Information packaging: A survey*

Enric Vallduví
Centre for Cognitive Science & Human Communication Research Centre
University of Edinburgh

enric@cogsci.ed.ac.uk

Contents

---

*Report prepared for WOPIS (*Word Order, Prosody, and Information Structure*), a collaborative initiative involving the Universities of Edinburgh, Groningen, and Helsinki, and the Rank Xerox Research Centre in Grenoble. E. Engdahl, E. Hajičová, J. Hoeksema, H. de Hoop, L. Joosten, J. Miller, M. Vilkuna, A. Zaenen, and F. Zwarts contributed data, comments, and/or suggestions to this report.

1 Introduction

Alternative sentential structures, differing in string order, in intonational structure, or in both, may be used to express the same propositional content. Despite their truth-conditional equivalence, these sentential structures are not interpretively equivalent in absolute terms. The 'functions of syntax' approach has tried to pin down what exactly their extrapropositional contribution to interpretation is.

Several pragmatic components have been argued to affect sentential form: illocution, implicature and presupposition, empathy, referential status, and information packaging. The component that has been studied the most in its relationship to syntactic form is perhaps INFORMATION PACKAGING. Even though other aspects of pragmatic interpretation will also be discussed, this report will place special emphasis on information packaging.

A set of information-packaging primitives that are crosslinguistically sufficient and methodologically useful need to be identified. This set of primitives should allow us to clearly identify structurally different but informationally equivalent sentences in a variety of languages. To this effect, Section 2 reviews several earlier approaches to information packaging and introduces a remodelled informational articulation that captures the insights of these approaches while circumventing their shortcomings. Then, Section 3 shows how these informational distinctions are structurally manifested in several languages, with an emphasis on Catalan, Dutch, and English. This is followed, in Section 4, by a discussion of the structural effects of other pragmatic components, like referential status and presupposition, and their interaction with information packaging, and of some related issues concerning the use of intonation.

2 Information packaging

2.1 Definition

A sentence, in one of its facets, may be viewed as a structural vehicle used to transfer some piece of knowledge (a proposition) from speaker to hearer. Information packaging is the speaker's tailoring of this structural vehicle to suit some 'communicative' aspect of the transfer of knowledge (propositional content) to the hearer. In other words, when communicating a proposition p a given speaker may encode p in different sentential structures according to his/her beliefs about the hearer's knowledge and attentional state with respect to p.

The following quotes from Chafe 1976 (where the term packaging was introduced), Clark & Haviland 1977, and Prince 1986 reflect this view of information packaging:

> I have been using the term *packaging* to refer to the kind of phenomena at issue here, with the idea that they have to do primarily with how the message is sent and only secondarily with the message itself, just as the packaging of toothpaste can affect sales in partial independence of the quality of the toothpaste inside. (Chafe 1976:28)

> To ensure reasonably efficient communication, [...] [t]he speaker tries, to the best of his ability, to make the structure of his utterances congruent with his knowledge of the listener's mental world. (Clark & Haviland 1977:5)

> Information in a discourse does not correspond to an unstructured set of propositions; rather, speakers seem to form their utterances so as to structure the

> information they are attempting to convey, usually or perhaps always in accordance with their beliefs about the hearer: what s/he is thought to know, what s/he is expected to be thinking about. (Prince 1986:208)

Within this same line, in Vallduví 1992a it is argued that the role of information packaging is to optimize the entry of information into (a relevant subset of) the hearer's knowledge-store. Each sentence encodes an indication of what part of its propositional content is in fact informative for the hearer (according to the speaker) and instructions on how this informative part fits in the (speaker's view) of the hearer's knowledge-store (see Section 2.3 for a more detailed account).

But, how do speakers go about packaging utterances? What are the informational primitives that underlie the diversity in sentential form information packaging is meant to account for? In trying to answer these questions several proposals have been put forward: the terms *focus*, *(back)ground*, *topic*, *comment*, *given*, *new*, *theme*, and *rheme*, among others, all refer to proposed informational primitives. In Section 2.2 these proposed informational articulations are reviewed.[1]

2.2 Two informational articulations

The information-packaging articulations proposed in the literature share one characteristic: they divide the sentence into a part that anchors the sentence to the previous discourse or the hearer's 'mental world' and an informative part that makes some contribution to the discourse or the hearer's 'mental world'. The differences between them lie mostly in the way the primitive notions used in each articulation are defined (Appendix A contains a list of existing articulations with selected references). Despite these individual definitional and conceptual differences, these proposals can be reduced, in terms of their empirical predictions, to only two: (a) those that divide the sentence into TOPIC and COMMENT, and (b) those that divide the sentence into GROUND and FOCUS.

2.2.1 Ground-focus

First, some terminological clarifications are in order. The term *focus* is used with several meanings other than the one intended here. It has been used, as a purely phonological term, to designate any intonationally prominent element. As will be shown below, the focus in the ground-focus articulation must contain a prominent element, but the ground may contain one as well. Furthermore, prominence may be the realization not only of information packaging, but of other linguistic components and nonlinguistic effects as well. Also, there is the so-called *AI-focus*. According to Sidner 1981, all discourse entities are ranked according to salience in a 'focus stack'. The AI-focus is the most salient discourse entity at a given time point, i.e. the one at the top of the focus stack. Being 'in focus' in this sense is really a referential status concerning discourse entities and not a notion that relates to the informativeness of propositions. Referents 'in focus' are those hearer-known referents that are in some sense

[1] Independently, there is another family of approaches to information packaging that argues that the role played by informational notions in language is not communicative in nature but logico-semantic. Within these, there are those accounts that analyze focus as an exhaustiveness operator (e.g. Szabolcsi 1981, Svoboda & Materna 1987), those that suggest that the role of informational articulation is to determine the quantificational structure of a sentence (e.g. Partee 1991, Krifka 1991-92), and those that argue that information packaging is inherently concerned with both the communicative and the logico-semantic dimensions (cf. Sgall et al. 1986).

'activated' and that can be referred to with a pronominal form. In this report the adjective *salient* is used to denote those referents in AI-focus. The use of 'focus' as a referential-status notion has become quite widespread in several lines of research (cf. e.g. Grosz 1981, Garrod & Sanford 1982, and Gundel, Hedberg & Zacharski 1992).[2] AI-focus and informational focus are quite distinct notions and should therefore not be mistaken. This said, let us discuss now the notion of informational focus in the context of the ground-focus articulation.

The ground-focus articulation divides the sentence into a noninformative, known, or expected part, the ground, and an informative, newsy, dominant, or contrary-to-expectation one, the focus. A single proposition may be 'packaged' in several different ways in terms of the ground-focus partition.[3] Several English instantiations of this partition are illustrated in (1). Here and below, F-labelled brackets ([$_F$]) are used to delimit the focus (without implying syntactic constituency of any sort) and small caps indicate the lexical item associated with focal prominence.

(1) a. The pipes are [$_F$ RUSTY].
b. The pipes [$_F$ are RUSTY].
c. [$_F$ The PIPES are rusty].
d. [$_F$ The PIPES] are rusty.
e. The pipes [$_F$ ARE] rusty.

As illustrated by examples like (1)c, a naturally occurring token uttered by M. Hemingway in W. Allen's *Manhattan* (1979), sentences may lack a ground altogether, i.e. they may consist entirely of informative, newsy material. In contrast, and not unexpectedly, sentences that consist exclusively of noninformative ground material do not exist.

Even though the sentences in (1) express one and the same propositional content, they are not interchangeable in a given context. It is common practice to set up the contexts for these sentences by using appropriate questions that take them as answers. In this respect, each one of the sentences in (1) is an answer to a different question or set of questions:[4]

[2] The topicality hierarchy of Givón (see Section 4.1) and the ranking of sentence centers (backward-looking and forward-looking) in Centering Theory (e.g. Grosz, Joshi & Weinstein 1987) are akin to the notion of focus stack just mentioned. The AI-focus would be, roughly, the (most continous) topic for Givón and the backward-looking center in Centering Theory.

[3] The ground has also been called 'background' (Dahl 1974, Chafe 1976), 'presupposition' (Chomsky 1971, Jackendoff 1972) 'open-proposition' (Prince 1986, Ward 1988), OldInfo (Välimaa-Blum 1988), 'given' (Halliday 1967, 1984), 'theme' (Firbas 1964, Contreras 1976), and 'topic' (Hajičová 1984, Sgall et al. 1986). The focus has also been called 'new' (Halliday), 'NewInfo' (Välimaa-Blum), 'rheme' (Firbas, Contreras) and 'dominant constituent' (Erteschik-Shir 1973, 1986). Several of these terms are used elsewhere with a different meaning. Classic presupposition, the kind that displays constancy under negation, is not equivalent to the ground. The pair 'given' and 'new' are often also used to describe a property of discourse entities generally correlated with structural definiteness. 'Theme-rheme' in Halliday (1967, 1984) are actually closer to 'topic-comment' and not to 'theme-rheme' in Firbas and Contreras. 'Topic' as a synonym of 'ground' is of course different from 'topic' as used in the topic-comment articulation, and from the notions of discourse topic and the topic in Givón's topicality framework (1983, 1992) (see fn. 6). Also, focus and topic (i.e. focus and ground) in Sgall et al. 1986 are not primitive notions but rather derived from the concepts of contextual boundedness and communicative dynamism. For an exhaustive survey of the different meanings and uses assigned to these terms see Schlobinski & Schutze-Coburn 1992 and Humphreys 1993.

[4] The question contextualization can be used to identify the informational structure of the answer but should be used with caution. The most natural answer to the question *What did she give to Harry?* is not *She gave a* SHIRT *to Harry* but rather *A* SHIRT. Assuming that the long answer is a normal answer here may obscure the reason behind the presence of an overt ground, its real task being unambiguously observable only in contexts in which an elliptical answer is ruled out (in Vallduví 1992a, for instance, these two answers are not

(2) a. What about the pipes? In what condition are they?
The pipes are [$_F$ RUSTY].
b. What about the pipes? What's wrong with them?
The pipes [$_F$ are RUSTY].
c. Why does the water from the tap come out brown?
[$_F$ The PIPES are rusty].
d. I have some rust remover. You have any rusty things?
[$_F$ The PIPES] are rusty.
e. I wonder whether the pipes are rusty.
The pipes [$_F$ ARE] rusty.

