

Scalar Implicatures as Implicit Metalinguistic Negation

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1 Introduction

Grice (1989) and Noe-Griceans like Horn (1972, 1989), Atlas and Levinson (1981), etc.

- (1) a. John is laughing or crying.
b. John is both laughing and crying.
c. John is not both laughing and crying.
- (2) a. Some women cried.
b. All women cried.
c. Not all women cried.

Relevant scales: [or, and], [no, some, many, (most), all/every], etc.

Reasoning behind calculating implicatures:

- (3) i. The speaker S said (1a) and not (1b), which would have been also relevant.
ii. (1b) entails (1a) [*or* and *and* are part of a scale].
iii. If S had the info that (1b), she would have said so. [quantity]
iv. S has no evidence that (1b) holds.
v. S is well informed. (S knows whether or not (1a) and (1b) are true.)
vi. Therefore: It is not the case that (1b) holds. (= (1c))
- (4) John did not read many/all books.

The existence of the negation operator reverses the direction of the implicature: the utterance does not implicate the negation of the stronger assertion. (Fauconnier 1975)

- (5) Other Examples of Horn scales:
 - a. Negative quantifiers: [*not all* < *few* < *none*]
 - b. Predicates: [*cute* < *beautiful* < *stupendous*], [*discrete* < *good* < *excellent*], ...
 - c. Numerals: [1 <... n <...]
 - d. the modals: [*possibly* < *necessarily*], [*may* < *must*], ...

2 Problems with Neo-Gricean Accounts of Implicatures

Gazdar (1979): Scalar implicatures are blocked in embedded contexts.

Hirschberg (1985/1991): Scalar implicatures are blocked by overt negation alone.

Horn (1989): Scalar implicatures are blocked in downward entailing (DE) contexts.

Levinson (2000): In downward entailing contexts, scalar implicatures are induced by inverse scales.

1. disjunction:

McCawley (1993), Y.-S. Lee (1995), and Simons (1998) pointed out problems with the Gricean analysis of scalar implicatures in calculating implicatures from disjunctive structures.

- (6)
- (Right now) Mary is either working on her paper or seeing some of her students.
 - Mary is not both working on her paper AND seeing some of her students.
 - It is not the case that Mary is either working on her paper or seeing all of her students.
(= Mary is not working on her paper and Mary is not seeing all of her students.)
 - Mary is not seeing all of her students.

predicted and actual scalar implicature from *or*: (6b)

predicted scalar implicature from *some*: (6c)

actual scalar implicature from *some*: (6d)

The wrong predictions are made because the implicatures are calculated *globally*.

2. Intrusive implicatures:

Levinson (2000)

- (7)
- The man who's reading one book is my brother. The man who's reading two books is my brother-in-law.
 - Anyone who has seven children is less miserable than anyone who has eight.
 - Every student who has three papers to write is better off than every student who has four papers to write.
 - Every student who has to solve problem 1 or problem 2 is better off than every student who has to solve problem 1 and problem 2.

3. Scalar implicatures in existential quantifiers

- (12a)
- Some students who read some of the stories will get a good grade.
 - NOT(some students who read all of the stories will get a good grade)
= No student who read all the stories will get a good grade.

predicts too strong prediction

4. Too strong and unrealistic assumption that a speaker is so well informed that he or she knows whether the utterance of every scalar alternative is true or not.

Purpose of this paper:

I will improve the Gricean analysis of scalar implicatures by avoiding these problems.

