INFORMATION STRUCTURE AND THE ENGLISH LEFT PERIPHERY

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Abstract

This paper uses two English structures with noncanonical word-order (Topicalization and Left-dislocation) as case studies into information-structure (IS). It is argued that topicalized elements have a contrastive IS-interpretation, while left-dislocated ones are like regular topics. Based on these observations, a new framework for IS is proposed, based on the features NEW and D(iscourse)-LINKED. As "contrast" is judged to be essential for the proper characterization of IS, it is integrated into the proposed architecture, as an additional d-linking feature. This framework is argued to be an improved amalgamation of previous IS-architectures.

1   Introduction

Languages commonly use a variety of methods to express the information-structural (IS) features of a sentence[1]. Besides intonation and certain morphemes (the Japanese topic marker *wa* is a common example), word order variation is one of the prime tools for such strategies. This is even true for English, a so-called "GF-configurational language", which is commonly assumed to have a relatively fixed word-order.

This paper has two goals. First, I will investigate the information-structural properties of two English structures which utilize word-order variation for such purposes. (1a) and (1b) provide examples for the constructions.

(1)   a.   *Chris, we like.*
       b.   *Chris, we like him.*

The common name in the literature for the configuration in (1a) is "Topicalization" (abbreviated as TOP henceforth), while (1b) is most commonly called "Left-Dislocation" (abbreviated as LD). Both feature an argument in a non-canonical, left-peripheral position[2]. The obvious difference between the two is that while in TOP, the canonical position of the fronted

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[1] I would like to express my gratitude for the invaluable comments of the two anonymous reviewers of this paper. All remaining errors are of course mine.
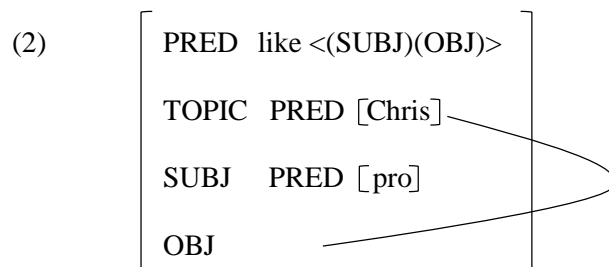
[2] Following Birner & Ward (1998), the discussion of TOP and LD is limited to lexically subcategorized elements. Adjuncts can also occur in the left-peripheral position, but their function is more like scene-setting and they occur much more freely than one would expect from topicalized or left-dislocated elements. For example, (ia) could be discourse initial, unlike (ib). I will argue that this is because in (ib), the initial element necessarily has a contrastive interpretation, while in ia it does not.

   (i) a.   *In New York, there's always something to do.* (could be felicitous discourse-initially)
       b.   *#In a basket, I put your clothes.* (could not be infelicitous discourse-initially)

constituent is empty, in LD, it is filled with a co-referential resumptive pronoun.

The second goal of the paper is to propose a novel feature-based information-structural framework for LFG, one which is capable of accommodating the various IS-categories that have been put forward in the literature.

Both of these constructions are commonly regarded as topic-marking devices. For instance, Dalrymple (2001: 391) offers the following f-structure for 1a:

(2)

$$
\begin{bmatrix}
\text{PRED} & \text{like} <(\text{SUBJ})(\text{OBJ})> \\
\text{TOPIC} & \text{PRED} \begin{bmatrix} \text{Chris} \end{bmatrix} \\
\text{SUBJ} & \text{PRED} \begin{bmatrix} \text{pro} \end{bmatrix} \\
\text{OBJ} &
\end{bmatrix}
$$

Although it has been noted (for instance see Dalrymple and Nikola 2011:65-66) that the discourse function labels that appear in f-structures do not necessarily tightly correspond to the exact IS-roles of the elements that bear them, the relationship has not been investigated in depth.

Despite the intuitive appeal of this characterization, not everybody has shared these ideas. There are several functionalist researchers who have called these assumptions into question. For instance, Prince (1999) writes the following about TOP:

> A glance at the literature over the past thirty years shows that this assumption has been maintained by syntacticians as well as by functionalists, although it has never been proven or even, to my knowledge, seriously investigated.

Prince argued in several papers (Prince 1981, 1998, 1999) that rather than being simple topic-marking devices, both TOP and LD may actually have several functions, and marking a topic is crucially *not* one of them. In this paper, I argue that Price's claims are partially correct. The claim that TOP and LD simply mark topics cannot be maintained (especially in the case of TOP), but a more fine-grained view of IS-notions can capture the generalizations about these constructions. In particular, I consider it essential that the LFG approach to IS should integrate the notion of "contrast".

The structure of the paper is the following. In section 2 I investigate the IS-properties of TOP and LD. Section 3 reviews the approaches to IS that has been proposed in the literature. Section 4 outlines a new IS-framework. Section

5 utilizes this framework for the treatment of TOP and LD in the form of annotated phrase-structure rules. Finally, section 6 summarizes the paper.

