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Edited by Ivona Kučerová and Ad Neeleman

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1 Introduction

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1.1 The problem

The chapters in this volume deal with the question of how information-structural notions are expressed in grammar. As is the case for other studies of linguistic interfaces, the complication in answering this question lies in the number of variables to be taken into account. In the case at hand, it is necessary to decide: (i) what interpretive notions should be considered information-structural primitives; (ii) what means the grammar has at its disposal to express information structure; and (iii) what the possible range is of the mapping rules that connect the two systems. These questions are interrelated, in that the answer to any one of them will affect the answers that can be given to the others. The challenge is therefore considerable. However, there is also a considerable pay-off, as a better understanding of linguistic interfaces is fundamental to our attempt to develop an adequate theory of the human language faculty. And there is some reason for optimism, as over recent years our insight into the relationship between grammar and information structure has increased substantially.

One of the surprising findings in the literature on information structure is that there is a relatively restricted set of interpretive notions affecting the grammar of natural languages. These include pairings like given–new, focus–background and topic–comment, and possibly additional notions like contrast and exhaustivity. It is clear that these notions may require refinements and subdivisions, but there does not seem to be a substantial case in the literature for extending the set. To give an example, categories may refer to individuals whose existence is implied by, but who are not explicitly mentioned in, previous discourse. Speakers treat such categories either as new or accommodate them as given, and their grammatical behaviour corresponds to which of these options is chosen. However, we are not aware of languages that place them in a separate class that is characterized as neither new nor given and that has its own syntactic distribution. So, the given–new dimension is limited to the familiar binary distinction, and not ternary. In the same vein, it doesn't seem

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to us that the limited number of familiar information-structural notions is a matter of sloppy labelling. Although the definition of some notions is notoriously difficult, there is a high degree of consistency in the literature: the tests to identify ‘focus’ in the analysis of Italian tend to be the same as the ones used to identify ‘focus’ in Kwa. So, we may have some hope that it is possible to develop a theory of information structure based on a limited number of universal primitives.

There is, at least on the surface, a wide range of grammatical phenomena that can reflect information structure. These include a variety of word-order effects and various types of prosodic and morphological marking of either an information-structural notion (say focus) or its complement (background in the case of focus). However, there are certainly clear tendencies in the way information-structural notions and grammatical effects line up. For example, focus tends to be prosodically prominent. There do not seem to be languages that mark focus by destressing. Similarly, movement of focus and topic often seems to require a contrastive interpretation. There are certainly languages that require or allow fronting of contrastive topics, but disallow fronting of topics that are non-contrastive (Dutch is an example; see Neeleman and Van de Koot 2008). But the opposite pattern is not attested, as far as we know. These tendencies may well be glimpses of an underlying system that restricts the grammatical expression of information structure. Again, there is a reason for optimism, although much work remains to be done.

In this introduction, we sketch some of the grammatical variation associated with topic, focus and givenness. We hope to give some sense of the intricacies of the problem, as well as some sense of the hints and guesses that may guide analysis. We then give a brief overview of the contributions that the chapters in this volume make.

1.2 Topic

A particularly illuminating example of language-internal variation in the expression of topic is found in Tsez (a Nakh-Daghestanian language spoken in the Caucasus). This language has been described as having three distinct means of marking topichood (see Polinsky and Potsdam 2001). Topics can be marked morphologically, using the morpheme *no* for regular topics and the morpheme *gon* for their contrastive counterparts. Alternatively, they can be marked by appearing in a designated position in the left periphery of the clause. In addition, when contained in certain embedded clauses, they can also be marked through agreement with the matrix verb. We give one example of each of these strategies below (topics are double-underlined).

In the examples in (1), the topic is marked by (an allomorph of) *no*. This marking is compatible with, but does not require, fronting.

- (1) (Polinsky and Potsdam 2001, pp. 597–8, (31))

a bikori-n už-ā bexursi
snake.ABS-TOP boy-ERG killed

b už-ā bikori-n bexursi
boy-ERG snake.ABS-TOP killed
'The snake, the boy killed.'

The examples in (2) illustrate the fronting strategy in the absence of a topic marker. If the directional expression remains *in situ* it can carry a focus particle *kin*, but this marker must be absent in the case of fronting. Polinsky and Potsdam argue that this suggests that the fronted expression must be interpreted as topic.

