INTRODUCTION

1. Aim and content of the volume

The idea that various subsystems of the linguistic faculty interact with and through information structure has an ever growing influence on linguistic theory formation. While this development is very promising, it also involves the risk that fundamental notions are understood in a different way in different subfields, so that congruent results may only be apparent or cross-discipline generalizations may be overlooked—dangers that are very real, as notorious examples from the past have shown.

The present volume of *Acta Linguistica Hungarica*[1] is an attempt to minimize such risks. First, one of the guest editors, Manfred Krifka, has contributed an article in which he proposes precise definitions for the key notions of information structure and embeds his definitions into the context of the current debate. Second, we asked colleagues from the SFB 632[2] and external experts on information structure for short

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[1] Parts of this volume have originally appeared as Interdisciplinary Studies on Information Structures (ISIS 6) of the SFB 632 (see footnote 2). Some of the guest contributors (Mats Rooth, Satoshi Tomioka and Katalin É. Kiss) also participated at a summer seminar and an international conference on information structure organized in Potsdam in 2006. Elisabeth Selkirk, Carlos Gussenhoven and Dorit Abush were so kind as to accept our invitation to contribute to the volume. The guest editors would like to thank Anja Arnhold, Kirsten Brock and Shin Ishihara for help in the proof-reading, English-checking and preparation of the volume.

[2] The Collaborative Research Centre (Sonderforschungsbereich, SFB) "Information structure: the linguistic means for structuring utterances, sentences and texts", funded by the German Research Foundation, brings together scientists from the areas of linguistics, psychology and German studies of the University of Potsdam and linguistics and African studies of the Humboldt-University Berlin. Altogether 15 projects grouping 42 researchers are involved in this joint enterprise. Their common scientific goals are the formulation of integrative models

contributions shedding light on the notions of information structure from various perspectives by offering definitions and discussing the scope and nature of the fundamentals of information structure for their subfields. These contributions complement each other, in the sense that Krifka's proposal may be considered a frame for the other papers. However, they should not be considered the final word of the SFB 632 on the notions of information structure. While the authors of the papers have discussed the notions of Information Structure intensively, they did not consult each other when writing their papers, and they were not even assigned particular topics within the area of information structure. This volume should be seen as an important step towards the development of a precise and comprehensive terminology, together with other work that has been done in the SFB, such as the development of the ANNIS annotation scheme and the QUIS questionnaire.

When we began with the preparations for this volume, we were well aware of the risks of such an enterprise, but we are very satisfied with the results. It shows that information structural concepts are reflected by a multitude of different grammatical devices, with a very high degree of congruence among the different subdisciplines. It is this variety of grammatical tools which often blurs the coherence of the terminology.

Does the volume bring us closer to a definition of the information structural concepts then? We think that it does. It turned out that phonologists, syntacticians and semanticists are speaking about the same kinds of objects when they use the terms *focus* and *topic, new* and *given,* and so on. In this sense, huge progress has been accomplished since Halliday's (1967–1968) and Chafe's (1976) work in the sixties and seventies.

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of information structure, the in-depth study of information structure in the various disciplines of linguistics, the better understanding of the embedding of the principles of information structure in human cognition in the areas of language processing and acquisition, as well as practical applications for their findings.

We define information structure as the structuring of linguistic information, typically in order to optimize information transfer within discourse. The underlying idea is that the same information needs to be prepared or "packaged" in diverse ways depending on the background and the goal of the discourse. Three aspects are of particular theoretical interest: first, the interaction of the relevant formal levels (phonetics, phonology, morphology, syntax, semantics, the choice of lexical means, the composition of texts); second, the general cognitive processing of information structure; and third, a crosslinguistic typology of information structural devices.

Even the papers lacking pointed definitions implicitly use the terms in the same way as those that do propose definitions.

