Day 5: Discussion and outlook for future research

- Summary of the open issues of the information structure approaches in
  - LFG
  - HPSG
  - CCG

- A major problem for all approaches: discontinuous information units

- A desiderata checklist

Open issues in the LFG approaches

- The representation and integration of information structure remains to be fully worked out, in particular
  - the interface between semantic structure and information structure
  - the interface between prosody and information structure

- Empirical issues: How can
  - focus projection,
  - multiple focus constructions, and
  - non-constituent focus

  be dealt with?

Open issues in the CCG approach

- Interaction of word order and information structure, and a combined approach integrating prosody, word order and information structure.

- Treatment of multiple focus construction and discontinuous theme or rheme.

- Principles restricting focus projection

Open issues in the HPSG approaches

- Integration of a more elaborate prosody component including a finer grained distinction of pitch accents and boundary tones.

- An interface between the finer grained prosody, information structure, and syntax.

- Treatment of non-constituent focus.

A key problem for structured meaning approaches and CCG

- The HPSG approach, integrating a structured meaning approach to focus, is built on the assumption that focus is realized by a constituent, i.e., focus projection involves contiguous material. (Note that this is not required of the background.)

- The CCG approach is based on the assumption that the informational units correspond to syntactic constituents, i.e, they need to be contiguous.

- Pulman (1997) discussed two types of problematic cases for this assumption:

  I. informational units that constitute a discontinuous constituent
  II. informational units that do not form "a constituent at any orthodox level of syntactic of semantic representation".

I. Discontinuous constituents

- As observed by Krifka (1992), there are cases where *focus* occurs on a discontinuous constituent:

  (1) a. Q: What is the only thing he did?
         A: Er hat [sich]   nur [RASIERT.]$_F$
            he has himself only shaved

      b. Q: What did John do with the radio?
         A: He only [turned] it [OFF.]$_F$

I. Discontinuous constituents (cont.)

- In a theory with multiple levels of representations, it could be possible to argue that such discontinuous focus is in fact on a constituent at some 'deep level'. However, the HPSG and CCG approaches (and according to Krifka (1992) also the traditional structured meaning approaches) are surface-oriented and it thus is unclear how such cases can be properly handled.

- CCG, for example, would need more complex "wrapping" operations to provide the type of derivation needed to construct constituents out of non-adjacent words. However, the general availability of such operations would greatly increase the "spurious ambiguity problem" that categorial grammar already has.

II. Informational units as non-standard constituents

- Krifka (1992) notes examples where the focus consists of adjacent words that do not form a syntactic constituent.

  (2) Q: What happened to John?
      A: SUE KISSED him.

- Krifka suggest to analyze example as in (2) as topic-comment effects, claiming that the relevant examples all have a background that is a constituent.

- The structured meaning would then be derived via the background (topic).

From non-standard to discontinuous constituents

Interestingly, the German example parallel to Krifka's non-standard constituent case involves a discontinuous focus:

(3) Q: Was ist denn mit John passiert? / What happened to John?
   A: [SUE hat] ihn [geküßt.]$_F$
      Sue has him kissed

While rarely discussed, examples in which the focus resulting from one pitch accent does not correspond to a constituent are already noted by (Höhle 1982), who mentions (4).

(4) Q: Was hat das Kind erlebt? / What did the child experience?
   A: [Karl]$_F$ hat dem Kind [das BUCH geschenkt]$_F$.
      Karl   has the child the book given
      'Karl gave the child the book as a present.'

CCG and non-constituent focus

- The availability of non-standard derivations in CCG makes it possible to produce the right kind of structure for examples with non-standard constituents as in (2). The analysis in terms of non-standard constituents seems convincing since the same non-standard constituents are needed for non-constituent coordination, as illustrated in (5).

  (5) Mary admires but Susan detests musicals.

- An important problem for such an account, raised by Joshi (1990) and reported by Pulman (1997), is that there are sentences in which the constituent structure needed for the information structuring conflicts with the one needed for the syntactic structure, as illustrated in (6).

  (6) Q: What about Mary? What does she admire?
     A: Mary admires MUSICALS but detests opera.

For the information structure, the first conjunct has to have a derivation of the form '[Mary admires] musicals'. But for the VP conjunction the first conjunction needs to have the structure 'Mary [admires musicals]'.

A desiderata checklist

The "ultimate" approach to information structure should encompass

- an encoding of intonation, including pitch accents and boundary tones

- an interface between intonation, word order and information structure.

- the representation of the informational units in a serious semantic formalism which enables the correct interpretation of the information structure of an utterance within a larger discourse.

- treatment of the following phenomena:
  - focus projection (and its interaction with word order, lexical restrictions, etc.)
  - multiple focus constructions
  - non-constituent and discontinuous information units

References

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