2 Information structure at the English Left-Periphery

2.1 Information-structure and Topicalization

That TOP is not simply a topic-marking device is obvious from the fact that topicalized entities may fail the basic topichood-tests, which are the following:

(i) *The "as for X"-test*:
   Can the sentence be plausibly paraphrased with an initial "as for X"-phrase, where X is the supposed topic expression?
(ii) *The "what about X"-test:*
   Can the sentence plausibly answer a "what about X"-question, where X is the supposed topic expression?
(iii) *The "say about X that…"-test:*
   Can the sentence be plausibly reported about using an initial "Y said about X that…"-phrase, where X is the supposed topic expression?

Now consider the following example, from Prince (1999):

(3) a. *Thanks to all who answered my note about asking about gloves. Didn't look at this bb for several days and was astounded that there were 11 answers. <u>Some I missed, darn.</u>*

   b. *#As for some, I missed them, darn.*

   c. A: *#What about some?*
      B*: Some I missed, darn.*

   d. *#She said about some that she missed them.*

The problem that underlies the intuition that these sentences fail the tests is that the noun phrase *some* is not definite and fails to provide an adequate referent about which the sentence could predicate something. The fact that in (3), the TOP is felicitous nevertheless strongly suggests that the fronted constituent is not a topic.

Prince (1981) has already noted that a topicalized constituent like *Chris* in (1a) may actually serve two distinct functions in the discourse: it can either be some kind of topic or some kind of focus. But what is the exact nature of these topic-like and focus-like entities?

I argue that the fronted phrases in TOP are actually contrastive elements, so TOP marks Contrastive Foci (CF) and Contrastive Topics (CT). To claim this, I need to have a working definition of "contrast". This is not entirely

straightforward. One of the earliest definitions of contrastiveness was provided by Chafe (1976). He defined "contrast" as assertion on the part of the speaker that one of "a limited number of candidates" is "correct". Birner & Ward (1998) criticizes this view on the basis of examples like (4):

(4) *John Smith resigned to accept the position of president of X company"* *– then you know he resigned.* <u>*This little nuance you recognize*</u> <u>*immediately when you're in corporate life.*</u>

They point out that "it seems unlikely that the speaker is asserting that one little nuance is the 'correct selection' from some set of little nuances (Birner and Ward 1998:41)."

Others (e.g. É. Kiss 1998) emphasize the existence of a limited number of candidates, some (e.g. Jacobs 1988) add that these alternatives must be explicitly mentioned in the context.

The definition that I am going to use is from Titov (2013), who asserts that for something to qualify as contrastive, "the set of alternatives must become active in the discourse at the point the sentence containing the contrastive element is uttered. No sooner and no later." It is important to note that Titov refers to a pragmatic set of alternatives, which are contextually salient entities. This is not the same as a "semantic set of alternatives which is usually taken to form the basis for the interpretation of foci generally (Krifka 2008)". This is crucial, since for example Kenesei (2006) shows, both New Information Focus (NIF) and Contrastive Focus also know as Identificational Focus) involves set-membership at the level of semantics. The difference according to Kenesei (2006) is that with CF, it is also asserted that the set includes no other members. This may be illustrated with the following dialogue:

(5) a. *Kit   hívtál   meg?*
who.acc   invited.2SG   PREVERB
'Who did you invite'

b. *Meghívtam   (például)   JánostNIF.*
invited.1SG   for example   John.ACC
'I invited (for example) John.'

c. *JánostCF   hívtam   meg.*
John.ACC   invited.1SG   preverb
'I invited JOHN (and not somebody else).'

According to Kenesei (2006), both the NIF in (5b) and the CF in (5c) would include a reference to a set-membership ("people I invited") in the semantic representation. However, at the level of pragmatics, it is only CF which evokes

alternatives. In other words, only CF signals to the hearers that other candidates are potentially present in the discourse. In section 4, I will make use of this idea by positing that CF evokes sister nodes in a discourse-tree.

As for the CF-use of TOP, Choi (1997), referring to Ward (1988), notes that the fronted phrase actually refers to two discourse elements: one, a set or a scale, and two, a specification of a value or an element in that set on that scale. In this example this would mean that (1a, *Chris, I like*) evokes a set of people that I may like and picks *Chris* as a member of that set. If this is correct, then the sentence meets the criteria for contrastiveness defined by Titov (2013), mentioned earlier: the set of alternatives becomes active in the discourse at the point the sentence containing the contrastive element is uttered. When TOP is used this way, the sentence has only one pitch accent, an H* tone (which Jackendoff 1972 calls A-accent) on the fronted constituent.