- (2) (Polinsky and Potsdam 2001, pp. 598–9, (33))

a už-ā k'et'u iškolayor(-kin) begirsi
boy-ERG cat.ABS to.school(-FOC) sent
'The boy sent the cat to school.'

b iškolayor(*-kin) už-ā k'et'u begirsi
to.school(-FOC) boy-ERG cat.ABS sent
'To school, the boy sent the cat.'

The examples in (3) illustrate marking through agreement (in the absence of fronting or morphological marking). If the nominalized embedded clause contains a topic, normal agreement of the matrix verb with the nominalization (here class IV agreement) is suspended, and the verb instead agrees with the topical expression (here class III agreement):

- (3) (Polinsky and Potsdam 2001, p. 609, (56))

a eni-r [už-ā magalu b-āc'-ru-ŋi]
mother-DAT [boy-ERG bread.III.ABS III-eat-PSTPRT-NMLZ].IV
r-iy-xo
IV-know-PRES
'The mother knows the boy ate the bread.'

b eni-r [už-ā magalu b-āc'-ru-ŋi]
mother-DAT [boy-ERG bread.III.ABS III-eat-PSTPRT-NLMZ]
b-iy-xo
III-know-PRES
'The mother knows that the bread, the boy ate.'

It is important to realize that both the fronting strategy and the agreement strategy allow the topic to bear either a contrastive or a non-contrastive morpheme. In other words, the notion of topic can indeed be realized in three ways in Tsez.

The agreement strategy seems to be rare (at least it has not been reported for languages other than Tsez). However, fronting and morphological marking

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have been found to be used as means of identifying topics in a range of languages (sometimes in combination). It is important to emphasize that the term ‘fronting’ covers at least three operations: (i) movement; (ii) left dislocation in the presence of a clitic, weak pronoun or zero pronoun; and (iii) so-called hanging topic left dislocation. The latter also requires the presence of a clitic, weak pronoun or zero pronoun, but in addition involves a looser relationship between the topic and the rest of the clause, often evidenced by default case marking of the topical category (where in regular left dislocation the case of the topic matches that of the pronominal category). We use German examples to illustrate the three fronting operations below (see Grohmann 2003 for discussion and references).

- (4) a Diesen Mann habe ich noch nie gesehen (movement)
 this-ACC man have I yet not seen
- b Diesen Mann, den habe ich noch nie gesehen (left dislocation)
 this-ACC man, that-acc have I yet not seen
- c Dieser Mann, ich habe ihn noch nie gesehen (hanging topic)
 this-NOM man, I have him yet not seen
 ‘This man, I’ve never seen him before.’

Languages may combine these types of topic fronting, but may also use a subset of them. As shown, German has all three. The same is true of Czech (see Sturgeon 2008). Greek and Italian, for example, have regular left dislocation and hanging topic left dislocation, but seem to lack the movement strategy (fronting by movement appears to be reserved for foci; see Cinque 1990 and Rizzi 1997 for Italian, and Philippaki-Warbuton 1985, Tsimpli 1995 and Tsipplakou 1998 for Greek).

In many cases, the choice of fronting strategies is sensitive to the presence of contrast. In Japanese, for example, non-contrastive topics are arguably fronted through left dislocation (with a null pronoun in the thematic position), whereas contrastive topics are fronted by movement (Vermeulen 2009 and subsequent work). In German, movement and regular left dislocation can affect contrastive and possibly non-contrastive topics, but hanging topic left dislocation permits only non-contrastive readings (see Grohmann 2003). Of course, this pervasive difference in the marking of contrastive and non-contrastive topics, with a greater affinity in the former for movement, raises the question of whether contrast is merely a special reading of topics or an information-structural primitive in its own right.

As in the case of fronting, we must distinguish different types of morphological marking of topics. The most important distinction is between topic markers attached to the topical element itself and topic markers that appear as functional heads in the extended verbal projection. There certainly seems to be

a predominance of markers that attach to the topic itself. The topic markers of Tsez presumably belong to the former category. Whether the topic appears *in situ* or in dislocation, the topic marker surfaces to its immediate right, exactly as we would expect if it was a (non-verbal) suffix. The Japanese particle *wa* has been argued to belong to the same category: given the strict head-final nature of the language, it can only be seen as a head in the extended projection of the topic. (Data below are from Shibatani 1990, pp. 262, 275; the suggested constituency is supported by a number of other tests, but we skip these here, as the point is not contested.)

