Negation and exhaustification

A brief overview of the exhaustification account of SI

In preparation for L&C Negation Workshop (27.05.2016)

Karoliina Lohiniva, candoc
Department of linguistics, UNIGE
09.05.2016

1. Introduction

- In preparation for Benjamin Spector's talk on **metalinguistic negation**, we'll go over the perspective adopted by Spector and colleagues on the derivation of scalar implicatures

- Chierchia, G., Fox, D. and B. Spector (2012). Scalar implicature as a grammatical phenomenon. In Maienborn, von Heusinger and Portner (eds.), *Semantics*, de Gruyter, 2297–2331

2. Negation

- Descriptive negation: truth-conditional
  - “It was not hot on Sunday. It was warm.”
  - “Mary does not have four cats. She has one.”
- Metalinguistic negation: non-truth-conditional (Horn 1985, 1989; Moeschler 2010):
  - “It was not hot on Sunday. It was blazing hot.”
  - “Mary does not have four cats. She has ten.”

2. Negation

- Descriptive negation:
  - “It was not hot on Sunday. It was warm.”
    = “It was less than hot”
  - “Mary does not have four cats. She has one.”
    = “Mary has less than four cats”
- Metalinguistic negation:
  - “It was not hot on Sunday. It was blazing hot.”
    = “It is not enough to say it was hot: it was more than hot”
  - “Mary does not have four cats. She has ten.”
    = “It is not enough to say Mary has four cats: she has ten”

3. Scalar implicature

- Traditional view: Gricean reasoning based mainly on the first submaxim of quantity (Grice 1975, Horn 1972, inter alia)
  - "Make your contribution as informative as is required (for the current purposes of the exchange"
  - If a speaker utters ϕ, but could equally well have uttered ψ, where ψ is more informative than ϕ, the hearer can infer that there was a reason for the speaker not to utter ψ
    - It's not the case that the speaker thinks that ψ
    - If the speaker can be assumed to have an opinion, that is, to think that ψ or to think that not-ψ, then the speaker can be inferred to think that not-ψ

3. Scalar implicature

- Example:
  - ϕ = Mary ate **some** apples
  - How do we understand *some*?
    - At least some: encoded meaning
    - Some but not all: strengthened meaning

3. Scalar implicature

- Example:
  - ϕ = Mary ate **some** apples
  - ψ = Mary ate **all** apples

- ψ is more informative than ϕ: anytime ψ is true, ϕ will necessarily be true as well, but the opposite does not hold
- We say ψ entails ϕ

3. Scalar implicature

- Example:
  - ϕ = Mary ate **some** apples
  - ψ = Mary ate **all** apples

- SI:
  - The speaker uttered ϕ
  - The speaker could have uttered the more informative ψ instead but did not
  - Probably the speaker does not believe ψ to be true
    - The strengthened meaning is the conjunction of ϕ with the negation of the more informative **alternative** ψ:
      - ϕ ∧ ¬ψ = Mary ate some apples but not all of them
  - “Mary ate some apples and in fact she ate all of them”
    - Cancellability is a hallmark of implicatures

3. Scalar implicature

- Example:
  - ϕ = Mary ate **some** apples
  - ψ = Mary ate **all** apples

- But:
  - ψ' = Mary ate **some but not all** of the apples
  - ψ' entails ϕ too

- Negating both alternatives would lead to a contradiction
  - Mary ate some of the apples but not all of them but also not some but not all of them
- This is called the symmetry problem (Kroch 1972, von Fintel and Heim 1997)
- The SI reasoning requires that the set of alternatives is restricted
  - Horn (1972): lexical scales
    - Criteria: monotonicity, complexity…
  - Katzir (2007): structural alternatives

3. Scalar implicature

- In sum: traditionally, scalar implicatures have been treated as conversational implicatures that
  - arise through reasoning about the speaker's intentions based on a full utterance
  - require two additional assumptions in order not to undergenerate or overgenerate:
    - The opinionatedness assumption
    - Restriction on the set of alternatives

