Scalar Items in Embedded Positions

Michael Franke

May 21, 2012

1 Motivation

· we are interested in studying potential global/local implicatures for sentences of the forms:

(1) a. All of the *X*'s are related to some of the *Y*'s.
b. Exactly one of the *X*'s is related to some of the *Y*'s.
c. Exactly one of the *Y*'s is related to all of the *Y*'s.

1.1 Global Implicatures

· a GLOBAL IMPLICATURE of a sentence is derived by replacing one scalar item with its scale mates and negating the resulting sentence:

(2) All of the *X*'s are related to some of the *Y*'s.
a. All of the *X*'s are related to some of the *Y*'s and ...
b. ... it's not the case that all of the *X*'s are related to all of the *Y*'s.

(3) Exactly one of the *X*'s is related to some of the *Y*'s.
a. Exactly one of the *X*'s is related to some of the *Y*'s and ...
b. ... it's not the case that exactly one of the *X*'s is related to all of the *Y*'s.

(4) Exactly one of the *Y*'s is related to all of the *Y*'s.
a. Exactly one of the *X*'s is related to all of the *Y*'s and ...
b. ... it's not the case that exactly one of the *X*'s is related to some of the *Y*'s.

· the global implicatures in (2) and (3) are attested by all current formal theories of quantity implicature

· we are interested in whether this prediction is borne out; previous experimentation supports this

· we are also interested in whether we find support for the global implicature in (4), which some theories predict (e.g. Sauerland, 2004; Fox, 2007) and others don't (Horn, 1984);[a] this case has not been investigated yet

a. need to check in detail who predicts what

1.2 Local Implicatures

- a LOCAL IMPLICATURE of a sentence is derived by inserting into any appropriate scope site an exhaustifity operator akin to the workings of *only*,[b]

b. there is some due variation in formulation of this kind of approach

- all global implicatures are local implicatures, but additionally for our target sentences we may derive:

  (5) All of the *X*'s are related to some of the *Y*'s.

  a. All of the *X*'s are related to some but not all of the *Y*'s.

  (6) Exactly 1 of the *X*'s is related to some of the *Y*'s.

  a. Exactly 1 of the *X*'s is related to some but not all of the *Y*'s.

- we are interested in whether these local implicatures are attested; previous studies have presented diverging evidence for this: Geurts and Pouscoulous (2009) provide evidence *against*; Chemla and Spector (2011) provide evidence *for* these inferences

2 Material

- we apply a truth-value judgement task, under the supposition that implicatures, when drawn, inform truth-judgements
- we speak of a possible "reading" of a sentence: whether a global and/or local implicature is drawn
  - literal reading: literally true (LIT)
  - global reading: global implicature true (GLB)
  - local reading: local implicature true (LOC)
- we present each of the three sentences with enough pictures to distinguish any possible reading
- since there may be entailment relations between these "readings", the space of possibilities is rather restricted
  (e.g., obviously, the global reading always entails the literal reading)

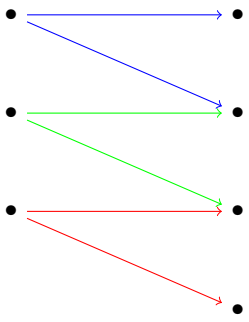
2.1 Case: "All of the *X*'s are related to some of the *Y*'s."

- entailment relations in this case are: LOC $\Rightarrow$ GLB $\Rightarrow$ LIT
- we can thus distinguish four cases:

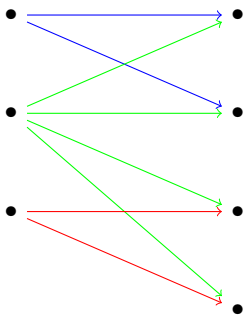
	LIT	GLB	LOC
Case 1	1	1	1
Case 2	1	1	0
Case 3	1	0	0
Case 4	0	0	0

2.1.1 Pictures

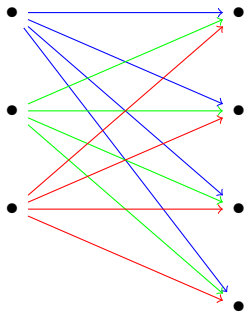
- these cases can be tested for with the following diagrams:
  - Case 1 (true-true-true):



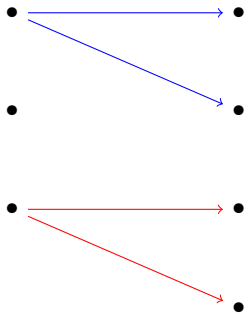
  - Case 2 (true-true-false):