Several distinct characterizations of ground and focus are found. For Jackendoff the ground 'denote[s] the information in the sentence that is assumed by the speaker to be shared by him and the hearer' (1972:230). For Wilson & Sperber 1979 it is the first background entailment. Lambrecht 1987, among others, argues that focus is 'the assertion of the utterance', where 'assertion' is not a Russellian commitment to the truth of the statement but a reduction of the context set à la Stalnaker 1978. What is not asserted is part of the common ground. So in (3), existential statement (b) is, according to these accounts, an entailment of (a) or part of the common ground shared by both speaker and hearer. Example (4), however, shows that accounts along these lines are not entirely correct:

(3) a. She gave [$_F$ the SHIRT] to Harry.
b. $\exists x$ she gave x to Harry.

(4) a. I talked to [$_F$ NOBODY] at the party.
b. $\exists x$ I talked to x at the party.

In (4) (a) cannot entail (b), and (b) cannot be considered part of a common ground either: it is obvious that the utterer of (a) does not believe (b) to be true nor takes it as background knowledge. The ground, then, is not 'shared knowledge'. Rather, it is what the speaker assumes the *hearer* knows or believes to be true (cf. Clark & Haviland 1977, Prince 1986). While (b) is assumed by the utterer of (a) to be believed by the hearer, the utterer herself need not have believed (b) at any time.

Rochemont 1986, in an approach to the definition of ground-focus closer to that of the modern Prague school, argues that the ground must be c-construable, where c-construable means 'having an antecedent in previous dicourse'. The focus, in contrast, is not c-construable. However, as is well known, there are c-construable foci,

(5) S_1: Good morning. I am here to see Mrs. Clinton again.
S_2: Sure, Mr. Smith. Let's see...One of her assistants will be with you in a second.
S_1: I'd like to see [$_F$ HER] today. I'm always talking to her assistants.

The problem with Rochemont's account is that it fails to divorce information packaging from referential status. C-construability is a referential status notion and groundness cannot be

informationally equivalent). In fact, most naturally occurring examples of sentences with a complex ground occur in contexts other than question-answer pairs. Likewise, questions like *What's new?* or *What happened next?* are often assumed not only to accept but also to require an all-focus answer (cf. Oehrle 1991). This, however, is not necessarily true.

defined in terms of it. Even though the ground is likely to have become hearer-known via previous reference in the discourse, it need not, since other sources of hearer-knownness are available (see Section 4.1 for more on referential status).[5]

2.2.2 Topic-comment

A classic description of how the topic-comment articulation divides the sentence is the one found in Hockett (1958:201): 'the most general chracteristic of predicative constructions is suggested by the terms "topic" and "comment" for their ICs [immediate constituents]: the speaker announces a topic and then says something about it' (1958:201). The following is a characteristic definition as well:[6]

> An entity, E, is the topic of a sentence, S, iff in using S the speaker intends to increase the addressee's knowledge about, request information about, or otherwise get the addressee to act with respect to E. (Gundel 1988:210)

The topic has also been described as a 'point of departure for the clause as a message' (Halliday 1967, who uses the term 'theme') or as a 'reference frame' for the sentence. It is clear that topic performs the anchoring role to the previous discourse or the hearer's mental world, while the comment is what makes some new contribution. The following examples (from Halliday 1967:212) illustrate three different topic assignments on a truth-conditionally equivalent sentence. The topic phrase, here and below, appears in boldface:

(6) a. **John** saw the play yesterday.
b. **Yesterday** John saw the play.
c. **The play** John saw yesterday.

Following for example Gundel 1974 and Reinhart 1982, topic phrases display a characteristic 'aboutness' feeling. For instance, each one of the sentences in (6) is a felicitous answer to the question *What about x?*, where x stands for the appropriate topic phrase.[7]

Sentences may be topicless, i.e. they may consist entirely of a comment (e.g. Gundel 1988). These are the so-called presentational or news sentences (Schmerling 1976) or neutral descriptions (Kuno 1972). The contrast between a topic-comment structure and a news sentence is illustrated in (7): (a) is a topic-comment sentence and (b) is a presentational one.

(7) a. **The screen** DIED.
b. The SCREEN died.

As becomes evident from these examples, there seems to be a correlation between topichood and lefthand position in the clause. Some authors claim that topics have to be sentence initial

[5] Rochemont does not ignore the existence of sentences like (5). He argues, though, that they are a special case he calls 'contrastive foci'. In contrastive-focus sentences, what is not c-construable is the fact that the focus is the focus of the particular focus-ground partition it appears in. This observation is correct and, in fact, it is what makes *all* foci, not just contrastive ones, informative (cf. Prince 1986).

[6] For the purposes of this report, the notion of *discourse topic* seen as a proposition or entity a given text or discourse is supposed to be about (cf. Brown & Yule 1983) is disregarded. For the time being, Givón's (1983, 1992) *topicality* (also called *continuity*) is also left aside. From this perspective, all discourse entities are hierarchically ranked according to topicality. The most continuous one is the 'topic'. Givón's topic, ironically, is descriptively equivalent to the AI-focus mentioned above (see fn. 2). It is really a referential status notion.

[7] The standard tests for topichood (*What about x*, *As for x*) are subject to several restrictions and do not always work as desired.

(Halliday). Others allow topics in other positions, but specify that any phrase encoded in a specific lefthand slot must be interpreted as a topic (Gundel 1988). We will return to the lefthand placement of topics below.

2.3 Conflating topic-comment and ground-focus

Even though there is some degree of overlap between topic-comment and ground-focus (e.g. the presentational topicless sentence in (7)b is informationally identical to the all-focus sentence in (1)c), neither of these informational articulations is, by itself, capable of capturing all the informational distinctions present in the sentence. In the answers in (8), for instance, the ground-focus partition accounts for the distinction between the focus *a shirt* and the ground *Mary gave something to Harry.*

(8) a. What about Mary? What did she give to Harry?
Mary gave [$_F$ a SHIRT] to Harry.
b. What about Harry? What did Mary give to him?
To Harry Mary gave [$_F$ a SHIRT].

Without resorting to independent accounts, however, this articulation has nothing to say about the fact that an element of the ground appears in situ in (a), but in a lefthand position in (b), i.e., it does not account for the extra informational value of *to Harry* in (b). Similarly, the topic-comment partition accounts for the lefthand position of the different phrases in (a) and (b), but it cannot offer an explanation of why the comment in the answer in (8)a, repeated here in (9)a, is different from the comment in the answer in (9)b:

(9) a. What about Mary? What did she give to Harry?
Mary [$_C$ gave a SHIRT to Harry.]
b. What about Mary? What did she do?
Mary [$_C$ gave a shirt to HARRY.]

The intonational contrast between (9)a, where *to Harry* is noninformative or nonfocal, and (9)b, where *to Harry* is focal, is reflected by the ground-focus articulation, but not by the topic-comment partition.

It is true that in examples like (10) the two articulations split the sentence in the same way, as indicated in (11) by means of the labelled bracketing notation. For such cases, one articulation would appear to be sufficient.

(10) a. What about John? What does he do?
b. John drinks BEER

(11) a. [$_T$ John] [$_C$ drinks BEER]
b. [$_G$ John] [$_F$ drinks BEER]

But when the same exact string is used in the context shown in (12) (from Dahl 1974), which triggers a different ground-focus partition, either articulation in isolation is insufficient. The ground-focus and topic-comment segmentations in (13) are nonidentical:

(12) a. What about John? What does he drink?
b. John drinks BEER (Dahl 1974: ex. 3)

(13) a. [$_T$ John] [$_C$ drinks BEER]
b. [$_G$ John drinks] [$_F$ BEER]

As a matter of fact, the need for more than just one of these articulations has long been noticed. Halliday 1967, 1985 and Dahl 1974 opt for including both topic-comment and ground-focus in the informational description of sentences (Halliday calls the former theme-rheme and the latter new-given). This, however, does not avoid the redundancy that arises in cases where topic-comment and ground-focus make the same structural predictions. In other words, what is required is, in some sense, not one articulation or two articulations, but one and a half articulations. In fact, Välimaa-Blum 1988 does just that. She states that the ground-focus distinction must be complemented with a notion of S-topic, akin to the topic in topic-comment.

In Vallduví 1992a, the insufficiency of the binomial articulations is circumvented with the introduction of a trinomial hierarchical articulation. This articulation parallels Välimaa-Blum's proposal, but integrates all the primitives within one single schema. The trinomial articulation divides sentences into a FOCUS and a GROUND (as in the ground-focus partition), while the latter is further composed of a LINK and a TAIL, as in (14).[8] This trinomial division cuts (10) and (12) as in (15)a and (15)b, respectively:

(14) S={ focus, ground }
ground={ link, tail }

(15) a. What about John? What does he do?
[$_G$ [$_L$ John]] [$_F$ drinks BEER]
b. What about John? What does he drink?
[$_G$ [$_L$ John] drinks] [$_F$ BEER]

Vallduví 1992a argues that each sentence encodes not only a logico-semantic proposition but also an information-packaging INSTRUCTION. Each instruction-type is designed to indicate what part of the sentence constitutes INFORMATION and where and how that information fits in the hearer's knowledge-store. The information carried by a given sentence S (I_s) is defined as the propositional content of S (p_s) minus the knowledge (the speaker assumes) the hearer already possesses and is attending to (K_h), i.e. $I_s = p_s - K_h$. Each instruction-type is the result of different combinations of the primitives in (14). From this perspective, then, the focus can be identified with the part of the sentence that encodes the actual information of the sentence or, in other words, what the hearer is instructed to enter into her/his knowledge-store, i.e. I_s. The ground corresponds to the elements that indicate where and how I_s must be entered. Specifically, links indicate *where* I_s should go within the hearer's knowledge-store and the tail indicates *how* it fits there.

