Chapter 1

Information Structure

Kordula De Kuthy
University of Tübingen

Abstract goes here

1 Introduction

The *information structure* of a sentence captures how the meaning expressed by the sentence is integrated into the discourse. The *information structure* thus encodes which part of an utterance is informative in which way, given a particular context. Different approaches exist with respect to the question what should be regarded as the primitives of the information structure.

It is now commonly assumed that there are three basic dimension of information structure that are encoded in natural languages and that have been assumed as the basic primitives: *focus* vs. *background*, *topic* vs. *comment*, *given* vs. *new*. For all three ways of partitioning the information structure, we find approaches within the HPSG framework.

2 Information Structure in the Architecture of Signs

Several ways of representing information structure within the architecture of signs have been pursued within the HPSG framework: In Manandhar (1994), a feature INFO-STRUC is added to signs, which marks the information structure category, in this approach *focus* vs. *background* - an approach that is similar to the idea of F-marking as pursued in many syntax-based approaches to information structure.

More common are approaches that encode the information structure as a feature with its own structural representation.

\lsCollectionPaperCitationText.

For example in Engdahl & Vallduví (1996), information structure is encoded as part of the SYNSEM|CONTEXT feature taking entire signs as its values. Other approaches encode infostruc as part of the CONTENT, such as Song (2017) and Song & Bender (2012). A third possibility is argued for in De Kuthy (2002) and Bildhauer (2008), namely that information structure should not be part of *synsem* objects. They encode information structure as an additional feature of signs, but the values are semantic representations.

3 Information Packaging in HPSG

One of the first approaches integrating an explicit representation of information structure into the HPSG architecture, Engdahl & Vallduví (1996) encode the information structure as part of the CONTEXT of signs with the help of an additional feature INFO-STRUC. Following the information packaging theory of Vallduví (1992), they assume that the information structure consists of the focus and the ground, which is further divided into link and tail, The features FOCUS, LINK, and TAIL take as their values entire signs.

4 Information Structure as Structured Meanings

The structured meaning approach (von Stechow 1981; Jacobs 1983; Krifka 1992) provides a compositional semantic mechanism based on separate representations of the semantic contribution of the focus and that of the background. De Kuthy (2002) and Webelhuth (2007) worked out how a structured meaning approach can be integrated into the HPSG architecture.

5 Information Structure in MRS

Song (2017), Song & Bender (2012) locate the representation of information structure within the MRS based CONTENT value of signs. The list elements of information structural values build up for a phrase consists of focus, background or topic elements coindexed with the semantic INDEX values of the daughters of that phrase.

In Paggio (2009), a similar MRS based approach is presented, in which the information structure, in this case as part of the CONTEXT, consists of FOCUS, TOPIC and BACKGROUND features which are structure shared with the respective INDEX values of the semantic representation of a phrase.

6 Topics

Most HPSG approaches are based on a focus/background division of the information structure. To capture aspects of a topic vs. comment distinction, or to be able to specify topics as a special element in the background, they include an additional feature or substructure for topics. Engdahl & Vallduví (1996), for example, divide the GROUND into LINK an DTAIL, where the link is a special element of the background linking it to the previous discourse, just like topics. In the approaches of De Kuthy (2002), Song & Bender (2012), Paggio (2009), and additional feature TOPIC is introduced, parallel to FOCUS and BACKGROUND, in order to

7 Givenness

In De Kuthy & Meurers (2003), it is shown how the HPSG approach to information structure of De Kuthy (2002) and colleagues can be extended to capture givenness and to make the right predictions for so-called *deaccenting*, which has been shown to be widespread (Büring 2006). In contrast to Schwarzschild (1999), who spells out his approach in the framework of alternative semantics Rooth (1992), they show how the notion of givenness can be couched in a standard structured meaning approach – thereby preserving the explicit, compositional representations of focus.

8 Information Structure and Word Order

The explicit representation of information structure as part of signs in HPSG opens up the possibility of providing explanations for constraints previously stipulated in syntax, such as word order constraints, by deriving the constraints from the nature of the integration of a sentence into the discourse.

De Kuthy (2002), for example, relates the occurrence of discontinuous NPs in German to specific information-structural contexts, and De Kuthy & Meurers (2003) show that the realization of subjects as part of fronted non-finite constituent and its constraints can be accounted for based on independent information-structure conditions.

In the same spirit, Bildhauer & Cook (2010) show that sentences in which multiple elements have been fronted are directly linked to specific types of information structure.

Webelhuth (2007) provides an account of predicate fronting in English that is based on the interaction of word order and information structural constraints.

