sick}]]^f =$
{that every student who had **two** bites of the salad got sick,
that every student who had **three** bites of the salad got sick}
b. $[[\text{every student who had [a single]}_F \text{ bite of the salad is taller than me}]]^f =$
{that every student who had **two** bites of the salad is taller than me,
that every student who had **three** bites of the salad is taller than me}

The scalar presupposition for the *sick* case then says that students who had one bite of the salad are less likely to have gotten sick than those who had two or three bites. This presupposition is easy to satisfy or accommodate. Much less plausibly, the scalar presupposition for the *tall* case says that students who had one bite of the salad are

less likely to be taller than me than those who had two or three bites. This looks like a plausible explanation of the contrast in (30).

Entailment?

But what if we assigned *a single* and the numerals *at least* interpretations? In that case, the proposition expressed by the scope of *even* entails each of its alternatives. The first likelihood principle then tells us that the proposition expressed by the scope of *even* is at most as likely as each of its alternatives. The scalar presupposition that *even* is predicted to contribute is only slightly stronger than that. In that case, is this scalar presupposition sufficient to derive the contrast in (30)? (See Guerzoni 2003: 95f for discussion).

5. A puzzle about negative *even* sentences

We now turn to examples where *even* is not associated with a negative polarity item or a numeral expression.

Horn (1969) observes an interesting contrast between the “factive” presupposition triggered by *only* and the presupposition triggered by *even*. In negative *only*-sentences the factive presupposition of their positive counterparts is preserved.

- (32)a. Sam only knows ITALIAN.
presupposes: Sam knows Italian
b. Sam doesn't only know ITALIAN.
presupposes: Sam knows Italian

- (33) a. *only* [Sam know [Italian]_F]
b. *not* [only [Sam know [Italian]_F]]

By contrast, the presupposition carried by a negative *even*-sentence seems to be the reverse of that carried by its positive counterpart.

- (34)a. Sam even knows ITALIAN.
presupposes (roughly): Italian is hard.
b. Sam doesn't even know ITALIAN.
presupposes (roughly): Italian is easy.

- (35) a. *even* [Sam know [Italian]_F]
b.* *not* [even [Sam know [Italian]_F]]

The observation that the presupposition triggered by *even* in positive sentences is unavailable in negative sentence indicates that *even* cannot be interpreted in the scope of clausemate negation. Apparently, *even* is a positive polarity item.

6. Two analyses

This leaves the question how the actual interpretation of negative even sentence is derived. There are two different accounts offered in the literature. Rooth (1985) posits a negative polarity item *even_N* whose presupposition is the reverse of that triggered by normal *even*.

(36) *even_N* ϕ

Existential presupposition

that at least one proposition in $[[\phi]]^f$ is false

Scalar presupposition

that $[[\phi]]$ is more likely than any element of $[[\phi]]^f$

(37) *not [even_N [Sam know [Italian]_F]]*

Existential presupposition

that Sam doesn't know Romanian or doesn't know French

Scalar presupposition

that Sam is more likely to know Italian than Romanian or French.

Assuming just one *even*, Karttunen and Peters (1979) propose instead that *even* can scope over clausemate negation.

(38) *even [not [Sam know [Italian]_F]]*

Existential presupposition

that Sam doesn't know Romanian or doesn't know French

Scalar presupposition

that Sam is less likely not to know Italian than Romanian or French =

that Sam is more likely to know Italian than Romanian or French

References

- Rullmann, Hotze: 1996, 'Two types of negative polarity items', in K. Kusumoto (ed.), Proceedings of North East Linguistics Society 26, GLSA, Amherst.
- Jackendoff, Ray: 1972, Semantic Interpretation in Generative Grammar, MIT Press, Cambridge.