- (5) a Hanako-wa Taroo-ga eigo-o osieteita
 Hanako-TOP Taro-NOM English-ACC teach-PAST
 ‘As for Hanako, Taro was teaching English to her.’
- b Tori-wa mesu-ga tamago-o umu
 bird-TOP female-NOM egg-ACC lay
 ‘As for birds, it’s the female who lays the eggs.’

There have been claims to the effect that certain topic markers are functional heads in the verbal extended projection; however, the facts are not entirely clear and the problem is complicated by the fact that verbal topic markers are cross-linguistically rather rare. The most explicit claim for their existence is made for Kwa by Aboh (2004, 2007). A relevant example from Kwa is given below, with the bracketing Aboh suggests:

- (6) (Aboh 2007, p. 84, (5))
 Ûn nywën do Yeti [yà Dòsú ná dà-è]
 1SG know that Yeti TOP Dosu FUT marry-3SG
 ‘I know that as for Yeti, Dosu will marry her.’

The bracketing in Aboh’s work is meant to suggest that *yà* is a verbal functional head. However, as far as we can tell from the data presented by Aboh, there is a possible alternative: we could analyse *Yeti yà* as a structural unit. (As we will see in the next subsection, a similar question of constituency arises with respect to focus marking.) Whatever may turn out to be the case in Kwa, there appears to be a clear typological asymmetry in this domain, with a preference for topic markers being attached to the topic. This should inform analyses of the syntactic expression of topichood.

Finally, in addition to fronting and morphological marking, languages use intonational patterns to mark topics. Well-known examples are the B-accent found in English (see Jackendoff 1972) and the onset of the hat contour found in German (see Féry 1993, Büring 1997 and Krifka 1998). As in the case of morphological markers, the intonational patterns appear to be anchored in the topics themselves, rather than in other elements in the clause (say, the structural sister of the topic). What we mean by this is that the rules for constructing an

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intonational contour for a sentence containing a topic must refer to that topic, even if the contour is larger than the constituent in question (this point is rarely made explicitly, but it seemed generally accepted by those working on the intonation of topics).

We arrive at the following picture. The marking of topics cross-linguistically can make use of a wide variety of grammatical options. Topic can be marked by word order (through movement, left dislocation and hanging topic left dislocation). It can also be marked by morphological means (through a morpheme attached to the topic itself, or perhaps a morpheme attached to the verbal projection, or through agreement) Finally, a topic can be marked prosodically (for example, through a B-accent in English and a hat contour in German). For each of these there are clear asymmetries: (i) some constructions, in particular those involving A'-movement, admit contrastive topics more easily than regular topics; other constructions admit regular but not contrastive topics; (ii) topic markers tend to be attached to topics rather than to the verbal extended projection; and (iii) intonational patterns identifying topics appear to be anchored in the topic.

1.3 Focus

The area of information structure that has perhaps attracted most attention is focus. As is the case for topics, foci can be marked in a variety of ways. Two parallels should be emphasized: (i) languages tend to distinguish contrastive and non-contrastive foci, and (ii) the marking tends to be anchored in the focus, rather than in other material, although this generalization is perhaps not as well motivated as in the case of topics.

One strategy of marking focus that has been studied widely is through stress. The seminal work by Jackendoff (1972) has led to a general acceptance that in a wide variety of languages focus is associated with prosodic prominence. The idea has guided work by a variety of researchers, including Reinhart (1995), Selkirk (1995b), Schwarzschild (1999) and Féry and Samek-Lodovici (2006). In the case of English, prosodic prominence is taken to mean pitch accent, but it is clear that languages may vary in this respect. There is an ongoing debate about the attested empirical patterns. Some of the issues may be resolved by work in corpus linguistics and empirical phonetics (see, for instance, Dilley unpub. ms.; Constant unpub. ms.; Howell and Rooth 2009; and Katz and Selkirk unpub. ms.). However, there is potentially a considerable range of variation. For example, Koch (2007) argues in some detail that, in Thompson River Salish, marking of focus is achieved by alignment of the relevant constituent to the left edge of an intonational phrase, while stress is assigned to the rightmost element in the clause (the phenomenon is illustrated below, where stress is marked by underlining). Thus, focused constituents tend to shift *away* from the main stress

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position. Therefore, if focus in Thompson River Salish is marked prosodically, as Koch claims, the relevant prosodic notion must be alignment, rather than stress (pp. 351–2):

- (7) Q: Sté? x^wúy k s-ła?xáns-əp tk sʔáp
 what FUT COMP NOM-eat-2PL.POSS OBL.IRL evening
 ‘What are you people going to eat this evening?’