In order to see exactly how the elements in the ground carry out their task, something must be said about the structure of the knowledge-store. The knowledge-store is taken to

[8]The Praguean approach (cf. Sgall et al. 1986) argues that only one articulation, ground-focus, is needed. This single articulation, however, is complemented by a notion of communicative dynamism. All sentence elements are ranked in a continuum of communicative dynamism. Instead of talking about a discrete dichotomy between link and tail within the ground, Sgall et al. 1986 talk about ground elements with different degrees of dynamism (they push the communication forward to a larger or lesser degree). The discrete division of the ground into link and tail appears to be empirically sufficient to deal with languages like Catalan and English, with a relative freedom of linear order. It remains to be seen whether the same primitives can be successfully extended to Czech, a language with a more radical freedom of word order, which motivated the postulation of the more fine-grained dynamism continuum in the first place.

be a Heimian collection of entity-denoting file cards (Heim 1982). Each file card contains a number of entries or records listing relations and properties relevant to the entity denoted by that file card. The content of these file cards is updated during communication. The role of information packaging is precisely to make this updating more efficient by partitioning the sentence in the way indicated above. In addition, and independently, the marking of referential status (see Section 4.1) is responsible for providing the hearer with instructions for file card management. Very roughly, an indefinite NP instructs the hearer to create a new file card (denotes a novel referent), while a definite NP instructs the hearer to activate a dormant already existing file card (denotes a familiar referent).[9]

In this light, links are argued to point to a specific file card in the hearer's knowledge-store, where the entry of I_s is to be carried out. The term 'link' is borrowed from Trávníček, who describes his 'theme' as 'the sentence element that links up directly with the object of thought, proceeds from it, and opens the sentence thereby' (cited in Firbas 1964:269). The parallelism betwen pointing to a specific file card in the hearer's knowledge-store and linking with the object of thought is clear. This view of link is also inspired in Reinhart's topic (1982:24), where it is argued that 'sentence topics [...] are one of the means available in the language to organize or classify the information exchanged in linguistic communication—they are a signal for how to construct the context set, or under which entries to classify a new proposition'. The difference is that Reinhart talks about the common ground (context set) instead of the hearer's knowledge-store. The job of links, then, is to pick a file card out of those involved in the event or state of affairs described by the sentence and designate it as a locus of information entry (see Section 3 for more about linkhood).[10]

Finally, the tail segment encompasses ground material that does not display linklike behavior. As part of the ground, the tail further specifies how I_s fits on a given file card, already pointed at by a link. In particular, it indicates that I_s should not be simply added to the file card in question as a new record detailing a property or relation, but rather that it must substitute for something in a record already present on that file card. In other words, a tailful instruction directs the hearer to a particular record on a file card and indicates that the focus completes or alters that record in some way. The ground, both link and tail, performs an 'ushering' role for I_s: it guarantees I_s finds its correct (from the speaker's perspective) place in the hearer's knowledge-store. If (the speaker assumes) no usher is needed, a sentence will have no ground. If only some ushering is needed, a sentence may have a link but not a tail,

[9] Heim's (1982) notion of file is actually closer to a discourse model than to a knowledge-store, since in file change semantics there is a file F_0 containing no file cards at the start of any linguistic interaction. The discourse model is a mental representation of the real-world referents evoked in the current discourse and of descriptions about them. As such, it represents a subset of the knowledge-store, which is a larger mental model containing previous knowledge as well. Here, however, given that familiarity and novelty seem to be definable in terms of previous knowledge by the hearer and not in terms of previous mention in the discourse, the file-card metaphor is extrapolated to the knowledge-store, making the necessary changes and omitting any reference to Heim's method of truth-value computation.

The notion of file card is historically related to Karttunen's (1976) discourse referent and is analogous to Webber's (1982) coathooks and Landman's (1986) pegs. File cards mediate between referring expressions and real-world entities. Judging by the types of things NPs can refer to, file cards should be able to denote individuals, pluralities, substances, actions, and abstract entities, among other kinds (cf. Chierchia & McConnell-Ginet 1990:50). Of course, the philosophical issue of what counts as an entity is still an open one.

[10] This informational task is totally independent of file-card management, which, as noted, is responsible for the activation and creation of file cards but has nothing to do with the update of their contents. The process of designating a file card as a locus of information entry is part of the general process of content update. There is, however, interesting interaction between the two dimensions, some of which is discussed in Section 4.4 below.

or vice versa.

The primitives in (14) may combine into only four possible instruction-types: link-focus instructions (in (16)), all-focus instructions (in (17)), link-focus-tail instructions (in (18)), and focus-tail instructions.

(16) What about the president?
a. The president $[_{F}$ hates CHOCOLATE].
b. The president $[_{F}$ CALLED].
c. The president$_1$ $[_{F}$ (I) wouldn't BOTHER t_1].

(17) So, did anything happen while I was gone?
a. $[_{F}$ The PRESIDENT called].
b. $[_{F}$ There are protests in the STREETS].

(18) a. What about the president? How does he feel about chocolate?
The president $[_{F}$ HATES] chocolate.
b. What about the president? What does he hate?
The president hates $[_{F}$ CHOCOLATE].

Informally, link-focus instructions tell the hearer to go to a particular file card and add a record on it containing I_s. With (16)a, for instance, the hearer is told to go to the file card denoting the president and add a record there with the property 'hates chocolate'. Link-focus-tail instructions tell the hearer to go to a particular file card, search for a particular record on that file card, and complete or alter that record with I_s. With (18)a, for instance, the hearer goes to the file card for the president, searches for a record of the form 'x-verbs chocolate' and substitutes 'hates' for 'x-verbs'. All-focus instructions like those in (17) occur when no specific file card is designated as a locus of information entry, but rather a general temporary situation file card is used. They correspond to the topicless neutral descriptions of Kuno 1972 or to thetic judgments in Kuroda 1972. This type of linklessness reflects the intuition that these sentences are not 'about' any particular referent (cf. Kuno 1972).[11] These four instruction-types do, in fact, encompass systematically all the informational constructions previously described in the literature from the topic-comment, ground-focus, and other perspectives. Appendix B contains a list of instruction-types, with Catalan and English instantiations, and their relationship with the informational constructions in earlier proposals.

There is another type of all-focus instruction besides the kind illustrated in (17). As mentioned above, a sentence S has a ground only if the speaker assumes that I_s needs to be ushered into the hearer's knowledge-store. For instance, the link ushers I_s to a particular file card in the hearer's knowledge-store, where the entry of I_s is to be carried out. Sometimes, however, the file card on which I_s is to be entered has already been designated as a locus of information entry in the immediately previous linguistic context and is inherited as such by S (see end of Section 3.1 for more on this). In such cases, the need for an overt link is preempted. Similarly for the tail. The need to usher I_s to a particular record on a given file card does not arise at every sentence. In fact, most information updates do not involve the alteration of an already existing record, but rather a mere addition of information. A

[11] Not every sentence type is amenable to an all-focus, thetic interpretation. Sasse 1987, for instance, mentions weather expressions, statements about body parts, unexpected events, and explanations as types of sentences that may encode thetic all-focus instructions. The 'length' and 'heaviness' of the predicate and its stage/individual nature are factors that have an effect as well.

sentence where no link and no tail are needed, in the sense just described, encodes an all-focus instruction as well, although it is not a presentational, thetic sentence of the sort illustrated in (17). This type of all-focus instruction is further discussed and illustrated at the end of Section 3.2, where the role of weak pronouns in information packaging is analyzed.

In Section 3, in exploring the possible structural realizations of information packaging in different languages, the primitives and terminology of Vallduví 1992a are used.[12] A closer discussion of the interpretation of these primitives and the distinct instruction-types they combine into is beyond the scope of this report and the reader is referred to Vallduví 1992a for further detail.

3 Possible Realizations

3.1 Catalan

First, a few words about Catalan syntax. Contra the traditional view, it is assumed here that Catalan, like other Romance languages, is underlyingly VOS. The VOS word order is defended in Rosselló 1986, Rigau 1988, Bonet 1990, Vallduví 1991, and Solà 1992 for Catalan and in Adams 1987, Fernández-Soriano 1989, and Contreras 1991, inter alia, for other Romance languages. The relative linear order of the verbal arguments in situ is verb-object-oblique-subject-adjuncts. Catalan is a null-subject language, so subjects need not appear overtly. In contrast, if a verbal complement does not appear within the clause an appropriate pronominal clitic must be attached to the verb. Arguments may also undergo *detachment*: left-detachment is a left-adjunction to IP, while right-detachment is a right-adjunction to IP. In any given sentence more than one phrase may be left- or right-detached. If the detached phrase is a verbal complement it must bind a clitic, as expected. The verb itself may also undergo detachment.[13]

Information packaging in Catalan is structurally realized primarily through syntax. While it is true that (a subset of the) focus is identified by means of intonational prominence, the association of the two is only attained through the mediation of syntax. Consider the sentences in (19), where one or more arguments are left- and right-detached:[14]

[12] However, it may be convenient to abandon the term 'focus' as an information-packaging notion altogether, given its increasingly widespread use as a referential-status notion, as pointed out in Section 2.2.1 above. Possible alternatives could be FORE, F, NEWINFO, and RHEME. The last two are already in use by some authors. This will be left as an open issue for the time being.

[13] Heavy NP shift may be the source of other linear orders within the clause. Also, unaccusative subjects seem to appear before oblique complements and not after them like regular transitive subjects. Wh-elements in wh-questions and other quantificational elements raise to an IP-internal position (Spec of IP) and do not necessarily bind a clitic (cf. Vallduví 1992b).