3 Chierchia's Local Approach to Scalar Implicatures

Claims in relation to Scalar Implicatures:

- LF in terms of the Transformational Grammar is assumed where QR occurs.
- Scalar implicatures are calculated compositionally just like compositionality of semantic interpretation. (no need for a separate projection mechanism)
- Scalar implicatures are calculated locally. (direct scalar implicatures)
 - (8) a. Some students who read some of the stories will get a good grade.
 - b. Some students who read some, but not all, of the stories will get a good grade.
- If compositional interpretation runs into a DE operator, a scalar implicature is blocked.
 - (9) a. If Paul or Bill come, Mary will be upset.
 - b. If Paul comes, Mary or Sue will be upset.
- Over the scopes over DE operators, new quantity implicatures are added in from interaction with the alternatives of scalar terms. (indirect scalar implicature)
 - (10) a. John drinks and drive. (\nrightarrow John does not drink or drive.)
 - b. I doubt John drinks and drive. (\sim I believe John drinks or d

Predictions:

- (11) a. (Right now) Mary is either working at her paper or seeing some of her students.
- b. Mary is either working at her paper or seeing some (though not all) of her student.
- (12) a. Some students who read some of the stories will get a good grade.
- b. Some students who read some of the stories, but not all, will get a good grade.

\nrightarrow NOT(some students who read all the stories will get a good grade.
 (= No student who read all the stories will get a good grade.)

- (13) John believes that some students are waiting for him.
- \sim John believes that not all students are waiting for him.
- \nrightarrow John does not believe that all students are waiting for him.

problems:

1. The distinction between direct and indirect scalar implicatures is arbitrary. (only for some cases where local calculation is necessary)

- (14) a. I believe that John did not read many stories.
- b. I believe that John did not read any/some stories. (alternative)
- c. I believe that John read some stories. (local)
- d. I do not believe John read no stories. (global)

local or global? local!

– Scalar implicatures should be calculated locally regardless of whether they are direct or indirect ones.

2. Why QR does not move a quantifier to a position where a local scalar implicature is not calculated.

(15) Some students_i [John believes that [t_i are waiting for him]]

3. In some cases, global calculation is preferred.

(16) Every student at MIT has read *LGB* or *Syntactic Structures*. (Sauerland 2004, (58))

~→ NOT[Every student at MIT has read *LGB* and *Syntactic Structures*]

↗ No student at MIT has read *LGB* and *Syntactic Structures*.

(17) Everyone must solve some of the problems.

~→ Not[everyone must solve all of the problems]

↗ Every one must not solve all of the problems.

(18) It's possible that Paul ate some of the eggs. (Hirschberg 1985, (75a))

~→ It's not possible that Paul ate all of the eggs.

↗ It is possible that Paul did not eat all of the eggs.

(19) a. Some students who drank some of the beer were allowed to go home.

b. NOT(Some students who drank all of the beer were allowed to go home)

c. Some students who drank some, but not all, of the beer were allowed to go home.

Chierchia (2002) predicts too weak a scalar implicature.

5. A SI can occur in a context in which normally a scalar implicature does not arise, when a scalar item is focused.

(20) If you read some of the books, you'll get confused—but if you read all of them, you'll get things straight.

(21) If it's warm, we'll lie out in the sun. But if it's hot, we'll go inside and sit in front of the air-conditioner.

4 A New Proposal: Metalinguistic Negation for Implicating

4.1 Metalinguistic Negation

Metalinguistic = echoic??

Many occurrences of metalinguistic negation are explicitly echoic, but we can find examples which are not.

(22) a. A: Does John eat tom[eiDowz]?

B: He does not eat tom[eiDowz]; he eats tom[a:towz].

b. John likes tom[eiDowz] and I like tom[a:towz].

c. A: Does John still eat tom[a:towz]?

B: Yes, he does. He still doesn't eat tom[eiDowz].

Suppose that John was raising two mongooses, but John always used the plural form *mongeese*. Mary and Bill are friends of John's and they met long time after they had seen John last.

- (23) Mary: What is John doing these days?
 Bill: He is still raising two mongeese.
 (He is not raising two mongooses.)

An inference from Bill's statement is that John is not raising two mongooses. In this inference the negation is metalinguistic. The use of the form *mongeese* triggers the correct alternative form *mongooses*.

What is echoed is the expectation that the speaker will say that John is raising two mongooses, if it is true. When Bill says the wrong pronunciation together with *still*, Mary infers something like "John is not raising two mongooses (yet)", even though it is not explicitly uttered. Here, the negation operator is interpreted as metalinguistic.