Krifka's paper and the system of definitions he proposes will serve as a guideline for this introduction. **Rooth**'s paper firmly anchors focus in the semantic tradition. His paper looks at phenomena like breadth of focus, scope of focus and focus anaphoricity. Definitions of focus and topic have been provided by **É. Kiss**'s paper as well, though she restricts them to Hungarian. She argues that in Hungarian the first position in a sentence is a topic and is to be interpreted as the logical subject of predication, while the preverbal position is the focus. It exhaustively identifies the set of entities for which the predicate denoted by the post-focus constituent of the clause holds. The presupposition of the paper might be that Hungarian uses information structural concepts in a different way from other languages, an idea also entertained by Zimmermann. Endriss and Hinterwimmer's, Selkirk's, Tomioka's, Abush's and Zimmermann's papers concentrate on a number of specific problems of information structure and help to clarify difficult issues in the field. **Endriss** and **Hinterwimmer** give a semantic account of topic and propose a definition which is compatible with the topichood of certain indefinite noun phrases. **Selkirk**'s paper considers two aspects of focus. First she addresses the phonology of contrastive focus, and second she proposes a tripartite syntactic marking: F-marking for contrastive focus, G-marking for discourse-given, and no marking for discourse-new. **Tomioka** has a different perspective. He questions the well-foundedness of the term *structure* appearing in *information structure* since there is only little hierarchical structure in the notions as they are commonly used. **Abush** asks whether focus triggers presuppositions and answers in the negative. **Zimmermann** examines contrastive focus from the point of view of hearer expectation. And finally, Féry's, Gussenhoven's, Fanselow's and Hartmann's papers are interested in the place information structure occupies in grammar, and in the grammatical reflexes of focus and topic. **Féry** denies the existence of phonological and syntactic categories specific for information structure, and proposes that languages only use devices for the expression of information structure that they have at their disposal anyway. **Gussenhoven** reviews focus types, focus sizes and focus realizations. The main emphasis of the paper is on the structural devices encoding focus: morphosyntax, the use of particles, verbal morphology and phonology (pitch accents and prosodic phrasing). **Fanselow** denies

that notions of information structure play a role in the identification of syntactic slots or categories, or in the triggering of syntactic operations. By contrast, **Hartmann** looks for correlates of information structure in the phonology, and gives an overview of some differences in the use of f_0 in intonation languages and tone languages.

2. Definitions

Manfred Krifka's paper provides clear and unequivocal definitions of *focus, given* and *topic.* The point of departure of his definitions is the content and management of the common ground (CG), which has been prominent in nearly all mentalistic and semantico-pragmatic accounts of information structure. The CG is the information which is believed to be shared and which is modified in the course of a conversation.

2.1. Focus

Krifka's general definition of focus, which leans on Rooth's (1985; 1992) Alternative Semantics, appears in (1).

(1)   **Focus**

    Focus indicates the presence of alternatives that are relevant for the interpretation of linguistic expressions.[3]

Krifka distinguishes between *expression focus* and *denotation focus.* Differences in meaning are only found in the latter kind of focus, on which we concentrate here. The pragmatic use of focus (or "management of CG") does not involve any change in the truth-value of the sentence. Only the semantic use of focus (or "content of CG") has such an effect. Pragmatic uses of focus include answers to *wh*-questions, corrections, confirmations, parallel expressions and delimitations. Some semantic uses of focus are focus-sensitive particles (so-called 'association with focus' cases), negations, reason clauses and restrictors of quantifiers.

It is important to understand which subclasses of focus can be expressed by grammatical means, even if the distinction is only realized in

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[3] Rooth (1985; 1992) distinguishes between the ordinary meaning and the focus meaning of expressions.

a small group of languages. In the SFB annotation guidelines, "focus" is subcategorized into new and contrastive. New focus is further subdivided into new-solicited and new-unsolicited, and contrastive focus is partitioned into replacing, selection, partiality, implication, confirmation of truth-value, and contradiction of truth-value. In the annotation of the data in ANNIS, a distinction is made between wide (or broad) and narrow focus. It is still unclear whether all these categories are given distinctive grammatical correlates in natural languages, but the examination and comparison of natural data will help to answer this difficult question.

Rooth's point of departure is the grammatical representation of focus, as introduced by Jackendoff (1972): the syntactic feature F links the phonological with the semantic representation of focus. He shows that the syntactic feature is not sufficient for the interpretation of focus, and that a semantic and pragmatic component is unavoidable. Rooth goes on with the question of the breadth of the F feature: Pitch accent and prosodic phrasing may be ambiguous. A more difficult question relates to the scope of focus. If a constituent in an embedded clause has a pitch accent, in which circumstances does it stand for a focus which has scope on the matrix sentence, as well? In this case, just postulating a syntactic F feature is not enough, and what Rooth calls "focus skeleton" (Jackendoff's presupposition) is needed. Focus anaphoricity and focus interpretation establish a relation between the focus and the context.