Detachment, especially right-detachment, occurs less frequently in the written language than in the spoken language, and, within the latter, it is impressionistically more common in dialogue than in narrative. The fact that detachment is very frequent in questions (subjects, in particular, seldom appear in situ) is probably not unrelated to this difference between dialogue and narrative.

[14] In these examples and in examples below, detached phrases are coindexed with a trace in their base position and, if applicable, with the clitic they bind. Following (a somewhat irregularly respected) Catalan orthographic convention, a comma is used to set off the right-detached phrases, but no punctuation is used with left-detachment.

(19) a. El Joan$_1$ [$_F$ va deixar una nota damunt la TAULA t$_1$].
b. El Joan$_1$ [$_F$ hi$_2$ va deixar una NOTA t$_2$ t$_1$], damunt la taula$_2$.
c. El Joan$_1$ [$_F$ l$_3$'hi$_2$ va DEIXAR t$_3$ t$_2$ t$_1$], una nota$_3$, damunt la taula$_2$.
Joan obj.loc 3s-pst-leave a note on the table
'Joan left a note on the table.'

Sentence (19)a is a typical link-focus instruction (topic-comment), where the link is the subject. This sentence may be an answer to the question *What did Joan do?*. As expected, prominence falls on a subset of the focus: on *taula* 'table'. In sentence (19)b part of the predicate is part of the ground as well: the locative phrase *damunt la taula* 'on the table' is nonfocal. This sentence is felicitious, for instance, in (the Catalan equivalent of) a context like (20), which requires the locative to be nonfocal:

(20) S$_1$: [narrating] Then, after lunch I laid out all the gifts on the table.
S$_2$: [interrupting] Oh, by the way, John had left a NOTE on the table. Did you see it when you laid out the gifts?

Prominence, as expected, falls on a lexical item within the focus, in this case *nota* 'note'. Finally, (19)c, as indicated by the bracket notation, is only felicitous in a context where all verbal arguments are interpreted as ground. Prominence falls on the only accentable item available within the focus.

Notice that the ground elements in each of the sentences in (19) do not appear in situ; rather, they are removed from their base position by means of detachment. What seems to be going on is that the association of prominence and focus is attained not by a change in intonational phrasing or a displacement of the pitch accent, but by means of a syntactic operation that removes those elements that must not be interpreted as focal from within the scope of prominence. In (19)a the ground subject is removed from its clause-final base position by means of left-detachment, in (19)b both the subject and the locative are, and in (19)c the object is too. In all three instances prominence falls on the rightmost accentable item available within the core IP.

What these examples, in conjunction with further evidence, show is that in Catalan all and only the overt material in the core clause (except weak proforms) is interpreted as focus. In other words, ground elements may not remain within the core clause and focal elements may not be detached away from it. This has been argued for extensively in Vallduví 1992a, where some potential counterexamples are smoothed out. This pattern is illustrated by the following contextualized sentences. Example (21) shows that, as expected, a direct object in situ is not felicitous in a context where the required focus is verb+locative. Example (22) shows that the appearance of an object in situ is illegitimate even when the focus is only the locative phrase. Finally, sentence (23) illustrates the fact that a focal element cannot be detached:

(21) a. Què en fareu, del ganivet?
'What will you do with the knife?'
b. #[$_F$ Ficarem el ganivet al CALAIX].
1p-fut-put the knife in.the drawer
'We'll put the knife in the drawer.'
c. [$_F$ El$_1$ ficarem e$_1$ al CALAIX].
obj
'We'll put it in the drawer.'

(22) a. On el ficareu, el ganivet?
'Where will you put the knife?'
b. #Ficarem el ganivet [$_F$ al CALAIX].
1p-fut-put the knife in.the drawer
'We'll put the knife in the drawer.'
c. [$_F$ Al CALAIX].
'In the drawer.'

(23) a. On és, el ganivet?
'Where's the knife?'
b. [$_F$ El$_1$ vaig ficar e$_1$ al CALAIX].
obj 1s-pst-put in.the drawer
'I put it in the drawer.'
c. #L$_1$'hi$_2$ vaig FICAR e$_1$ t$_2$, al calaix$_2$.
obj.loc
d. #Al calaix$_2$ l$_1$'hi$_2$ vaig FICAR e$_1$ t$_2$.

As expected, in examples of all-focus instructions, no sentence element is detached. Even the subject remains in its base postverbal slot:

(24) [$_F$ Deu estar rovellada la CANONADA].
3s-must be-inf rusty the pipe
'The PIPES must be rusty.'

While it is clear, then, that ground elements must be detached, nothing has been said about the informational import of the directionality of the detachments. The contrast between left- and right-detachment in Catalan serves to distinguish between the two elements that constitute the ground: left-detached phrases are links, while right-detached ground phrases are tails. It was mentioned in Section 2.2.2 that there was an obvious correlation between topichood and lefthand position. This correlation is categorical in the case of Catalan.

The difference between left-detachment and right-detachment becomes evident in contrastive contexts. Out of the two ground elements, only links are compatible with a contrastive use. As expected, in such contexts, like the one in (25), a right-detachment is illicit (d) and a left-detachment is required (b). An answer with an in-situ *els ganivets* 'the knives' (c) is infelicitous as well:[15]

---

[15] Link contrast must be distinguished from focus contrast. In (i) the boldface *John* is link-contrastive and in (ii) the small-capped *John* is focus-contrastive,

(i) **John** swept (and **Mary** mopped).
(ii) JOHN swept (not MARY).

While (ii) conversationally implicates that no relevant person other that John swept (hence the appropriate continuation *not* MARY), (i) implicates that someone else did something other than sweeping (hence the appropriate continuation *and* **Mary** *mopped*). In English the *John* phrases in (i) and (ii) are accented differently. In Catalan they are different in both their prosodic and their syntactic properties. For further discussion on the two types of contrast see Ronat 1979 and Szabolcsi 1981:158.

(25) a. On són, els coberts?
'Where's the flatware?'
Les forquilles són a l'armari, però...
'The forks are in the cupboard, but...'
b. ...els ganivets$_1$ els$_1$ vaig ficar t$_1$ al CALAIX.
the knives obj 1s-pst-put in.the drawer
c. ...#vaig ficar els ganivets al CALAIX.
d. ...#els$_1$ vaig ficar t$_1$ al CALAIX, els ganivets$_1$.
'...the knives I put in the drawer.'

The contrastive feeling links emanate in the appropriate contexts is not unexpected, given the definition of link in Section 2.3. Take a link-focus sentence S_n, where the link denotes a file card fc_1. S_n designates fc_1 as the locus of information entry, i.e., I_{S_n}, the information of S_n, is to be added as a new record on fc_1. Now, let S_{n+1} be the sentence that follows S_n in a given discourse. If the speaker chooses fc_1 to be the locus of information entry for the information of S_{n+1} as well, then S_{n+1} need not have a link. In other words, the need to designate a locus of information entry disappears because the appropriate file card, fc_1, has already been designated in the immediately previous linguistic context. However, if the information of S_{n+1}, $I_{S_{n+1}}$, is to be entered on a different file card fc_2, the presence of a link becomes necessary to designate it as a locus of entry. In these cases, the link becomes contrastive ipso facto, since there is an opposition between fc_1 and fc_2 as loci of entry for I_{S_n} and $I_{S_{n+1}}$, respectively. Link-contrast is particularly evident in cases of so-called topic-switch (or switch-reference), illustrated by examples like (26),

(26) a. [$_L$ La Sió$_1$] [$_F$ va insultar la COIA$_2$ t$_1$]
the Sió 3s-pst-insult the Coia
b. i [$_L$ ella$_2$] [$_F$ li$_1$ va fotre una HÒSTIA t$_2$].
and she iobj 3s-pst-do a blow
'Sió$_1$ insulted Coia$_2$ and **she**$_2$ hit her$_1$.'

Sentence (26)a instructs the hearer to go to fc_1, which denotes Sió, and to add a record there detailing that she insulted Coia. In sentence (26)b, also a link-focus instruction, the link NP is only a pronoun that a priori can refer to either Sió or Coia. The hearer knows, however, that fc_1 denotes Sió. If the speaker had chosen fc_1 as a locus of information entry for (26)b, this sentence would have had no link, i.e., it would have been an all-focus instruction. But it does have a link. The link NP *ella* 'she' in (26)b points to a new file card fc_2 and, therefore, forces the anaphoric link to Coia (given that Sió is fc_1). Thus, (26)b instructs the hearer to go to fc_2, which denotes Coia, and add a record there detailing that she hit Sió.

If the subject of (26)b were realized as a null subject in Catalan (or an unstressed pronoun in the English translation), as in (27), it could refer to either Sió or Coia, both present in the previous utterance:

(27) La Sió [$_F$ va insultar la COIA]. [$_F$ Li va fotre una HÒSTIA].
'Sió insulted Coia. She hit her.'

The second sentence in the sequence, S_{n+1}, is an all-focus sentence of the nonthetic kind, with no link. Therefore, the hearer knows that $I_{S_{n+1}}$ is to be added on fc_1, which is the locus of information entry inherited from S_n. The hearer also knows that fc_1 is Sió. Nevetherless, this is not sufficient to determine who the null subject refers to, since Sió could be the referent of either the subject or the complement. By realizing the subject as a link in S_{n+1} (overt left-detached pronoun in Catalan or stressed pronoun in English), as in (26), the speaker rules out one of the two possible anaphoric links: the link to the entity denoted by fc_1. At the end of Section 3.2, more is said about nonthetic all-focus instructions in the context of the discussion about the informational import of weak pronominals (see the discussion around (38)).

Summarizing, in Catalan informational partitions are realized by syntactic means: focal elements remain within the core clause, while ground elements are detached to a clause-peripheral position. In particular, links are detached to the left. Nonlink ground elements, in contrast, undergo right-detachment. In Section 3.5 a number of Catalan sentences are contrasted with their informational equivalents in English and Dutch.