4.2 Scalar implicature as implicit metalinguistic negation

- Horn talks of metalinguistic negation as involving *an objection to an utterance on any grounds whatever*.
- All language users in a speech community know that scalar terms have scalar alternatives systematically.
- Selecting one scalar term implicates objection to utterances of sentences with other scalar alternatives.
- When more than one scalar term is involved, a scalar implicature can arise for each of the the scalar terms.
- Intuitively correct scalar implicatures are derived globally or locally.
- Scalar implicatures derived globally from non-DE contexts cannot be derived locally.
- Previous global approaches predict wrong scalar implicatures because the negation operator involved in calculating scalar implicatures is taken to be a descriptive one.

- (24) a. Every student read some of the stories.
 b. It is not the case that (= NOTD) every student read some of the stories. (descriptive)
 c. The speaker does not assert that (= NOTM) every student read many of the stories. (metalinguistic)

descriptive: Not every student read all of the stories.

metalinguistic:

- (i) Not every student read all of the stories.
 (ii) Every student read not all of the stories.

The stronger sentence with *all* is objected to for one of the two reasons.

Suppose the following situations:

Situation 1: There are some students who read even all of the stories, but the number of those students is not significant.

Situation 2: There are some students who read even all of the stories, and the number of those students is significant.

Situation 3: No students read all of the stories.

Situation 4: Every students read all of the stories.

I suppose that the sentence in question can be uttered in situations 1 and 2 without being criticized as not being informative enough.

What is crucial is how significant the number of the students who read all. In this respect, scalar implicatures are pragmatic.

Other examples:

- (25) a. John believes that some of the students are waiting for him.
b. NOTD(John believes that ALL of the students are waiting for him)
c. NOTM(John believes that ALL of the students are waiting for him)

descriptive negation:

John does not believe that all of the students are waiting for him.

metalinguistic negation:

- (i) John does not believe that all of the students are waiting for him.
(ii) John believes that not all of the students are waiting for him.

In my analysis, more than one scalar implicature can be obtained from a scalar term.

Question: What determines the actual scalar implicature of a sentence?

Factor 1: Stronger implicatures are preferred:

- (26) It's possible that Paul ate some of the eggs (Hirschberg 1985, (75a))
↪ NOTD(It's possible that Paul ate all of the eggs)
↯ It's possible that NOTD(Paul didn't eat all of the eggs)
- (14') a. I believe that John did not read many stories.
b. NOTM(I believe that John did not read any/some stories)
c. NOTD(I believe that John did not read any/some stories)
= I do not believe that John read no stories.
d. I believe NOTD(John read no stories)
= I believe John read some stories.

Factor 2: Contextual plausibility

– A stronger scalar implicature can be canceled by contextual implausibility.

- (27) Every student wrote a paper or made a classroom presentation.
- (28) Every student at MIT has read *LGB* or *Syntactic Structures*.

It is likely that each student did only one thing for an assignment.

It is likely that each student at MIT tries to read more GB books.

- (29) Everyone must solve some of the problems.
↪ NOTD(everyone must solve all of the problems)
↯ Everyone must NOTD(solve all of the problems)

Obligation is likely to impose the lowest limit rather than the upper limit. The use of *some* implies that it is the lower limit.

- (30) a. Every student must solve at least three problems out of five.
b. ??Every student must solve at most three problems out of five.

4.3 Scalar implicatures in disjunction structures

- (31) a. John walked or read some of the poems.
b. NOTD(John walked or read ALL of the poems)
c. NOTM(John walked or read ALL of the poems)

descriptive negation:

NOTD(John walked or read ALL of the poems) = NOTD(John walked) and NOTD(John read all of the poems)

metalinguistic negation:

NOTM(John walked or read ALL of the poems)

(i) = NOTD(John walked) and NOTD(John read all of the poems)

(ii) (John walked) or NOTD(John read all of the poems)

(i) is canceled by the clausal quantity implicature that it is possible that John walked.