In the CT-use of TOP, the sentence has two accents. On the initial expression, it has an L+H* tone. This is called B-accent by Jackendoff (1972), and there is also an A-accent on some later constituent of the sentence. This is exactly the pattern that is associated with CTs (Büring 2003).

There is additional supportive evidence for the claim that TOP may mark contrastive topics. It is generally accepted that topics should be referential (e.g. Reinhart 1981, Lambrecht 1994). Considering this, it is striking that there are several grammatical elements that may be topicalized, but would not count as referential under a basic understanding of the concept: verbs ((6a), (6b)), adjectives (6c) and propositions (6d). If topicalization was about (referential) topics, all these examples would be predicted to be unacceptable.

(6) a. *Surrender, we never will.*
     b. *To win, we at least tried.*
     c. *Happy, Tom will never be.*
     d. *That Tom was a movie star, we would never have guessed.*

The claim that TOPs mark CTs also sheds some light on the question of why they can be used with nonreferential expressions, demonstrated in (6). For reasons that are not clear to me at this point, the referentiality restrictions on Contrastive Topics are lighter than on regular topics. The reasons for this should be subject to further investigation. Nevertheless, the fact remains. For instance, Gécseg (2001) notes that in Hungarian (as in 6b-c), infinitives and adjectives can serve as CTs, unlike regular topics (the same fact holds for foci as well):

(7) a. *Úszni_CT*   *tudok.*   (Hungarian)
         swim.INF   can.1SG
         'To swim, I'm able to.' (as opposed to e.g., skiing)

     b. *Szép-nek_CT*   *szép*   *a*   *húgod.*
         pretty-DAT   pretty the   sister.POSS.2SG
         'Pretty, your sister in fact is.' (but she may not be smart)
         (lit.: 'For nice, nice your sister really is.')

2.2 Information-structure and Left-dislocation

Now let's turn to the other construction with a noncanonical word-order, Left-dislocation. Here the canonical position of the initial element is filled with a resumptive pronoun, as in (1b), *Chris, I like him.*

    Prince (1998) claims that there are 3 basic functions for LD:

    (i)   island-amnesty,
    (ii)   simplifying discourse processing,
    (iii)   signaling a "poset-inference."

In the first use, it is actually applied as covert topicalization. The speaker would like to use TOP, but faces a syntactic obstacle, e.g. an island, and thus is forced to put a resumptive pronoun in the canonical position of the initial element. One such example is shown in (8).[3]

    (8)   *Chris, the story about *(him) was funny.*

In this case, it cannot be decided whether the speaker uses TOP or LD, as he/she is constrained by syntax. The context and the intonation would clarify this, but as this use is clearly forced by core syntax and has nothing to do with Information-structure, I exclude it from the scope of this paper.

    The second function of LD is "simplifying discourse processing." According to Prince (1998), this means that by using LD, people remove discourse-new entities from positions that are dispreferred by them. Prince's (1998) example for this is the following segment:

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[3] While in some languages, the distribution of gaps and resumptive pronouns is more complex, it is a fairly uncontroversial generalization in the literature that English uses resumptive pronouns for a very restricted set of purposes. Their main function is to neutralize island-violations like the one in (8), and possibly they can be inserted in some sentences for parsing purposes, for instance in (iib) from Falk (2002).

    (ii) a.   *This is the girl that John likes (*her).*
        b.   *This is the girl that Peter said that John thinks that yesterday his mother had given some cakes to ?(her).*

(9) *My sister got stabbed. She died. Two of my sisters were living together on 18ᵗʰ Street. They had gone to bed, and this man, their girlfriend's husband, came in. He started fussing with my sister and she started to scream. <u>The landlady, she went up, and he laid her out.</u> So sister went to get a wash cloth to put on her, he stabbed her in the back.*

According to Prince (1998), the landlady in its original position would be a subject and subjects are generally dispreferred as discourse-new entities.[4] One can also approach this from the perspective of Lambrecht's (1994: 185) "Principle of the separation of reference and role": do not introduce a referent and talk about it in the same clause.

The third use of LD according to Prince (1998) is to trigger an inference on the part of the hearer that the entity represented by the initial NP stands in a salient partially-ordered set relation to some entity or entities already evoked in the discourse-model. Partially ordered sets, "posets" are "defined by a partial ordering R on some set of entities, e, such that, for all e-1, e-2, and e-3 that are elements of e, R is either reflexive, transitive, and antisymmetric or, alternatively, irreflexive, transitive, and asymmetric" (Prince 1998). In essence, this means that the left-dislocated entity has some set relation with other elements.

Prince (1998) sees these functions as unrelated entities. However, subsequent research suggests that there may be a way to have a unified view of functions 2 and 3 (as was stated, the first function is set aside in this paper).