Selkirk concentrates on English and has no doubt that a contrastive focus is expressed differently from informational focus. In phonology, different phonetic correlates are active in these cases, and the contrastive focus must be more prominent than other constituents in the sentence. In syntax, the marking of a focused constituent must also make a distinction between different types of focus. **Zimmermann** also considers contrastive focus, but from a cross-linguistic, semantically oriented perspective. According to him, contrastive focus cannot be accounted for in familiar terms like *introduction of alternatives* or *exhaustivity,* but rather discourse-pragmatic notions like *hearer expectation* or *discourse expectability* must enter the definition of this notion.

2.2. Topic

Let us again start this section on the definition of topic with Krifka's definition in (2).

(2) **Topic**

    The topic constituent identifies the entity or set of entities under which the information expressed in the comment constituent should be stored in the CG content.

The notion of topic is best understood as a kind of address or file card which specifies the individual or set about which the remainder of the sentence makes a comment (see Reinhart 1981 for such a concept of topicality). It has no truth-conditional effect except that it presupposes the existence of that individual. In this sense, the complement of "topic" is "comment", which can itself be partitioned into a focused and a backgrounded part. Sentences usually have only one topic, but can also have none, or more than one.

Following Jacobs (2001), topics can be aboutness or frame-setting topics, and the means to express a topic in the grammar can be pinpointed rather precisely in terms of which syntactic and intonational preferences the topic displays, at least in an intonation language. However, according to Féry's theses, none of these properties are definitional for topic. Rather they express preferences as to how a "good" topic has to be realized (see also Jacobs 2001 for a similar view).

Very prominent in the research about topic is the question of the kinds of expressions which are prototypical topics. In **Endriss** and **Hinterwimmer**'s view, topics serve as the subject of a predication, and do not need to be familiar (in contradistinction to Prince's 1981, or Lambrecht's 1994 definitions of topic). Consequently, not only proper names, definite descriptions, and pronouns can be good topics, but also a subclass of indefinite expressions. Indefinite topics are semantically combined with the comment by making use of their "minimal witness set" (Barwise–Cooper 1981).

Contrastive topics have figured prominently in the agenda of researchers working on information structure, especially in the last few decades. They come in two varieties, as parallel expressions and as implicational topics. Krifka's examples are reproduced in (3) and (4). Krifka analyzes contrastive topics as focus within a topic, since a contrastive topic typically implies that there are alternatives in the discourse.

(3) A: What do your siblings do?
    B: [My [SIster]$_{Focus}$]$_{Topic}$ [studies MEDicine]$_{Focus}$, and [my [BROther]$_{Focus}$]$_{Topic}$ is [working on a FREIGHT ship]$_{Focus}$.

(4)   A: Where were you (at the time of the murder)?
       B: [[I]$_{\text{Focus}}$]$_{\text{Topic}}$ [was [at HOME]$_{\text{Focus}}$]$_{\text{Comment}}$

Worth mentioning at this point is a paper by Frascarelli and Hinterhölzl (2007), who distinguish between aboutness, contrastive and familiarity topics and who show that at least in Italian and in German, these are arranged in this order. This does not seem to be true for languages like Japanese or Chinese, or other tone languages, though, in which topics are mostly "external". In these languages, the order of more than one topic does not seem to be pragmatically conditioned.

In the SFB annotation guidelines, topic is divided into aboutness and frame-setting. In the database of D2 (ANNIS), further categories are introduced: familiarity, implication and contrastivity. Again, it is an empirical issue whether all these distinctions are found in natural languages.

2.3. New/given

A third concept addressed by Krifka is givenness. Following the tradition introduced by Schwarzschild (1999), he does not treat it in parallel with "new". Krifka's definition of givenness is reproduced in (5).

(5)   **Givenness**

       A feature X of an expression α is a Givenness feature iff X indicates whether the denotation of α is present in the CG or not, and/or indicates the degree to which it is present in the immediate CG.

Givenness is a different notion from focus, as it may well be the case that a focused constituent is given in the discourse, as is exemplified by second occurrence focus, for instance.

Krifka correlates givenness with anaphoricity in syntax and deaccenting in phonology, and shows that the preference for accenting arguments rather than predicates can come from the necessity to make a distinction between new and given referents, which is more important for arguments than for heads. This is a powerful hypothesis which needs more investigation in the future.