  - Case 3 (true-false-false):



- Case 4 (false-false-false):



2.1.2 Sentence Items

(7) a. Für jeden dieser Anwälte gilt: er vertritt einige dieser Angeklagten.

b. Für jedes dieser Kinder gilt: es mag einige dieser Speisen.

c. Für jeden dieser Kritiker gilt: er lobte einige dieser Aufführungen.

d. Für jede dieser Tennisspielerinnen gilt: sie hat schon einige dieser Turniere gewonnen.

e. Für jede dieser Künstlerinnen gilt: sie stellt in einigen dieser Museen aus.

f. Für jeden dieser Jungen gilt: er ist mit einigen dieser Mädchen befreundet.

g. Für jeden dieser Fußballfans gilt: er hat einige dieser Spiele gesehen.

h. Für jeden dieser Touristen gilt: er hat bereits einige dieser Länder bereist.

i. Für jeden dieser Bergsteiger gilt: er hat bereits einige dieser Gipfel erklommen.

j. Für jeden dieser Musikliebhaber gilt: er mag einige dieser Komponisten.

k. Für jeden dieser Schauspieler gilt: er hat bereits mit einigen dieser Regisseure zusammengearbeitet.

2.2 Case: "Exactly one of the X's is related to some of the Y's."

- entailment relations in this case are:

  (i) GLB $\Rightarrow$ LIT

  (ii) GLB $\Rightarrow$ LOC

  (iii) LOC $\Rightarrow \neg$LIT

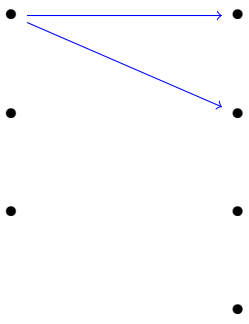
- so we distinguish the following four cases:

	LIT	GLB	LOC
Case 1	1	1	1
Case 2	0	0	1
Case 3	1	0	0
Case 4	0	0	0

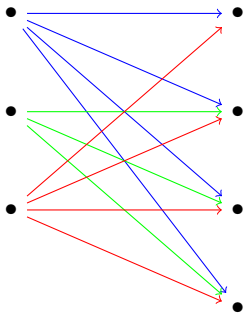
2.2.1 Pictures

- these cases can be tested for with the following diagrams:

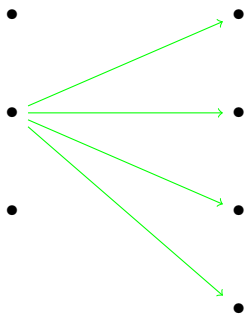
  - Case 1 (true-true-true):



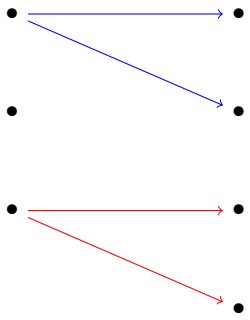
  - Case 2 (false-false-true):



  - Case 3 (true-false-false):



· Case 3 (false-false-false):



2.2.2 Sentence Items

(8)
a. Für genau einen dieser Anwälte gilt: er vertritt einige dieser Angeklagten.
b. Für genau eines dieser Kinder gilt: es mag einige dieser Speisen.
c. Für genau einen dieser Kritiker gilt: er lobte einige dieser Aufführungen.
d. Für genau eine dieser Tennisspielerinnen gilt: sie hat schon einige dieser Turniere gewonnen.
e. Für genau eine dieser Künstlerinnen gilt: sie stellt in einigen dieser Museen aus.
f. Für genau einen dieser Jungen gilt: er ist mit einigen dieser Mädchen befreundet.
g. Für genau einen dieser Fußballfans gilt: er hat einige dieser Spiele gesehen.
h. Für genau einen dieser Touristen gilt: er hat bereits einige dieser Länder bereist.
i. Für genau einen dieser Bergsteiger gilt: er hat bereits einige dieser Gipfel erklommen.
j. Für genau einen dieser Musikliebhaber gilt: er mag einige dieser Komponisten.
k. Für genau einen dieser Schauspieler gilt: er hat bereits mit einigen dieser Regisseure zusammengearbeitet.

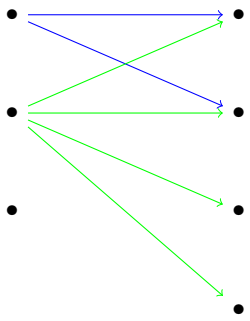
2.3 Case: "Exactly one of the X's is related to all of the Y's."