Gregory & Michaelis (2001) have conducted a corpus study on TOP and LD. They suggest that the overarching function of LD is that of "topic promotion", that is, to bring entities into the discourse. They have compared all the LD tokens with all the TOP tokens and have found 3 factors that back up this claim.

First, they examined the givenness of LDs, compared to TOPs. They used Gundel, Hedberg & Zacharski's (1993) cognitive statuses to determine the referential givenness of an element in the discourse. These are (from the lowest to the highest givenness): type identifiable, referential, uniquely identifiable, familiar, activated, in focus. In (9) there is an example for each status (examples (9a) to (9e) are from Gundel, Hedberg & Zacharski 1993).

(10)   *I couldn't sleep last night,*
   a.   Type identifiable: <u>*A*</u> *dog (next door) kept me awake.*
   b.   Referential: <u>*This*</u> *dog (next door) kept me awake.*
   c.   Uniquely identifiable: <u>*The*</u> *dog (next door) kept me awake.*
   d.   Familiar: <u>*That*</u> *dog (next door) kept me awake.*
   e.   Activated: <u>*That*</u> *kept me awake.*

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[4] There is a traditionally assumed connection between subjecthood and topichood, see Lambrecht (1994), chapter 4.2.

f.   In focus: *I couldn't sleep last night because of your dog. <u>It</u> kept barking.*

The authors found that LD has relatively low givenness in the discourse, the most typical givenness status being uniquely identifiable. According to Gregory and Michaelis (2001), this is expected if LD is a topic-promotion device, since "uniquely identifiable status alone represents the intersection of discourse-new and hearer-old statuses," entities that can be identified by the hearer, but are not in the current discourse yet. TOPs, on the other hand, had higher activation status, which is expected if they are contrasted to some discourse elements, as was established in the previous section.

Gregory & Michaelis's (2001) second target for investigation was the anaphoricity of left-dislocated and topicalized entities. They categorized tokens according to the type of the anaphoric link that the fronted element had to the discourse (from highest to lowest): directly mentioned, the entity is member of a set that has been mentioned, none. They found that LDs tended to have low anaphoricity, which is expected if their role is topic promotion.

Gregory & Michaelis (2001)'s final factor was topic persistence. They measured to what extent the fronted elements in LD and TOP tend to remain topics of the subsequent discourse. They found that LD has a high topic persistence, as opposed to TOP. This is in line with what we have discussed in connection with these structures: LD is a topic promoter, so one expects that the entity introduced by it is going to be talked about. We do not have such expectations for contrasted elements introduced by TOP.

The conclusion that may be drawn from these observations is that it is plausible to regard LD as a topic-marking device, if we define "topic" in the way that for instance Gazdik (2011) does. Her term is "thematic shifter", and it is seen as a discourse function whose role is either to introduce a new discourse-topic or to open a new subtopic of an existing one.

Seeing LD as a topic-marking device gets additional support from the fact that nonreferential left-dislocated meanings are quite infelicitous:

(11) a.   *#Surrender, we will never do so.*
     b.   *#Happy, Tom will never be like that.*
     c.   *?That Tom was a movie star, we would have never guessed that.*

3 Information-structure taxonomies

Since Choi (1996) and Butt & King (1996), IS is viewed as an independent level of representation in LFG, where the sentences' discourse-contextual and information packaging characteristics are represented[5].

Choi (1996), in her account of German and Korean scrambling, was one of the first researchers to incorporate information-structure in an analysis in an LFG-setting. She proposed that information-structural notions could be decomposed into feature matrices. Choi's framework involved two independent features: PROM(inent) and NEW. These features could have either positive or negative specifications, yielding the following taxonomy for IS-categories:

	+ NEW	− NEW
+ PROM	Contrastive Focus	Topic
− PROM	Completive Focus	Tail

Figure 1.
IS-taxonomy of Choi (1996)

In this framework, + PROM means that the discourse function is prominent in the discourse and + NEW means that it introduces novel information.

The decompositional approach has been very influential. Butt & King (1996) offered another version of it, as they accounted for word-order in Urdu and Turkish. They used the same features, but the set of discourse functions occupying the taxonomy is different:

	+ NEW	− NEW
+ PROM	Focus	Topic
− PROM	Completive Information	Background Information

Figure 2.
IS-taxonomy of Butt & King (1996)

This framework has been used in several subsequent approaches, see e.g. Butt & King (1997), Dalrymple & Nikolaeva (2011) and Mycock (2013).

Cook & Payne (2006) replaced PROM with TOPICAL and they also enriched the feature-set, adding a CONTRASTIVE feature. The meanings of TOPICAL and NEW remained fairly obscure. Also, this move doubled the available discourse functions, including an unattested one (Contrastive Tail).

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[5] For space-limitations, I cannot review every LFG-work about IS. Apart from the ones discussed, the reader might also be referred to Andreasson (2007) and Sulger (2009).