3.2 English

The realization of information packaging in English has already been touched upon in the discussions in Sections 2.2, 2.3, and 3.1. In English, as in Catalan, (a subset of) the focus is marked in situ by intonational prominence. Steedman 1991, adopting Pierrehumbert's (1980) representation of intonation identifies the pitch accent in the tune associated with focus as a level high tone (H*) (called A accent in Jackendoff 1972). In the sentences in (1), repeated here as (28), the items in small caps are associated with a H* pitch accent. The pattern in (28) shows that different ground-focus partitions can be structurally encoded by shifting the position of the H* pitch accent on a constant syntactic structure. This contrasts with the Catalan strategy discussed in the previous section.

(28) a. The pipes are [$_F$ RUSTY].
b. The pipes [$_F$ are RUSTY].
c. [$_F$ The PIPES are rusty].
d. [$_F$ The PIPES] are rusty.
e. The pipes [$_F$ ARE] rusty.

Furthermore, prosodically identical strings like (28)a and (28)b, or (28)c and (28)d, may be informationally ambiguous (cf. Chomsky's (1971) range of permissible focus or the Praguean notion of communicative dynamism). This is perhaps clearer in (29), where the different possible focus readings of each string are simultaneously notated:

(29) a. John [$_F$ left a note [$_F$ on the TABLE]].
b. John [$_F$ left [$_F$ a NOTE]] on the table.

Of course, these sentences are ambiguous only in isolation, since context indicates which focus reading is intended. Notice, however, that the Catalan equivalent of (29)a in its narrow-focus reading is illicit. This was shown in example (22). In Catalan, the ground element *a note* cannot appear in situ; rather, it must undergo detachment. In English, in contrast, both focal and ground phrases may appear in situ. A variable intonational phrasing and the displacement of the pitch accent are the structural means used in the realization of information packaging in English.

What about the structural encoding of links? As discussed above, there is a belief among some analysts that links or topics must appear in a lefthand position. Hence, for instance, the name 'topicalization' given to a construction that promotes 'aboutness' expressions to a lefthand position. It is also true, however, that other scholars have argued that links in English need not be characterized by a lefthand structural position. In fact, the latter view appears to be the correct one if, for instance, the English equivalent of Catalan (25) is constructed. As noted, the context in (25) forces a contrastive reading for the ground phrase *els ganivets* 'the knives'. Tails cannot be contrastive, so *els ganivets* is a link. In Catalan, where links are realized via left-detachment, sentence (25)c, with *els ganivets* in situ is infelicitous in this context. In English, in contrast, topicalization of the link is not mandatory. Both (30), with a lefthand link, and (31), with a link in situ, are felicitous in this context:

(30) a. Where can I find the flatware?
The forks are in the cupboard...
b. but **the knives** I left in the DRAWER.

(31) a. Where can I find the flatware?
The forks are in the cupboard...
b. but I left **the knives** in the DRAWER.

Even though it appears in situ, a link interpretation is forced on *the knives* in (31) by the context.

It is not the case, however, that links remain structurally unidentified. Both the lefthand link in (30) and the link in situ in (31) are marked by a particular pitch accent. That the link in situ in (31) *the knives* receives a pitch accent becomes obvious when it is compared with the phrase *the knives* in (32), where it is completely deaccented,

(32) a. What did you do?
b. I left the knives in the DRAWER

The pitch accent on *the knives* in (30) and (31) is distinct from the pitch accent that characterizes focus. This link-related pitch accent corresponds to Jackendoff's (1972) B accent and Steedman 1991 defines it as a high tone preceded by a distinctive low level (L+H*). In-situ links in English are always realized through a L+H* tone, while placement in an appropriate lefthand position (e.g. prototypical subjects and topicalized phrases) is an alternative means to realize linkhood. Topicalization, in fact, may mark linkhood redundantly, since topicalized phrases may display the L+H* tone as well.[16]

As for tails, they do not appear to be structurally characterized in any way other than by being typically deaccented. Unlike Catalan tails, which must be removed from within the core clause, tails in English are free to remain in situ. The examples in (33) illustrate this. A narrow-focus reading is intended in both sentences, on *beer* in (a) and on *loves* in (b), while *John* is a link in both as well. An appropriate continuation for (a) is ... *and Mary loves cider*, while an appropriate continuation for (b) is ... *but Mary hates it.* The nonfocal nonlink elements in (a) and (b), *loves* and *beer* respectively, appear in their in situ position:

[16] Steedman's (1991) account has been slightly adapted for expository purposes. What Steedman states is that the 'theme' portion of the sentence (i.e. the ground) is associated with an L+H* LH% tune. Looking at his examples, however, it is clear that the pitch accent in the 'thematic' tune L+H* always falls on the subset of the ground that has been called link here.

As noted, lefthand links may also display the characteristic L+H* pitch accent that links in situ must display. An empirical question that will be left unanswered is whether lefthand links *must* display an L+H* accent as well. In other words, are links mandatorily realized with a L+H* tone throughout? It may be the case that noncontrastive links need not be realized with a particular pitch accent. This question is particularly relevant in the case of (ground) subjects, which often, although not necessarily, act as links (cf. e.g. van Oosten 1986 for the relationship between subjecthood and topichood).

(33) a. [$_L$ **John**] loves [$_F$ BEER].
b. [$_L$ **John**] [$_F$ LOVES] beer.

It is this characteristic of English tails which allows for the existence of potentially ambiguous structures like those in (29). Notice that (33)a, for instance, could also be the structural realization of an instruction where the focus was *loves beer*. This potential ambiguity extends to the case of subjects as well. A sentence like (34), is potentially ambiguous between a link-focus and a focus-tail interpretation,

(34) John [$_F$ left].

Sentence (34) may correspond to a sentence with a left-detached subject in Catalan or to a sentence with a right-detached subject.[17]

Before concluding this section, the informational import of weak pronominal forms will be discussed. In Vallduví 1992a it is argued that the two sentences in (35) are informationally distinct,

(35) a. John LOVES beer.
b. He LOVES it.

While (35)a is analyzed as a ground-focus structure, (35)b is analyzed as an all-focus instruction. In other words, in (35)b there is no ground. To make this distinction between (a) and (b) in (35) may seem, at first blush, counterintuitive. After all, the two sentences have a parallel syntactic and prosodic structure. But while this is true, it is no less true that there is a difference in markedness between (35)a and (35)b: while the former is informationally marked with respect to its corresponding canonical (36)a, the latter is obviously unmarked when compared to (36)b:

(36) a. John loves BEER.
b. John loves IT.

This contrast is accounted for if it is assumed that, while the postfocal phrase in (35)a is a tail, the postfocal weak pronominal in (35)b is not.

From this perspective, the presence of the weak pronominals in a sentence like (35)b has nothing to do with information packaging. Rather, it is due to independent requirements of English grammar, which does not allow for null argument slots (in Catalan the equivalent of (35)b has a null subject and a clitic object). In fact, (35)b, repeated here as the answer to (37)a, is informationally equivalent to the answer to (37)b:

(37) a. How does John feel about beer?
[$_F$ He LOVES it].
b. What drink does John love?
[$_F$ BEER]

Both (a) and (b) are the most natural answers to their respective questions. The only difference beetween them is that English disallows sentence fragments of the form *loves* but allows fragments of the form *beer*. In other words, the weak pronominals in (a) are redundantly part of the focus as place-holders.

[17] If, as discussed in fn. 16, intonational marking of links is mandatory, then this example would not be ambiguous. *John* would necessarily be a tail. However, since the possibility that noncontrastive links are not prosodically marked was left open, the two readings are, in principle, available.

Sentences like (37)a and (37)b instantiate the nonthetic all-focus instruction mentioned at the end of Section 2.3 and in the discussion around examples (26) and (27) in Section 3.1. The sentences in (37) are not presentational or thetic. Rather, they lack a ground because (the speaker assumes) the hearer is capable of updating the contents of his/her knowledge-store without the need of an 'usher' for the information they carry. In particular, there is no need for a link because no new file card needs to be designated as a locus of entry for the focus. This is further illustrated in (38),

(38) a. Then [$_{\mathrm{L}}$ **Ann**] [$_{\mathrm{F}}$ hugged SUE].
b. [$_{\mathrm{F}}$ She would forever be GRATEFUL to her.]

Sentence (b) realizes a nonthetic all-focus instruction. If *she* in (b) were realized as a strong pronoun with a link interpretation, a new file card fc_2 would be designated as a locus of entry, forcing a disjoint reading for itself with respect to *Ann*, which represents fc_1 (cf. discussion for (26) in Section 3.1). But, as it stands, in (b) no new file card fc_2 is pointed at so that $\mathrm{I_b}$ can be entered on it. Rather, $\mathrm{I_b}$ is entered on the file card fc_1 inherited from (a), namely the file card for Ann. Notice, though, that this does not mean that *she* in (b) refers to *Ann*; *she*, in fact, may refer to either *Ann* or *Sue* (if *she* refers to *Sue*, then *her* refers to *Ann*).[18]

This discussion concerning pronominal forms affects only weak pronouns. Strong pronouns behave like any other full lexical phrase and may play any role in the informational instruction as part of the focus or as part of the ground. The only difference between weak and strong pronouns in English seems to be stress (and the ensuing phonological attrition the former undergo). In many other languages, including Catalan, the two series of pronouns are morphologically distinct.

In Section 3.5 a number of English sentences are contrasted with their informational equivalents in Catalan and Dutch.

3.3 German

German is like English in that it has a 'malleable' intonational structure and in that it allows informationally ambiguous strings. The following examples are adapted from Féry 1992. Example (39) illustrates the informational ambiguity of a string with focal prominence on the direct object. As in (29), the three possible informational readings in (39) are superimposed (according to Féry, a sentential focus reading is not available, since *Karl* requires its own accent). Each reading corresponds to one of the questions in (40): the narrowest reading is an answer to (a), the widest reading is an answer to (c), and the intermediate reading is an answer to (b),

(39) Karl hat [$_{\mathrm{F}}$ dem Kind [$_{\mathrm{F}}$ [$_{\mathrm{F}}$ das BUCH] geschenkt]].
'Karl gave the book to the child.'