4.4 Scalar implicatures in existential quantifiers

- (32) a. Some students who read some of the stories will get a good grade.
b. NOTD(Some students who read ALL of the stories will get a good grade)
c. NOTM(Some students who read ALL of the stories will get a good grade)

Descriptive Neg:

NOTD(some students who read ALL of the stories got a good grade)

= No students who read ALL of the stories got a good grade.

Metalinguistic Neg:

- (33) a. NOTD(some students who read ALL of the stories got a good grade)
b. Some students who NOTD(x read ALL of the stories) got a good grade.

The stronger implicature is canceled: If one reads only some of the stories and get a good grade, one who reads all is likely to get a good grade too.

- (12a') a. Some students who read some of the stories will get a good grade.
b. No students who read all of the stories will get a good grade.
c. Some students who NOTD(x read all of the stories) will get a good grade

- (19) a. Some students who drank some of the beer were allowed to go home.
b. No students who drank all of the beer were allowed to go home.

The stronger implicature is maintained: If one drinks only some of the beer and is allowed to go home, one who drinks all is likely not to be allowed to go home.

There are two potential problems with existential quantifiers.

1. There is still another scalar implicature allowed in my analysis.

- (33) c. Some students who read ALL of the stories NOTD(got a good grade)

This implicature is relevant only if the students who read all of the stories are part of those who read some of the stories.

2. In (33b): Even if we get the implicature (33b), it is not guaranteed that the students who read some of the stories and those who read not all the stories were the same group.

These two problems can be solved by introducing a context variable.

1. In a given context, the students who read all the stories and those who read only some can be distinguished by the values of a discourse referent given to the expression *some students*

2. We consider contexts in which the mentioned group of students who read some of the stories and those who read not all of the stories are the same.

Assumptions:

Existential quantifiers are given discourse referents.

A context can be represented by an assignment g .

$\text{dom}(g) = N$

The utterance in hand:

$[(32a)] \setminus [(33b)] =$ Some students who read some, but not all of, the stories got a good grade.

(i) $\langle w, g \rangle$ such that $g(i)$ was a student who read some of the stories, but not all, in w got a good grade, and there were no students who read all the stories.

(ii) $\langle w, g \rangle$ such that $g(i)$ was a student who read some of the stories, but not all, in w got a good grade, and there were some other students who read all the stories and got a good grade.

(iii) $\langle w, g \rangle$ such that $g(i)$ was a student who read all the stories and got a good grade, and there were some other students who read only some of the stories and got a good grade.

(iv) $\langle w, g \rangle$ such that $g(i)$ was a student who read all the stories and got a good grade, and there was no other student who read only some.

(i) & (ii) survive; (iii) & (iv) are subtracted.

(ii) prevents us from predicting the implicature that no students who read all the stories got a good grade.

4.5 Intrusive implicatures

(20) If you read some of the books, you'll get confused—but if you read all of them, you'll get things straight.

Cases of intrusive implicatures involve focus, which triggers a set of alternatives which are exclusive to each other.

Role of focus:

(34) How many children does John have?

(35) a. He has **three** children.

b. *He has **three** children, in fact **five**.

Situations where John has three children do not include situations where he has five children.

(36) Who has three children?

- a. **John** has three children.
- b. **John** has three children, in fact he has five.

Situations where John has three children DO include situations where he has five children.

– Intrusive implicatures involve focus; on the other hand, ordinary scalar implicatures do not involve focus.

5 Conclusion

- Scalar implicatures are not always calculated locally, as Chierchia (2002) claims.
- Even when scalar implicatures are calculated locally, it is globally determined whether they are actual implicatures.
- Scalar implicatures are calculated from metalinguistic negation, not from descriptive negation.
- Metalinguistic negation allows multiple scalar implicatures.
- Informativeness, plausibility, etc determine which one is the actual one.
- For scalar implicatures in the scopes of existential quantifiers, context variables are necessary.

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