4. A grammatical account of SI

- Chierchia (2004) argues against a globalist view of SI and for a grammatical approach, where SIs are derived compositionally through **silent exhaustification**
  - The strengthened meaning of ϕ = **O(ϕ)**, where O is like silent *only*
  - Exhaustification via O takes the set of alternatives of ϕ and negates all alternatives that are not entailed by ϕ
    - With amendments to avoid the symmetry problem
  - Exhaustification does not apply vacuously (if it does not lead to a logically stronger, more informative result)
    - ϕ = I **doubt** that Mary **or** John will come
    - π = I **doubt** that Mary **and** John will come
    - ϕ entails π
    - Therefore, O(ϕ) wrt. π is vacuous; O(π) wrt. ϕ is not, however!
      - In general, O is vacuous in when applied to the stronger alternative
      - The motonicity properties of the alternative determine which alternative entails which

4. A grammatical account of SI

- **Downward entailing (DE)** or monotone decreasing contexts have the property of licensing subset inferences ≈ reversing the direction of entailment wrt. **upward entailing contexts (UE)**

    1. "I ate **spaghetti**" entails "I ate **pasta**"
    2. "I ate **pasta**" does not entail "I ate **spaghetti**"
    3. "I did **not** eat **pasta**" entails "I did **not** eat **spaghetti**"
    4. "I did **not** eat **spaghetti**" does not entail "I did **not** eat **pasta**"

- **Negative** declaratives are DE, so the pattern of SIs is reversed wrt. the scalar expression:
    - Mary **or** John will come ⇝ **not**(Mary **and** John will come)
    - It is **not** the case that Mary **and** John will come ⇝ **not**(It is not the case that Mary **or** John will come = Neither Mary nor John will come)

4. A grammatical account of SI

- Chierchia's argument is empirical
  - SIs can be embedded: they sometimes need to be derived not based on a full utterance, but a subpart of it
  - The silent exhaustification operator O needs to be inserted locally, so that it applies before another operator

4. A grammatical account of SI

- Hurford's constraint (HC, Hurford 1974):

  "A sentence that contains a disjunctive phrase of the form *S or S'* is infelicitous if *S* entails *S'* or *S'* entails *S*"

  - # "Mary ate an apple or a fruit"

- Scalar expressions violate HC
  - "Mary ate **some** or **all** of the apples"
  - "… all …" entails "… some …"

- Local exhaustification solves the problem
  - "… all …" does not entail "… *only* some …"
  - Does not help in cases where no relevant alternatives are available

5. Negation and SI

- Negation is DE: no SI arises when there are no stronger alternatives to negate
- However, there are cases where negation in a stronger alternative gives rise to an interpretation that is not compatible with the logical meaning
  - These examples can also be dealt with by positing that the silent exhaustification operator can be inserted in embedded positions
  - "Mary did **not** eat an apple **or** a pear; she ate **both**"
    = **not** (*only* (… **or** …)) = not O_{alt}(Mary ate an apple or a pear)
- Other examples:
  - "I do**n't** think **some** people will come; I think everyone will"
    = **not** (*only* (… **some** …)) = not O_{alt}(I think some people will come)
  - "It was **not** **hot**; it was blazing hot"
    = **not** (*only* (… **hot** …))= not O_{alt}(It was hot)
- **These are also used as examples of metalinguistic negation** (Horn 1985, 1989), where negation is used by a speaker who wishes to object to the way an utterance was put
  - "You cannot say that it was hot because it was more than that"

6. Conclusion

- The grammatical approach to SI might explain some cases of metalinguistic negation simply by positing a difference in scope
  - metalinguistic negation = negation that scopes over the exhaustification operator?
- For other cases, an exhaustification-based explanation seems unsuitable
  - /təˈmeɪtoʊ/, /təˈmɑːtəʊ/
  - “That is not my wife… because I have no wife”