- entailment relations in this case are trivial: GLB $\Rightarrow$ LIT
- so we distinguish the following three cases:

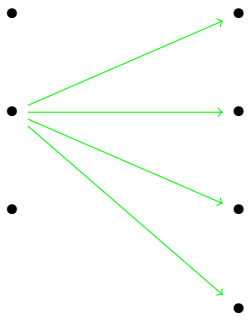
	LIT	GLB
Case 1	1	1
Case 2	1	0
Case 3	0	0

2.3.1 Pictures

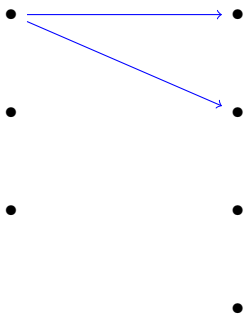
- these cases can be tested for with the following diagrams:
  - Case 1 (true-true):



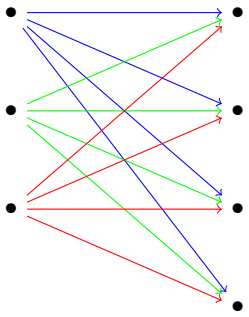
  - Case 2 (true-false):



  - Case 3 (false-false):



· Case 4 (false-false):[c]



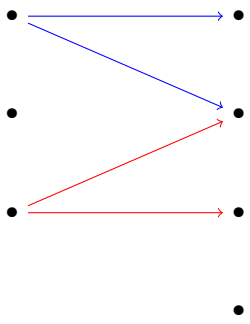
[c] we wanted to use two false conditions here, to fill the data set with four pictures for each sentence

2.3.2 Sentence Items

(9)
a. Für genau einen dieser Anwälte gilt: er vertritt jeden dieser Angeklagten.
b. Für genau eines dieser Kinder gilt: es mag jede dieser Speisen.
c. Für genau einen dieser Kritiker gilt: er lobte jede dieser Aufführungen.
d. Für genau eine dieser Tennisspielerinnen gilt: sie hat schon jedes dieser Turniere gewonnen.
e. Für genau eine dieser Künstlerinnen gilt: sie stellt in jedem dieser Museen aus.
f. Für genau einen dieser Jungen gilt: er ist mit jedem dieser Mädchen befreundet.
g. Für genau einen dieser Fußballfans gilt: er hat jedes dieser Spiele gesehen.
h. Für genau einen dieser Touristen gilt: er hat bereits jedes dieser Länder bereist.
i. Für genau einen dieser Bergsteiger gilt: er hat bereits jeden dieser Gipfel erklommen.
j. Für genau einen dieser Musikliebhaber gilt: er mag jeden dieser Komponisten.
k. Für genau einen dieser Schauspieler gilt: er hat bereits mit jeden dieser Regisseure zusammengearbeitet.

3 Thoughts on Cumulative Readings

- there may be a problem in our design from cumulative readings of (2)
- under a cumulative reading, a sentence like (2) means that the group of *X*'s *as a whole* is connected to some of the *Y*'s
- there are three relevant possible (disjoint) state distinctions for this reading:
  - false-condition: group of *X*'s is connected to none of the *Y*'s; no arrows whatsoever
  - literally-true-condition: group of *X*' is connected to all of the *Y*'s
  - implicature-condition: group of *X*' is connected to some-but-not-all of the *Y*'s
- the potential problem is that subjects' *true/false* judgements could be based on these cumulative readings (with/without implicature) and thus obscure whether they apply local or global readings
- in particular, subjects who answer *false* in cases 2 and 3 might do so based on the cumulative reading with implicature, so that we might not know whether these judgements reflect on the potential implicatures of the non-cumulative readings
- there is no way we can present a picture that could illicit judgements that would let us differentiate between cumulative and non-cumulative readings in cases 2 and 3
- *but* we can assess whether cumulative readings are available in two ways:
  - under a cumulative reading case 1 (as depicted above) should also be judged *false*
  - moreover, we should change pictures for case 4 to:



Subjects who apply a cumulative reading should judge this *true*

- as far as I can see, this is the best we can do: we have control conditions (cases 1 and 4) that would detect cumulative readings; but when they do we simply cannot use pictures like these to test cases 3 and 4 (if we wanted that, we'd need different visual material, unfortunately)

- or am I wrong?
- finally, if cumulative readings are possible for "all of the *X*'s" in (2), so should they be in (4), shouldn't they?
- but here, too, we would see this in subjects responding *true* in case 3 (as above) for this case[d]

d. careful: I mean the *first* false-false picture; the previous text contained two times "case 3", a typo!