Selkirk also attributes an important role to givenness, especially as it creates additional layers of accenting through second occurrence focus (SOF).

Abush examines the important question of whether existential pre-supposition is an obligatory part of focus interpretation and comes to a negative answer. She shows that compositional semantics of conditional and negated clauses, traditionally used to check the presence of existential presuppositions, do not necessarily trigger existential presuppositions in a sentence with a focus or a topic accent, and she argues that a treatment of these cases in terms of givenness should be preferred.

The annotation guidelines distinguish between categories of given-ness found in Prince (1981), Givón (1983) and Lambrecht (1994): given-active, given-inactive, accessible, situationally accessible, aggregation, in-ferable, general and new. Again, it is an empirical issue whether lan-guages distinguish between these categories.

3. The "structure" of information structure

Tomioka's paper addresses the following central question: does the rela-tion between information structure concepts ever involve interesting and complex structural aspects, such that the use of the term information *structure* is really warranted? Traditionally, binary oppositions are used: focus is opposed to background, topic to comment, new to given, theme to rheme, etc., but these oppositions are envisaged as orthogonal to each other. Tomioka has a conservative view of the success of establishing an information structural hierarchy, but finds two places in which a hierar-chy can be recognized, albeit of a different kind: topics can be embedded into each other, as evidenced by Japanese topic constructions, and foci can also be embedded in SOF types of structure.

The problem can be illustrated by means of an example. The ques-tion *Who introduced Willy to Mimi? Ingrid or Iris?* may be answered with an exhaustivity marker, like a cleft sentence *It was Ingrid*. It is a special case of alternative semantics, in which the alternatives are given in the preceding question. From a semantic perspective, a contrast, or an exhaustive focus, is not hierarchically superior to alternative semantics, but is rather a special case. And of course, *Ingrid* has been mentioned, so that it is given.

However, some partial hierarchies are located in different parts of the grammar. In the phonology, a progression can be established when going from "backgrounded" and unaccented referents, to a referent which

is informationally new and attributed a pitch accent, and finally to a referent which takes part in a contrast or a parallel construction, given or not. In this last case, the pitch accent may be realized with a boost of f_0 (Selkirk 2002; Baumann–Grice 2006).

It is also the case that finer distinctions may be needed, like those found in second occurrence focus, in which a focus is given and new at the same time, or in embedded foci, where a contrastive focus is embedded in an informational focus. Association with focus (*only, also, even,* quantification adverbs and the like) may also be a special kind of focus embedding.

4. Reflexes of information structure

A recurrent question in many papers of this volume and in the research about information structure addresses the place that information structure occupies in grammar. It is important to distinguish the mechanics of the grammatical computation from the properties of resulting linguistic objects. As for the realization of information structure, **Féry** proposes that languages enhance the grammatical reflexes that they have at their disposal anyway. In this view, there are no phonological or syntactic reflexes reserved solely for information structure. A language with lexical stress enhances exactly this position, but a tone language may choose to express information structure with particles or with different word order, because its grammar provides these solutions independently of information structure.

Gussenhoven shows that it is necessary to distinguish between broad and narrow focus on the one hand and between the kind of focus (at least informational vs. contrastive) on the other hand, before studying the grammatical devices that languages use to encode information structure. With examples from Basque, Wolof, Japanese, Sundanese, Portuguese and Bengali, he shows that languages make important distinctions in the way they realize the two kinds of focus. Interestingly, they all use the same devices for both kinds of focus, but in different ways. Japanese and Sundanese use different particles, Wolof different verb morphology, Portuguese different kinds of pitch accents. All vary the prosodic phrasing along with the other devices, a fact pointing at the universality of prosodic phrasing as a way of signaling focus.

Hartmann concentrates on the realization of prosodic prominence as a result of focus and proposes that languages use tone, intonation and/or prosodic phrasing for the signaling of information structure.

Finally, **Fanselow** proposes that syntax should be information-structure free, in the sense that the computational part of syntax does not refer to positions and processes directly linked to information structure, as proposed, for example, by Rizzi 1997. A focus or a topic does not move because it is informationally marked, but for independent reasons, related, for instance, to the presence of formal features in the syntactic structure. In Selkirk's view, by contrast, the syntactic structure of information structure is expressed by features directly attributed to syntactic constituents.

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