(40) a. What did Karl give to the child?
b. What did Karl do for the child?
c. What did Karl do?

[18] Even though both readings are possible for the (b) sentence (this can be checked by changing the gender or number of the huggee in (a)), the one where *she* refers to the subject in the previous sentence is favored when first reading the example. This could be due to some sort of parallelism priming effect.

The subject *she* in (b) would be considered a topic in a topic-comment articulation by most authors working within that framework. This is a place where the notion of link in Vallduví 1992a differs from the traditional notion of topic. The more traditional topic will come into discussion again in Section 4.2.

In contrast, a string with focal prominence on the indirect object allows only a narrow-focus reading:

(41) Who did Karl give the book to?
Karl hat [$_F$ dem KIND] das Buch geschenkt.
'Karl gave the book to the child.'

Focal prominence may also fall on the subject of the clause. Given the appropriate clause type, these sentences are also ambiguous between an all-focus interpretation (42)a and a narrow-focus interpretation on the subject (42)b, just as in English:

(42) a. What's happened?
[$_F$ GORBATSCHOW ist verhaftet worden].
b. Who has been arrested?
[$_F$ GORBATSCHOW] ist verhaftet worden.
'GORBACHEV has been arrested.'

The particular kind of pitch accent associated with focus is a bitonal falling tone (H*L), at least in declaratives.

As far as links is concerned, following Féry, they also seem to coincide with English in requiring a pitch accent. This is shown with a subject in (43)a and a topicalized element in (43)b. Example (43)a can be contrasted with (44), which is a presentational, thetic sentence realizing an all-focus instruction akin to (42)a:

(43) a. What about the president?
Der Präsident [$_F$ wird GEWÄHLT].
'The president's ELECTED.'
b. What about sleeping? Did any of you get any sleep?
Geschlafen [$_F$ hat KEINER von uns].
'As for sleeping, NONE of us slept.'

(44) a. What's going on?
[$_F$ Der PRÄSIDENT wird gewählt].
'The PRESIDENT's (being) elected.'

With regard to the pitch accent associated with links, Féry observes that it may be either a raising tone (L*H) or a falling tone (H*L). If the former occurs, the resulting sequence in a link-focus sentence parallels the sequence found in English link-focus sentences: L*H...H*L for German, L+H*...H* for English (in English there is also a low after the focal H*, but it is seen by Steedman 1991 as part of the ensuing boundary tone and not the pitch accent itself). This sequence has been dubbed a 'hat pattern' by Cohen & 't Hart 1967. On the other hand, if a falling tone is used for the link, then Féry states there is actually no phonological difference between the focal pitch accent and the link pitch accent. However, given that the second pitch accent is not downstepped with respect to the former, subjects in experiments still perceive the focal one as more prominent.

3.4 Dutch

Dutch seems to behave very much like German. The patterns observed in the German examples (39) and (42) are replicated in Dutch. Thus, in (45) the same multiple readings are allowed that were allowed in (39). As above, each one of the questions in (46) is an appropriate contextualization for each one of the three readings in (45):[19]

(45) Karel heeft [$_F$ het kind [$_F$ [$_F$ het BOEK] gegeven]].
'Karl gave the book to the child.'

(46) a. What did Karl give to the child?
b. What did Karl do for the child?
c. What did Karl do?

As in German, a string with focal prominence on the indirect object allows only a narrow-focus reading, as in (47)a. In (47)a *kind* is associated with the focal pitch accent thanks to the leftward shifting of the latter. Alternatively, *kind* may receive the focal pitch accent by appearing next to the verb, as in (47)b:

(47) Who did Karl give the book to?
a. Karel heeft [$_F$ het KIND] het boek gegeven.
b. Karel heeft het boek [$_F$ aan het KIND] gegeven.

The two sentences in (47) appear to be informationally equivalent. The string order contrast between (47)a and (47)b appears to be analogous to the contrast between shifted and nonshifted datives in English.

According to the informant, string (47)b is felicitous not only in the context of *Who did Karl give the book to?* but also in the context of *What did Karl do with the book?*. In the latter context, the focus-ground partition of (47)b would be (48),

(48) What did Karl do with the book?
Karel heeft het boek [$_F$ aan het KIND gegeven.]

In contrast, this very same string order and contour does not constitute a felicitous utterance in a context where the entire verb phrase is to be interpreted as focus. In such a context, if the string order in (47)b and (48) is to be used, the focal pitch accent must fall on the direct object:[20]

(49) What did Karl do?
Karel heeft [$_F$ het BOEK aan het kind gegeven.]

As in German and English, in Dutch sentences with a focal tone on the subject are ambiguous between an all-focus reading and a reading with narrow focus on the subject:

(50) a. What's happened?
[$_F$ GORBATSJOV is gearresteerd].
b. Who has been arrested?
[$_F$ GORBATSJOV] is gearresteerd.
'GORBACHEV has been arrested.'

[19] The Dutch examples in this section and in Section 3.5 below were all elicited from L. Joosten. The facts concerning prosody, especially those in Section 3.5, should be taken with a grain of salt.

[20] There seems to be some dissent about this particular fact among native speakers.

As for links, they behave like the German links discussed in the previous section in that they appear to require their own pitch accent. Nothing will be said about the phonological nature of this pitch accent. In Section 3.5, where a number of Dutch examples containing links are contrasted with their informational equivalents in some other languages, it is shown that in Dutch, like English, links may be realized in two ways: they may be fronted by means of a topicalization-like operation or they may appear in situ (marked by a link pitch accent, of course).

Dutch, however, like Swedish and a number of other Germanic languages, has an additional alternative: the configuration called ‘contrastive dislocation’ (cf. Zaenen 1984). Contrastive dislocation is, like topicalization, a fronting operation. It differs from the latter, however, in that it binds a pronominal which appears in a lefthand slot as well, but to the right of the contrastive-dislocated phrase. Sentence (51)a contains a contrastive-dislocated link, while (51)b illustrates a topicalized link, *de vijf laatste films van Godard* ‘Godard’s last five films’ (both sentences are from Zaenen 1984). In (51)c the same link phrase appears in situ:

(51) a. **De vijf laatste films van Godard**$_1$ die$_1$ heeft Jan gezien.
the five last movies of Godard that has Jan seen
b. **De vijf laatste films van Godard** heeft Jan gezien.
c. Jan heeft **de vijf laatste films van Godard** gezien.
‘The last five films by Godard John has seen.’

These three sentences appear to be informationally equivalent. Therefore, the working hypothesis is that contrastive dislocation realizes links as well.[21]

3.5 A crosslinguistic comparison

In this section, the structural realization of several ground-focus partitions in Catalan, English, and Dutch is contrasted. The English examples, originally Jackendoff’s, are adapted from Steedman 1991. The question context used by Steedman is meant to set up the choice of focus (the answer to the second question) and the choice of link (the first question triggers an ‘aboutness’ reading for the constituent it contains). Stressing the pronoun in the second question with a link pitch accent is meant to trigger an implicit contrast between its referent and another potential referent in a relevant set. This contrast is wanted to secure that the ‘aboutness’ phrase is realized as a link.

As above, boldface represents the link, which receives an L+H* pitch accent in English (and possibly in Dutch as well) and no particular or necessary accent in Catalan. The bracketing delimits the focus, which in Catalan coincides with the core clause, i.e. IP. The nonfocal nonlink elements are tails. While in English and Dutch tails remain in situ and deserve no special structural identification, other than being destressed, in Catalan they cannot remain in situ and must be right-detached. Also, for English and Dutch, in cases where topicalization and contrastive dislocation are a link-marking option, the two or three available alternatives are provided.

[21] Dutch contrastive dislocation must not be identified with Dutch left-dislocation. In left-dislocation the dislocated phrase binds a pronominal as well. This prominal, however, does not appear in a lefthand slot but rather in situ. In contrastive dislocation, the detached phrase is felt to be part of the clause (for instance, it displays connectivity effects), much like in Catalan left-detachment and English topicalization. The dislocated phrase in left-dislocation behaves as if external to the clause, as in Catalan and English hanging left-dislocation.

(52) What about Fred? What did **he** do?
a. Eng.: **Fred** [$_F$ ate the BEANS.]
b. Cat.: El Pere$_1$ [$_F$ es va menjar els FESOLS t$_1$.]
c. Dutch: **Fred** heeft [$_F$ de BONEN opgegeten.]
d. Dutch: **Fred**$_1$ die$_1$ heeft [$_F$ de BONEN opgegeten.]

(53) What about Fred? What did **he** eat?
a. Eng.: **Fred** ate [$_F$ the BEANS.]
b. Cat.: El Pere$_1$ [$_F$ t$_v$ els FESOLS t$_1$,] es va menjar$_v$.
c. Dutch: **Fred** heeft [$_F$ de BONEN] opgegeten.
d. Dutch: **Fred**$_1$ die$_1$ heeft [$_F$ de BONEN] opgegeten.

(54) What about Fred? What did **he** do to the beans?
a. Eng.: **Fred** [$_F$ ATE] the beans.
b. Cat.: El Pere$_1$ [$_F$ se'ls$_2$ va MENJAR t$_2$ t$_1$,] els fesols$_2$.
c. Dutch: **Fred** heeft de bonen [$_F$ OPgegeten.]
d. Dutch: **Fred**$_1$ die$_1$ heeft de bonen [$_F$ OPgegeten.]

(55) What about the beans? What happened to **them**?
a. Eng.: [$_F$ FRED ate] **the beans**.
b. Eng.: **The beans**$_1$ [$_F$ FRED ate t$_1$]
c. Cat.: Els fesols$_1$ [$_F$ se'ls$_1$ va menjar el PERE.]
d. Dutch: **De bonen** heeft [$_F$ FRED opgegeten.]
e. Dutch: **De bonen**$_1$ die$_1$ heeft [$_F$ FRED opgegeten.]