		+ NEW	− NEW
+ TOPICAL	+ CONTRASTIVE	Contrastive New-information Topic	Contrastive Old-information Topic
	− CONTRASTIVE	New-information Topic	Old-information Topic
− TOPICAL	+ CONTRASTIVE	Contrastive Focus	Contrastive Tail
	− CONTRASTIVE	Non-contrastive Focus	Tail

Figure 3.
IS-taxonomy of Cook & Payne (2006)

Gazdik (2011) kept the PROM feature but replaced NEW by D(iscourse)-LINKED. Also, in Gazdik's system, IS is integrated into a wider representation of discourse-structure. This means that several IS-categories can occupy one slot in the taxonomy and it is the discourse context that ultimately specifies which discourse function is assigned to which element in the sentence.

	+ D-LINKED	− D-LINKED
+ PROM	Thematic Shifter, Contrastive Topic	Focus, Hocus[6]
− PROM	Background Information	Completive Information

Figure 4.
IS-taxonomy of Gazdik (2011)

As we can see, the landscape is not very clear. Three main issues obscure the view: i. it is not clear how many discourse functions we should distinguish, ii. it is not clear what features we should use, and iii. it is often inadequately defined what these features really mean.

A closely related problem to the first and second issues is the status of "contrast". With the exception of Cook & Payne (2006), the LFG-taxonomies do not recognize contrast as a feature of information-structure. This appears to go against the current in generative linguistics. Several authors have argued in the Minimalist tradition that contrast is an independent notion of IS, and it plays an important role in a number of pragmatico-syntactic phenomena (see for example É. Kiss (1998), Molnár (2002) or Lopez (2009).

For instance, Neeleman et al. (2009) propose the following taxonomy:

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[6] Hocus was originally proposed by Kálmán (1985), for newsworthy preverbal NPs in a neutral Hungarian sentences. I assume that they can be regarded as New Information Foci, but further research has to be done on this issue.

	TOPIC	FOCUS
+ CONTRASTIVE	Contrastive Topic	Contrastive
− CONTRASTIVE	Non-contrastive Topic	Non-contrastive Focus

Figure 6.
IS-taxonomy of Neeleman et al. (2011)

They deem it necessary to set up a taxonomy like this because one can find linguistic phenomena that make reference to the individual features in it.

For example, A-scrambling in Dutch is possible with elements that bear contrastive IS-categories, Contrastive Topics and Contrastive Foci.

(12) a.　　*Ik geloof dat $\underline{alleen\ DIT\ boek_{CF}}$ Jan Marie gegeven*
　　　　　I believe that only this book John Mary given
　　　　　heeft.
　　　　　 has
　　　　　'I believe that John has given only this book to Mary.'

　　　b.　　*Ik geloof dat $\underline{zo'n\ boek_{CT}}$ alleen JAN Marie gegeven*
　　　　　I believe that such-a book only John Mary given
　　　　　heeft.
　　　　　 has
　　　　　'I believe that only John has given such a book to Mary.'

Additionally, I have argued in section 2 that TOP is also a construction that involves contrastive discourse functions.

Next, Neeleman et al. (2009) argue that the distribution of the marker *wa* in Japanese indicates the generalization that the feature TOPIC is licensed in clause-initial position. That is, *wa* is a marker for topic, be they contrastive or non-contrastive ones. (13a) is an example for a non-contrastive *wa*-marked topic, while (13b) is a contrastive one.

(13) a.　　A: *Tell me about that dog.*
　　　　　B: *Sono $\underline{inu\text{-}wa_{TOPIC}}$ kinoo John-o kande - simatta.*
　　　　　　that dog-WA yesterday John-ACC bite - closed
　　　　　　'The dog bit John yesterday.'

　　　b.　　A: *What did John eat at the party yesterday?*
　　　　　B: *Hmm, John-wa doo-ka sira-nai-kedo,*
　　　　　　('Well, I don't know about John, but…)
　　　　　　$\underline{Bill\text{-}wa_{CT}}$ *8-zi-goro MAME-O tabeteita (yo).*
　　　　　　Bill-WA 8 o'clock-around beans-ACC eating (PRT)
　　　　　　'As for Bill, he was eating beans around 8 o'clock.'

Finally, Neeleman et al. (2009) argue that in Russian, the feature FOCUS is licensed in a clause-final position. This generalization on the surface only holds for New-information Focus (NIF), as illustrated by (14).

(14)   A: *Čto   Saša čitajet? '*   B: *Saša čitajet knigu$_{NIF}$.*
           what.ACC Sasa reads   Sasa reads book.ACC
           'What does Sasa read?   'Sasa reads a book'

Neeleman et al. (2009) argue, however that while CF is normally left-peripheral, it ends up there as a result of movement. The launching site is clause-final, just as in the case of NIF. Arguments to support this position come from the complementary distribution of CF and NIF (no sentence in Russian can contain both of them), scope relations (while scope in Russian is generally dictated by surface order, CFs always take narrow scope, even though they are at the beginning of the sentence) and the possibility of split scrambling, where part of a scrambled material remains in the original position of the constituent, as illustrated by (15).