9 Information Structure and Prosody

A lot of languages mark information structure prosodically, as for example English and German, where pitch accents of various shapes are used to mark focus. Accordingly, several of the above discussed approaches include a component, which enriches the phonology representation of signs such that is allows the integration of the necessary prosodic aspects, as for example accents.

Engdahl & Vallduví (1996) assume, that signs can be marked for particular accents signalling focus or links in English, so-called A and B accents. In a similar way, De Kuthy (2002) extend the PHON value such that it includes a feature ACCENT, in order to formulate constraints on the connection between accents and information structure markings. In Bildhauer (2008) a detailed account of the prosodic properties of Spanish is developed together with a proposal how to integrate prosodic aspects into the PHON value, also allowing a direct linking of the interaction of prosody and information structure.

References

Bildhauer, Felix. 2008. *Representing information structure in an HPSG grammar of Spanish*. Universität Bremen Dissertation.

Bildhauer, Felix & Philippa Helen Cook. 2010. German multiple fronting and expected topic-hood. In Stefan Müller (ed.), *Proceedings of the 17th International Conference on Head-Driven Phrase Structure Grammar, Université Paris Diderot*, 68–79. Stanford, CA: CSLI Publications. http://csli-publications.stanford.edu/HPSG/2010/, accessed 2018-02-25.

Büring, Daniel. 2006. Focus projection and default prominence. In Valéria Molnár & Susanne Winkler (eds.), *The Architecture of Focus*, vol. 82 (Studies in Generative Grammar), 321–346. Berlin: Mouton De Gruyter.

De Kuthy, Kordula. 2002. *Discontinuous NPs in German* (Studies in Constraint-Based Lexicalism 14). Stanford, CA: CSLI Publications.

De Kuthy, Kordula & Walt Detmar Meurers. 2003. The secret life of focus exponents, and what it tells us about fronted verbal projections. In Stefan Müller (ed.), *Proceedings of the 10th International Conference on HPSG*, 97–110. Stanford, CA: CSLI Publications. http://purl.org/dm/papers/dekuthy-meurers-hpsg03.html.

Engdahl, Elisabet & Enric Vallduví. 1996. Information packaging in HPSG. In Claire Grover & Enric Vallduví (eds.), *Edinburgh Working Papers in Cognitive Science, vol. 12: Studies in HPSG*, chap. 1, 1–32. Edinburgh: Centre for Cognitive Science, University of Edinburgh. ftp://ftp.cogsci.ed.ac.uk/pub/CCS-WPs/wp-12.ps.gz, accessed 2018-03-20.

Jacobs, Joachim. 1983. *Fokus und Skalen: Zur Syntax und Semantik der Gradpartikeln im Deutschen* (Linguistische Arbeiten 138). Tübingen: Max Niemeyer Verlag.

Krifka, Manfred. 1992. A compositional semantics for multiple focus constructions. In Joachim Jacobs (ed.), *Informationsstruktur und Grammatik* (Linguistische Berichte Sonderheft 4 / 1991–92). Opladen/Wiesbaden: Westdeutscher Verlag.

Manandhar, Suresh. 1994. Encoding information packaging in HPSG. In Elisabet Engdahl (ed.), *Integrating information structur into constraint"=based and categorial approaches*. Amsterdam: ILLC. DYANA-2 Report R.1.3.B.

Paggio, Patrizia. 2009. The information structure of Danish grammar constructions. *Nordic Journal of Linguistics* 32(1). 137–164.

Rooth, Mats. 1992. A theory of focus interpretation. *Natural Language Semantics* 1(1). 75–116.

Schwarzschild, Roger. 1999. Givenness, AvoidF and other constraints on the placement of accent. *Natural Language Semantics* 7(2). 141–177.

Song, Sanghoun. 2017. *Modeling information structure in a cross-linguistic perspective*. Berlin: Language Science Press.

Song, Sanghoun & Emily M. Bender. 2012. Individual constraints for information structure. In Stefan Müller (ed.), *Proceedings of the 19th International Conference on Head-Driven Phrase Structure Grammar, Chungnam National University Daejeon*, 330–348. http://cslipublications.stanford.edu/HPSG/2012/song-bender.pdf.

von Stechow, Arnim. 1981. Topic, focus, and local relevance. In Wolfgang Klein & Willem Levelt (eds.) (Synthese Language Library 13), 95–130. Dordrecht/Boston/Lancaster/Tokyo: D. Reidel Publishing Company.

Vallduví, Enric. 1992. *The informational component*. New York, NY: Garland.

Webelhuth, Gert. 2007. Complex topic-comment structures in HPSG. In Stefan Müller (ed.), *Proceedings of the 14th International Conference on Head-Driven Phrase Structure Grammar*, 306–322. Stanford, CA: CSLI Publications. http://csli-publications.stanford.edu/HPSG/2007/, accessed 2018-02-25.