(56) What about the beans? What did Fred do to **them**?
a. Eng.: Fred [$_F$ ATE] **the beans**.
b. Eng.: **The beans**$_1$ Fred [$_F$ ATE t$_1$.]
c. Cat.: Els fesols$_1$[$_F$ se'ls$_1$ va MENJAR t$_1$ t$_2$], el Pere$_2$.
d. Dutch: Fred heeft de **bonen** [$_F$ OPgegeten.]
e. Dutch: **De bonen** heeft Fred [$_F$ OPgegeten.]
f. Dutch: **De bonen**$_1$ die$_1$ heeft Fred [$_F$ OPgegeten.]

(57) What about the beans? Who ate **them**?
a. Eng.: [$_F$ FRED] ate the **beans**.
b. Eng.: **The beans** [$_F$ FRED] ate.
c. Cat.: Els fesols$_1$ [$_F$ t$_v$ t$_1$ el PERE,] se'ls va menjar$_v$.
d. Dutch: [$_F$ FRED] heeft de **bonen** opgegeten.
e. Dutch: **De bonen** heeft [$_F$ FRED] opgegeten.
f. Dutch: **De bonen**$_1$ die$_1$ heeft [$_F$ FRED] opgegeten.

(58) I know what Fred cooked. But then, what did he **eat**?
a. Eng.: Fred **ate** [$_F$ the BEANS.]
b. Cat.: De menjar$_v$ [$_F$ es va menjar$_v$ els FESOLS t$_1$,] el Pere$_1$.
c. Dutch: Fred **at** [$_F$ de BONEN.]

(59) I know who cooked the beans. But then, who **ate** them?
a. Eng.: [$_F$ FRED] **ate** the beans.
b. Cat.: De menjar$_v$ [$_F$ se'ls$_1$ va menjar$_v$ t$_1$ el PERE,] els fesols$_1$.
c. Dutch: **Gegeten** heeft [$_F$ FRED] de bonen.

Several observations are in order. First, in (58) and (59) linkhood falls on the verb. While English, according to Steedman, may express this intonationally, Catalan, as expected, may not. In Catalan, an infinitival copy of the verb is left-detached, in a fashion analogous to the German example (43)b above, while inflection remains with the copy left behind. Dutch opts for a left-detachment strategy for (59), but prefers an exclusively prosodic solution for (58).[22] Second, in several Dutch examples perceptions on the relative prominence of the two pitch accents in the sentence varied. In (52), in particular, the link accent was judged to be more prominent than the focal accent.

Notice also that English and Dutch generally have at least two alternatives in the cases where the link is the direct object: one structure where the object is fronted and one where it remains in situ. The parallelism between English and Dutch is only interrupted in (55), where the Dutch in situ version, according to the informant, is not available. The intended informational reading for (55) is one where the focus is constituted by both the verb and the subject. Interestingly, if the link were to appear in situ in (55) the two elements in the focus would be discontinuous, as shown in (60)b:

(60) En de bonen? Wat is er **daar**mee gebeurd?
a. **De bonen** heeft [$_F$ FRED opgegeten.]
b. #Fred heeft **de bonen** opgegeten.

Whether this is the reason for the unavailability of in-situ placement for the link in the context of (55) will be left as an open question.

Finally, let us point out that contrastive dislocation is impossible where the dislocated constituent is focus. Whereas the link subject *Fred* in (52)d, as shown, may be contrastive-dislocated, the focus subject *Fred* in (57)d may not. Compare the grammatical (57)d with the ungrammatical (61):

(61) *[$_F$ FRED$_1$] die$_1$ heeft **de bonen** opgegeten.

This further confirms the hypothesis that Dutch contrastive dislocation is a means to realize links.

There is one further contrast between Catalan and at least English which is not reflected in the comparative list in this section. It concerns the informational import of sentences with narrow focus on a verbal element. In Catalan a sentence with a focal pitch accent on the verb may be the structural realization of focusing on three distinct elements. In such cases, the information of the sentence may be the verb proper, as in (62), it may be tense, as in (63), or even the affirmation/negation polarity, as in (64):

(62) No cal que hi insisteixis. L'amo$_2$ [$_F$ el$_1$ REBUTJARÀ t_1 t_2,] el projecte$_1$.
no 3s-need that loc 2s-insist the.boss obj 3s-fut-reject the project
'You needn't insist. The boss will REJECT the project.'

(63) Encara no l'ha rebutjat *pro*, però [$_F$ ja el$_1$ REBUTJARÀ e_1 *pro*.]
yet no obj.3s-pst-reject but prt obj 3s-fut-reject
'He hasn't rejected it, but he WILL (reject it).'

[22] These two Dutch examples were provided by J. Hoeksema, who suggested that in Dutch a contrastive link best precedes the focus. Hence the use of detachment or the use of prosody in these sentences.

(64) S_1: Segur que el rebutja sense ni mirar-se'l...
‘I'm sure he'll reject it without even looking at it.’
S_2: Estigues tranquil.la, que [$_F$ no el$_1$ REBUTJARÀ e$_1$ *pro.*]
2s-imp-be calm that no obj 3s-fut-reject
‘Don't worry. He will NOT reject it.’

In English, judging from the English translations given to these examples, the situation is slightly different. Only in (62), where the focus is the verb proper, is focal prominence realized on the verb. In contrast, in (63), where the focus is tense, focal prominence falls on the auxiliary that carries that tense. Similarly, in (64), where negation is the focus, focal prominence is realized on the negative element, contrasting with Catalan. When affirmation is the focus, prominence is placed on the auxiliary again, since there is no independent affirmation word (although *indeed*, for instance, may perform that role sometimes).[23]

3.6 Other realizations

The structural realizations illustrated by Catalan, English, Dutch, and German do not exhaust the list of possibilities. As a matter of fact, without having to resort to other languages, there appears to be a construction in English that illustrates one of these alternative realizations. It is the construction called focus-preposing, focus-topicalization, Y(iddish)-movement, or rhematization (this construction is available in other Germanic languages (e.g. Swedish) as well). In this configuration the focal element, while still receiving a focal pitch accent, is not left in situ but rather it is fronted in a topicalization-like process:

(65) a. Did you get wet?
b. [$_F$ Bloody SOAKING] I was. (Hannay 1991:134)

The existence of this construction, in fact, has been analyzed by several syntacticians in the government-binding framework (cf. Rochemont 1986) as suggesting that at a certain level of abstraction *all* foci are fronted in such a way.

It has been argued, however, that focus-preposing is not equivalent in its informational import to its nonfronted counterpart. Ward 1988 and Vallduví 1992a defend the position that two sentences like (66)a and (66)b receive two different informational interpretations:

(66) a. They named their dog [$_F$ FIDO]
b. [$_F$ FIDO] they named their dog.

[23] This is not the only peculiar aspect of (Catalan) verbs with respect to informational realization. In Catalan, verbs may sometimes vacuously remain within IP receiving no focal interpretation. In the examples in this section where the verb is a tail, right-detachment is obligatory, but in cases where the optimal answer is an isolated constituent, the verb may redundantly appear:

Q: Qui estimava, el Dalí?
who 3s-impf-love the Dalí
‘Who did Dalí love?’
(i) La GALA.
(ii) Estimava la GALA.
‘He loved Gala.’

Answer (i) is the informationally expected option and indeed is a normal answer to Q. Answer (ii), however, is also possible. Informationally, the verb in (ii) must be treated in the same way pronominal clitics in general are treated: in examples like (ii) the verb acts as a weak proform (cf. Section 3.2 above).

Ward shows that in cases like (65) and (66)b the fronted phrase actually refers to two discourse elements: one, a set or scale and, two, a specification of a value or an element in that set or scale. In (65) the scale is the scale of wetness and the value is *bloody soaking*; in (66)b, the set is the set of dog names, probably ordered among them in terms of clichédness, and the value is the extremely clichéd *Fido*. In these examples the specification of the relevant value is indeed focal and triggers the appropriate structural realization by means of prosody, but the scale this value belongs to is part of the ground. In fact, it is a link, and this is what triggers its realization as a fronted element. Crucially, *Fido* in (66)a does not give rise to the same interpretation.

If this analysis is correct, focus-preposing blends naturally into the general observations made for English in Section 3.2. Nevertheless, whatever the correct analysis for English focus-preposing, the fact is that focusing by means of syntactic operations on the focus is available in other languages. It is a standard view that some languages realize foci by placing them in a specific syntactic slot. In languages like Hungarian and Basque, it is claimed that foci must appear in an immediately preverbal slot (cf. Kiss 1981, Horvath 1986, Puskás 1992 inter alia). Horvath 1986:91-92 provides the examples in (67). In (a) the object *a földrengéstől* 'the earthquake' appears in situ, where it cannot be realized with focal prominence. In order to be realized as a focus the object must be placed in a position left-adjacent to the verb, as in (b):[24]

(67) a. *Attila félt [$_F$ a FÖLDRENGÉSTŐL.]
Attila 3s-pst-fear the earthquake.from
'Attila feared [$_F$ the EARTHQUAKE].'
b. Attila [$_F$ a FÖLDRENGÉSTŐL] félt.

The same applies to other focused arguments: they all must appear in this specialized preverbal slot. This immediately preverbal slot is called the 'focus position' by Hungarian syntacticians.

Besides foci, other elements that appear in this focus slot are wh-words in wh-questions and a class of elements that includes, among others, verb particles, some quasi-incorporated complements, and some adverbs (cf. Puskás 1992). This is shown in (68) and (69). The (a) examples show the default position of these elements. The (b) examples show they cannot normally appear postverbally. Finally, the (c) examples show they can appear postverbally if the focus position is filled by a real focus (examples from Puskás 1992:8).[25]

(68) a. ELaludt a gyerek.
prt.3s-pst-sleep the child-nom
'The child fell asleep.'
b. *Aludt el a gyerek.
c. KÉSŐN aludt el a gyerek.
late
'It was late the child fell asleep.'