(15)   *<u>JAZ-PIANISTA</u>$_{CF}$ mal'čiki   slyšhali   [vystuplenije]$_{CF}$*
           jazz pianist-GEN   boys.NOM   heard   performance-ACC
           (a   ne   jaz-gitarista).
           (and not   jazz- guitarist.GEN)
           'The boys listened to the performance of the jazz pianist and
           not of the jazz guitarist.'

Although an LFG-analysis (without "movement") would provide a different account of the Russian facts, the point is that the presence of CONTRAST causes syntactic differences that are problematic to account for if the feature itself is not integrated into the system.

4   A new proposal for information-structure

In this section I aim to construct an IS-taxonomy that builds on all the previous approaches and also improves upon them. The improvement involves two aspects: firstly, my proposal will include all (and only) the well-established IS-categories, and secondly, I will attempt to provide a clearer definition of the features than the existing frameworks do. My suggestion is shown in figure 7.

		+ NEW	− NEW
+ D-LINKED	+ CONTRASTIVE	Contrastive Focus	Contrastive Topic
	− CONTRASTIVE	New Information Focus	Topic
− D-LINKED		Completive Information	Background Information

Figure 7.
The proposed IS-taxonomy

As can be seen, six discourse functions are distinguished with the features NEW, D-LINKED and CONTRASTIVE. Now the task is to provide a definition for these labels.

Let's begin with NEW. As established in Gundel (1988) and Lambrecht (1994), (and also noted in Mycock 2013) it is crucial to distinguish between two kinds of newness: referential and relational. If something is referentially new, it introduces information that has not been present in the discourse. The information can come from several sources, e.g. it can be explicitly mentioned in the discourse, or it may be generally known background information. In Gundel's and Fretheim's (2004:176) words, "referential givenness-newness involves a relation between a linguistic expression and a corresponding non-linguistic entity in the speaker/hearer's mind, the discourse (model), or some real or possible world, depending on where the referents or corresponding meanings of these linguistic expressions are assumed to reside." This definition is not the one that I will use. The other "relational" sense provides a much more fruitful way to think about NEW. It means an element provides new information in relation to the logical subject of the sentence. Let's illuminate this with an example from Lambrecht (1994).

(16) A: *When did you move to Switzerland?*
  B: *When I was sixteen.*

As Lambrecht (1994:48) notes, "what constitutes the information conveyed by this answer is not the fact that at some point in his life the speaker was seventeen (…) but the RELATION (emphasis by Lambrecht) established between an act of moving to Switzerland, the person involved in that act, and the time at which the moving occurred". In other words, the answer provides a value for X in the proposition evoked by the question: *I was X (years old) when I moved to Switzerland.* So, using Lambrecht's (1994) terminology, +NEW elements in a sentence are part of the assertion, while –NEW elements are part of the presupposition.

To define discourse-linking and contrast, I assume that discourses have their internal structures which are plausibly represented by the kinds of discourse-trees proposed by Büring (2003). Once this assumption is made, we have a ready tool to define D-LINKED and CONTRASTIVE.
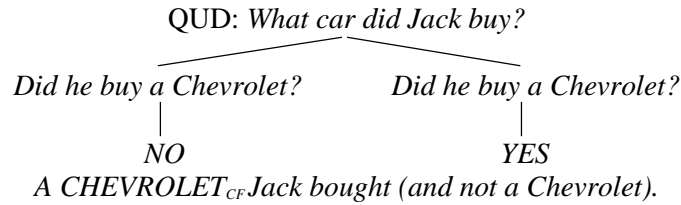
A discourse function is D-LINKED if its interpretation is dependent on a specific configuration in a discourse tree. In particular, it is common in the D-LINKED IS-categories that they are related to a Question Under Discussion (QUD, Büring 2003). This is enough for the non-contrastive categories, Topic and New Information Focus. I must note that the way I understand "topic" follows Gazdik (2011), as "the constituent that links the sentence to the preceding discourse by introducing a subtopic of the discourse topic". This discourse topic is the QUD (as was noted in 2.2, "thematic shifter" is also a possible label). New Information Focus is also related to a QUD, but in this case the QUD is a question, to which NIF provides an answer. These are illustrated in figures 8a and 8b. One may observe that these are all vertical relations in a discourse tree.

QUD: *I tell you about my friend.*
|
Jack$_{TOPIC}$ *bought a Chevrolet.*

Figure 8a.
Topic in a discourse-tree.