A: [píns]_{FOC} nce? x^wúy e n-s-ła?xáns
 beans 1SG.EMPH FUT COMP 1SG.POSS-NOM-eat
 ‘It’s beans that I’m gonna eat.’

The idea that focus must be marked prosodically, perhaps most commonly by stress, has been explored by a number of authors to explain information-structural restrictions on scrambling in languages with at least a certain degree of free word order. The general idea is that, where languages like English adjust the intonation of a sentence in order to adhere to the stress-to-focus principle, as illustrated in (8), languages with free word order may select a variant of the sentence in question that meets this principle without any shifts in the position of main stress. Thus, in a comparable context in Dutch, the scrambled order is strongly favoured, as in this structure the nuclear stress rule will target the verb, whereas in the unscrambled order stress falls on the object (see section 1.4 for an alternative view of these data):

- (8) Q: What did John do with the book yesterday?
 A: He SOLD the book yesterday.
- (9) Q: Wat heeft Jan gisteren met het boek gedaan?
 what has John yesterday with the book done
- A: Hij heeft het boek gisteren VERKOCHT
 he has the book yesterday sold
- A': #Hij heeft gisteren het boek VERKOCHT
 he has yesterday the book sold

This approach to regulating free word order has been developed in different ways by different authors; see in particular Vallduví (1990), Reinhart (1995), Zubizarreta (1998), Truckenbrodt (1999), Arregui-Urbina (2002), Szendrői (2003) and Samek-Lodovici (2005). In fact, even for English it has been argued that where free word order is found, the alternative structures differ in their focus interpretation as a consequence of their intonation. The point is made persuasively for the case of particle placement by Svenonius (1996) and Dehe (2002):

- (10) a John put down the BAGS.
 b John put the bags DOWN.

The success of the idea in explaining restrictions on free word order raised the question of whether focus placement could be explained in its entirety in terms of alignment with prosody. The answer to this question relies on whether it is possible to develop a prosodic account of rules of focus placement that are apparently syntactic in nature. Hungarian is probably the language that has been studied most intensively in this respect. Several seminal papers in generative grammar take the occurrence of focused constituents in the immediately preverbal position to be a syntactic phenomenon (see Szabolcsi 1981; Brody 1990; É. Kiss 1994; Brody 1995; É. Kiss 1998). The alternative that has been developed since the early nineties is that the stress system of Hungarian (which places main stress leftmost in prosodic units) singles out the preverbal position as the location for main stress. The placement of focus then reduces to the same system observed above for Dutch: focus is aligned with stress (see Horvath 2000 and Szendrői 2003, among others).

A second language that is important for this issue is Italian, which allows focus to surface in a range of positions, at least at first sight. Samek-Lodovici addresses this complication by arguing that focus is always placed in an invariant main stress position, and that the impression of freedom originates in the availability of right dislocation of a wide range of constituents. His claim is that any category following the focus is right-dislocated.

It is fair to say that the issue is still very much open. One problem, addressed in the current volume by Surányi, is that the preverbal focus position of Hungarian is associated with a particular interpretation, sometimes referred to as 'exhaustive' (see É. Kiss 1998), that is not typical of focus in general. The prosodic account of focus placement does not account for this, at least not without modification. A second problem is to do with the different behaviour of contrastive and non-contrastive foci. As we have shown, in certain languages the position of regular foci appears to be arranged so as to align with stress. However, in the very same languages contrastive foci may (optionally) move leftward, away from the main stress position (a movement not available for non-contrastive foci). This is discussed for Dutch in Neeleman (1994) and Neeleman and Van de Koot (2008), but the special behaviour of contrastive foci has been observed for several other languages:

- (11) Volgens mij heeft [_{DP} alleen _{DIT} boek] Jan belooft _{t_{DP}} te zullen
 according.to me has only this book John promised to will
 lezen
 read
 'I think that John has promised that he will read only this book.'

This pattern provides a challenge for stress-based accounts of focus placement, in that amendments must be made for focus under contrast. An intriguing further complication is found in Russian, where contrastive foci at one stage of the derivation occupy the same right-peripheral position

as regular foci and subsequently move to a variety of preverbal positions. Neeleman and Titov (2009) suggest that it is hard to account for these data in prosodic theories of focus placement (at least if stress assignment is, in relevant respects, a surface phenomenon). Stress is rightmost in Russian, but there is no reason why a contrastive focus should move through the stress position if it subsequently vacates it.