QUD: *What car did Jack buy?*
|
Jack bought a Chevrolet$_{NIF}$.

Figure 8b.
NIF in a discourse-tree.

Continuing this line of reasoning, "contrast" can be defined as an additional discourse-linking feature. Let's restate Titov's (2013) definition of contrast, from section 2: for something to qualify as contrastive, a set of alternatives must become active in the discourse at the point the sentence containing the contrastive element is uttered. In the context of discourse-trees, this means that additional, horizontal nodes become active in a discourse-tree, when a +CONTRASTIVE element is contained in the sentence. This is illustrated by figures 9a and 9b.

QUD: *What car did Chris buy?*

Did he buy a Chevrolet?   *Did he buy a Chevrolet?*
| |
?   *YES*
A Chevrolet$_{CT}$*, Jack bought (but I don't know about a Chevrolet).*

Figure 9a.
Contrastive Topic in a discourse-tree.

(10a) shows that when a sentence contains a CT, it evokes alternative questions in the discourse tree. An answer to the alternative questions is not necessarily provided. On the other hand, Contrastive Focus also evokes these alternative questions, but it also provides an answer to them (Titov 2013).

QUD: *What car did Jack buy?*

Did he buy a Chevrolet?   *Did he buy a Chevrolet?*

NO   *YES*
A CHEVROLET$_{CF}$ Jack bought (and not a Chevrolet).

Figure 9b.
Contrastive Focus in a discourse-tree.

The non-D-LINKED discourse functions are Completive Information and Background Information. Completive Information is new, additional information in the assertion, like *yesterday* is (17a). Background Information is repeated information from the presupposition, like *yesterday* in (17b).

(17) a   A: *What car did John buy?*
            B: *John bought a Chevrolet yesterday$_{COMP\ INF}$.*

    b   A: *What car did John buy yesterday?*
            B: *John bought a Chevrolet yesterday$_{BACKG\ INF}$.*

These are not dependent on such discourse-configurations; they can be added to any discourse situation.

        Before the last section, let me make some comments on the feature PROM, as it has been used in several IS taxonomies in LFG. The reason why I have discarded it is that it is very problematic to define what "prominence" really is. Firstly, it is relational notion, so an element can be prominent only as compared to another element. Furthermore, the label PROM may cause confusion because prominence can be defined at various levels.

        For instance, Mycock (2013) suggests that question-words may populate the taxonomy of Butt & King (1996) if a Q feature is posited for them. The resulting system is this:

	+ NEW	− NEW
+ PROM	Focus	Topic
	Q: Questioning Focus	**Q: Sorting key**
− PROM	Completive Information	Background Information
	Q: Non-sorting key	**Q: Echo-question**

Figure 10.
The taxonomy of question words in Mycock (2013)
In this system, echo-questions are −PROM. However, they clearly have a high degree of phonetic prominence.

(18)   A: *John bought a Chevrolet.*
            B: *John bought WHAT$_{ECHO-Q}$?*

Finally, as Mycock (2013) acknowledges, prominence is an inherently graded notion and this is obscured by the binary system.

Nevertheless, Mycock's (2013) system offers some intriguing cross-linguistic generalizations involving PROM. In particular, she introduces the Principle of Relative Prominence Encoding.

(19)   <u>Principle of Relative Prominence Encoding</u>: A −PROM question word will only be syntactically "highlighted" in a language (i.e. appear ex situ, as the filler element in a long-distance dependency) if its +PROM question word counterpart is also by default syntactically highlighted.

This means that for example one cannot find a language where non-sorting key question-words are highlighted, but a sorting keys are not[7]. The situation is similar with Questioning Foci and Echo-questions.

This is a valuable generalization, one that should be reflected in the system proposed by this paper as well. Thus, I propose that PROM is best viewed as an emergent notion, one that is the result of newness and discourse-linkedness. If we assume that +NEW is more prominent than −NEW and +D-LINKED is more prominent than −D-LINKED, then Mycock's (2013) insights could be integrated into my framework this way:

		+ NEW	− NEW
+ D-LINKED	+ CONTRASTIVE	Contrastive Focus	Contrastive Topic
	− CONTRASTIVE	New Information Focus **Q: Questioning Focus**	Topic **Q: Sorting key**
− D-LINKED		Completive Information **Q: Non-sorting key**	Background Information **Q: Echo question**

Figure 11.
A possible integration with Mycock (2013)