Let us sum up what we have seen so far. To begin with, there is solid evidence suggesting that focus can be marked prosodically, most typically – but not exclusively – by stress. In addition, there is some evidence that a distinction must be made between contrastive and non-contrastive foci, on a par with the contrast observed in topics. Typically, contrastive foci undergo A'-fronting operations more easily than non-contrastive foci. It is perhaps worthwhile pointing out that it is not obvious that this movement can be equated with *wh*-movement. In Dutch, the landing sites are different (*wh*-expressions land in spec-CP; focused constituents land in a range of lower positions, as well as spec-CP). Moreover, focus movement is optional, while *wh*-movement is obligatory. Finally, even in Hungarian, where *wh*-movement and focus movement have much in common, the size of constituents affected is different, as shown in Horvath (2000, 2007).

The final issue to be addressed in this section is the syntax of focus markers. There can be little doubt that there are languages that mark foci morphologically, just as topichood can have a morphological expression. However, what is less clear is whether focus markers consistently attach to the focus itself, or whether they can also be attached as functional heads in the verbal extended projection. We begin by giving two examples of languages of the former type: Japanese and Guruntum, a West Chadic language spoken in Nigeria.

Japanese is perhaps not well known as having a focus marker. However, Vermeulen (2005) argues convincingly that the particle *ga*, which marks nominative case, can also be used to mark focus. This is not obvious when we consider arguments marked by *ga*, as arguments require case. However, if *ga* is attached to an adjunct, it must function as a focus marker, given that adjuncts do not bear case in Japanese. Some data illustrating this are given below:

- (12) a ano ziko-de takusan-no nihonzin-ga sinda
that accident-by many-GEN Japanese-GA died
'Many Japanese died in that accident.'
- b ano ZIKO-ga takusan-no nihonzin-ga sinda
that accident-GA many-GEN Japanese-GA died
'It was in that accident that many Japanese died.'
- c ano ZIKO-de-dake-ga takusan-no nihonzin-ga sinda
that accident-in-only-GA many-GEN Japanese-GA died
'It was only in that accident that many Japanese died.'

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The core contrast is between (12a) and (12b). The locative adjunct is normally marked by the preposition *de*. When marked with *ga*, however, the locative expression must be interpreted as in focus. It may seem surprising that the locative in (12b) does not surface as *ZIKO-de-ga*, but this is probably the consequence of a deletion rule triggered by adjacency of *de* and *ga*. When these morphemes are separated by another element, as in (12c), the preposition shows up again.

Given the strict head-final nature of Japanese, it must be the case that *ga* is attached to the focused constituent. It cannot be a head in the extended verbal projection, as it would then have to precede its complement, unlike any other head in the language.

The Guruntum system of focus marking is described in some detail by Hartmann and Zimmermann (2009). As can be seen in (13), focus is marked through a prefix *á*, which appears left adjacent to the argument in focus. (In the answer in (13b) it has cliticized onto the verb, but this is presumably a phonological matter.)

- (13) a Q: *Á kwá bà wúm kwálingá-lá-ì?*
 FOC who PROG chew colanut-DEF
 'WHO is chewing the colanut?'
- A: *Á fúrmáyò bà wúm kwálingá-lá*
 FOC fulani PROG chew colanut
 'The FULANI is chewing colanut.'
- b Q: *Á kãè ã màì tí bà wúmi?*
 FOC what REL 3SG PROG chew
 'WHAT is he chewing?'
- A: *Tí bà wúm-á kwálingá-lá*
 3SG PROG chew-FOC colanut
 'He is chewing COLANUT.'

As is the case in Japanese, it is not disputed that the particle *á* is attached to the focused constituent, rather than being merged as a functional head in the extended verbal projection. This must be the case, simply because the position of *á* shifts with the focus in examples like (13) (see Hartmann and Zimmermann 2009 for more discussion).

So, there are undisputed examples of focus markers that are attached to the focused constituent. The question is whether this is the only possibility, or one possibility among others. Interestingly, Hartmann and Zimmermann show that in Guruntum the focus marker is placed as close to the focused category as possible, given certain structural constraints. Therefore, in some cases the focus is properly contained in the category that is marked (if the focus is a constituent in a complex DP, the marker is prefixed to the DP as a whole; see