(20)   <u>Order of question-word prominence</u>:
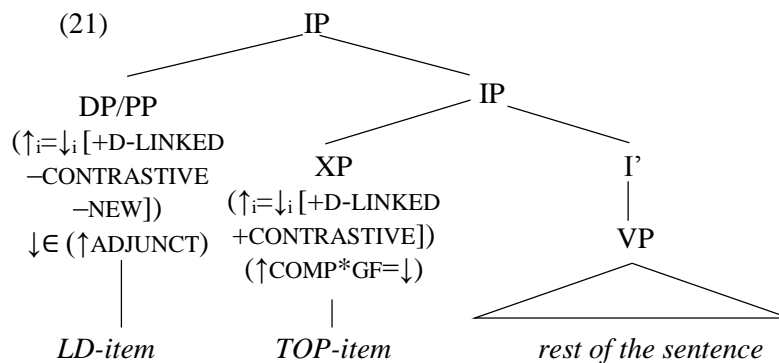Questioning focus > Sorting key > Non-sorting key > Echo question

---

[7] In an interrogative sentence with multiple question words, the sorting key is the question word according to which the answer is expected to organize the information. In (ii), *who* is the sorting key. The other question word(s) are non-sorting keys.

ii)   Q: *Who bought what?*
          A: *Mark bought a Chevrolet and Kate bought a Cadillac.*

I have to admit that this last section is speculative. There are some obvious problems like the lack of question word-types in the +CONTRASTIVE row. One could hypothesize that contrast and Q are somehow incompatible. However, at present, I cannot add further details to this point and must leave it to further research. Nevertheless, I think the system proposed is promising and is not incompatible with previous approaches, which is a desirable trait for progress.

5 The English Left-Periphery

In this last section I return to TOP and LD and offer some tentative LFG phrase structure rules for English, using the proposed IS system.

(21)

IP
- DP/PP
  ($\uparrow_i=\downarrow_i$ [+D-LINKED −CONTRASTIVE −NEW])
  $\downarrow\in(\uparrow$ADJUNCT)
  |
  LD-item
- IP
  - XP
    ($\uparrow_i=\downarrow_i$ [+D-LINKED +CONTRASTIVE])
    ($\uparrow$COMP*GF=$\downarrow$)
    |
    TOP-item
  - I'
    |
    VP
    rest of the sentence

So I propose that the fronted elements are attached via IP-adjunction. The LD-topic is an adjunct because the clause itself is complete without it. The left-dislocated element is usually represented as a resumptive pronoun. It must be noted that although the configuration with a resumptive subject is the most common case, this is not a necessity. Lambrecht (1994) offers the following LD-example:

(22)   *Tulips, you have to plant new bulbs every year?*

Fronted adjunct PPs which serve a scene-setting role may also be assumed to be a case of LD. These are different from TOP, which involves arguments and can never be discourse initial (see footnote 2).

Topicalized constituents are arguments and must have some grammatical function in the clause. Also, various constraints can be specified about the path of TOP (see Dalrymple 2001: 395 and references therein).

As a reviewer rightly notes, various questions remain. For example, it should be investigated why the result is degraded if a sentence contains both a left-dislocated and a topicalized constituent. The degradation is even more pronounced if the LD-item is an adjunct PP.

(23) a.   *?Chris_{TOPIC}, a Chevrolet_{CT} he did buy.*

     b.   **In June*_{TOPIC}, a Chevrolet_{CT} I did buy.*

One may approach this issue from the perspective of sentence processing and argue that too much initial material causes processing difficulties. In (23b), the PP in principle could receive an analysis in which it is a topicalized element. In this case two constituent would aspire for the single TOP-slot, leading to ungrammaticality. (23a) is unambiguous in this respect, the resumptive pronoun is a clear indication that it is a left-dislocated element. The fact that ambiguity worsens the situation could support a processing based explanation.

An alternative would be to say that there is just one left-peripheral position, so a sentence can only contain either a TOP or an LD. But we need to note that question words do occur in sentences with LD, so there must be a possible position for them. It might be conceived that (24) is uttered by someone entering a room, looking for *Chris*. The sentence is quite bad as a TOP-sentence, without the resumptive pronoun.

(24) a .   *Chris, where is *(he)?*

     b.   *Chris, where did he buy what?*

Where in (24a) is a questioning focus and a sorting key in (24b). These are non-contrastive categories, their presence indicates that the Q feature must have a crucial role in licensing. The phrase-structure in (21) does not cover these cases, so there is much room for further research.

6   Summary

In this paper I investigated the nature of information-structure, using two English "fronting" constructions, Topicalization and Left-dislocation as case studies. I argued that Topicalization involves contrastive discourse functions (Contrastive Focus and Contrastive Topic), while Left-dislocation is a marker for Topics (interpreted as thematic shifters). To implement this into LFG, I proposed a new information-structural architecture, using the features NEW, D-LINKED and CONTRASTIVE. This framework builds on previous approaches and also improves upon them.

Various questions remain with the proposed framework, especially with the phrase-structure implementation. Also, Mycock (personal communication) remarks that the definition of features, most crucially the D-LINKED feature is still not satisfactory. Even so, I hope that this paper offers some valuable additions to the current interest in the information-structure-syntax interface.

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