[24] There is serious disagreement about what the in-situ position of verbal arguments in Hungarian is, or, for that matter, about what the general syntactic makeup of the language is. This should be taken into account when considering the data in this section.

[25] Puskás stars example (68)b. According to M. Vilkuna (p.c.), however, this sentence is grammatical but differs from (68)a in its aspectual value.

(69) a. LASSAN olvas ez a gyerek.
slowly 3s-read this the child-nom
'The child reads slowly.'
b. *Olvas lassan ez a gyerek.
c. SZÁNDÉKOSAN olvas lassan ez a gyerek.
on purpose
'It is on purpose that this child reads slowly.'

The complemetary distribution of real foci and these particles and adverbs suggests they are occupying the same slot.

One question that remains unclear in the literature on Hungarian used as a source here is whether the foci that occupy the focus position are necessarily narrow foci or whether, on the contrary, they may be just the accented item within a wider focus. The translations given to the majority of examples, including Puskás' *it*-cleft renderings for (68) and (69), suggest they are narrow foci. In (70), only the narrow focus reading appears to be legitimate (examples (70), (71), and (72) are from Komlósy 1986:218),

(70) Mari [$_F$ JÁNOST] látta a kertben.
Mary John-acc 3s-pst-see the garden-ine
'Mary saw JOHN in the garden.'

Komlósy 1986, however, states that in some cases this is not necessarily so. According to him, the examples in (71) are ambiguous between three possible informational readings. These readings are indicated, as above, by partially overlapping brackets:

(71) a. Mari [$_F$ [$_F$ [$_F$ ALMÁT] eszik] a kertben.]
Mary apple-acc 3s-eat the garden-ine
'Mary eats apples in the garden.'
b. Mari [$_F$ [$_F$ [$_F$ BETEG] volt] tegnap.]
Mary sick 3s-be yesterday
'Mary was sick yesterday.'

The relevant generalization is that wider foci are possible in sentences where the element that appears in focus position appears there as a 'default' (the verb particles, quasi-incorporated complements, and adverbs mentioned above), like those in (71). Wider foci are ruled out in cases where the in-situ slot of the element appearing in focus position is elsewhere, as in (70).

It is also a standard assumption that when the focus position is empty, the focal pitch accent falls on the verb (although prima facie there is no evidence from string order to know whether the verb remains in situ or appears in focus position). In other words, in contrast with its arguments the verb may be realized with focal prominence while remaining in situ (cf. Kiss 1986). Again, Komlósy points out that in such cases focal ambiguity is again present:

(72) Mari [$_F$ [$_F$ [$_F$ LÁTTA] Jánost] a kertben.]
Mary 3s-pst-see John-acc the garden-ine
'Mary saw John in the garden.'

If the observations made by Komlósy are on the right track, the analysis of focus in Hungarian is not as straightforward as it seems.

Hungarian-type languages form a third group that contrasts both with the Catalan type and the English type. The structural realization of ground-focus relationships crucially involves syntactic operations, like in Catalan. But, in contrast to this language, these syntactic operations are not used to remove ground elements *from* a default focal slot, but to move focal elements *to* a default focal slot.

4 Other pragmatic effects

4.1 Referential status

Referential status is used here to refer to a property of discourse entities. Discourse entities may be 'known' (or 'familiar' or 'given') or 'unknown' (or 'new' or 'novel') to the hearer. Speakers have their assumptions about whether their interlocutors are familiar with a particular discourse referent. It is these speakers' assumptions that determine how referents are structurally realized. In the Heimian file metaphor used in Section 2.3 to describe the (hearer's) knowledge-store, familiar or hearer-old referents are those for which a file card already exists, while novel or hearer-new referents are those for which there is no preexistent file card. It is generally agreed that in languages that possess overt determiners, these play an important role in the encoding of referential status. Roughly, hearer-new referents are realized through indefinite noun phrases; an indefinite noun phrase indicates that a new file card has to be created. Hearer-old referents are realized through definite noun phrases. Within the hearer-old referents, there are dormant referents and already activated, salient referents. The former are realized as full noun phrases (they indicate that the dormant file card must be activated), while the latter are realized as pronouns.

From this perspective, there is a neat correlation between form and pragmatic interpretation. Information packaging, which operates at the level of the proposition, is structurally realized through syntactic operations and through intonational phrasing. Referential status, which operates at the level of discourse referents, is structurally realized through the morphological properties of the noun phrase (or determiner phrase).

This neat picture, however, is not unanimously agreed upon. In the topicality framework of Givón (1983, 1992), for instance, both definiteness and word order are structural reflections of referential status. From this perspective, all referents in a discourse are ranked in a scale of topicality or continuity and it is their ranking in the scale that determines the way they are structurally encoded. A number of studies in this framework have provided evidence for the following correspondence between degree of topicality and structural realization, starting with the highest degree and going down the scale:[26]

> Topicality Hierarchy:
> Zero anaphora > weak pronouns > strong pronouns > right-detachment > neutral order (+definite) > left-detachment > Y-movement > clefts > indefinite NPs.

[26] Givón uses Y-movement as a cover term for both topicalization (i) and focus-preposing (ii):

(i) **Six months** I can wait. **More** I couldn't.
(ii) [$_F$ SIX months] you're going away for. That's a long time!

Notice, also, that in the topicality hierarchy definiteness is clearly distributed, with indefinite noun phrases not behaving like other phrases and meriting a separate mention. This supports the view that what really matters in the realization of referential status is noun phrase morphology and not word order.

As noted in fn. 6, Givón's topicality scale is analogous to Sidner's (1981) 'focus stack'. Referents are ranked in this focus stack and their ranking determines their structural realization. There is one particular case in which word order may especially come into play in the encoding of referential status: in languages that lack overt determiners. A language where such a possibility may be considered is Finnish. This idea will remain unadressed here.

Word order also appears to be correlated with the so-called strong and weak readings of certain indefinite and quantified expressions. This issue is discussed in de Hoop 1992 and is illustrated by her examples in (73):

(73) a. Er zijn gisteren twee krakers opgepakt.
there are yesterday two squatters arrest-pple
'Two (of the) squatters were arrested yesterday.'
b. Er zijn twee krakers gisteren opgepakt.
'Two *(of the) squatters were arrested yesterday.'

In (73)a the quantified NP appears postadverbially and may have a strong and a weak reading, but in (73)b, where it appears preadverbially, it must have a strong reading. In this particular case, a strong reading means a partitive reading, i.e., *two squatters* is interpreted as denoting two squatters out of a larger salient set of squatters. In this reading, *two squatters* may be paraphrased by *two of the squatters*. The weak reading of *two squatters* simply denotes a set of squatters with a cardinality of two. Partitivity in this sense is related to Pesetsky's (1987) d-linking and Diesing's (1992) presuppositionality. The relevant issue here is why the preadverbial NP has to receive a strong or partitive interpretation, while its postadverbial counterpart may have either a weak or a strong reading. Interestingly, a similar phenomenon is found in Catalan. Quantified NPs within the core IP may have either a partitive or a weak rading, but if they appear in a left-detached slot they must have a partitive reading. Since the left-detached position in Catalan is associated with a link interpretation, it is suggested in Vallduví 1992b that only the partitive reading is compatible with a link interpretation for the NP. Whether there is a parallel explanation for the Catalan and the Dutch data remains to be seen.

4.2 Topic-fronting in Swedish

In Swedish, there is a construction, called 'topic fronting' by Andersson 1974, that is characterized by the sentence-initial placement of a weak pronominal.[27] This construction is illustrated in (75). Both (a) and (b) are possible continuations to the sentence in (74),

(74) a. I går fick jag en bok
yesterday 1s-pst-get i a book
'Yesterday I got a book...'

(75) b. Den ska jag läsa i kväll
it fut i read tonight
c. Jag ska läsa den i kväll
i fut read it tonight
'I will read it tonight.'

[27] The contents of this section are entirely based on the data and analysis of E. Engdahl.

The pronouns *den* 'it' and *jag* 'I' in (75)a and (75)b, respectively, are totally unstressed and are highly salient in terms of referential status. Hence, this fronting configuration is not analogous to the link-fronting constructions that were discussed for several languages above in Section 3. In link-fronting what is fronted is a full phrase generally with its own pitch accent. It was observed that the role of links is to point to or designate a new file card on which the oncoming information of the sentence is to be entered. The topic-fronting construction discussed in this section, in contrast, appears to front an element to mark it as a continuing topic inherited from the previous clause.

The trinomial articulation of Vallduví 1992a, used in making the crosslinguistic comparison in Section 3, does not contemplate such a possibility. Givón's (1983) topicality framework, however, does. Topic-fronting seems to be marking topic continuity in the sense that the most continuous, salient element in the sentence is fronted. This is shown in the sequence in (76) from the tale *Barnens dag i Bullerbyn* by A. Lindgren (1987):

(76) a. *Sen* gick vi till stora grissuggan.
then went we to the big sow
'Then we went to the big sow.'
b. *Hon* hade just fått smågrisar, nio stycken.
she had just had piglets nine ones
'She had just had piglets, nine of them.'
c. *Dom* tyckte Kerstin om att titta på.
them liked Kerstin to watch
'Kerstin liked to watch them.'

Such a fronting is unknown in languages like Catalan and English, but does have a correspondence in other Germanic languages. In Dutch an analogous constructions exists, but the class of elements that undergo topic-fronting is further constrained (mostly, it is restricted to demonstratives). It would be interesting to know if there are any correlations between Swedish and Dutch topic-fronting and other constructions that seem to mark elements as the most salient, continuous referent (e.g. German topic zap, perhaps).

Topic-fronting also seems to play a role in establishing a temporal sequencing between events in a narrative. The fronted pronouns carry the narrative forward in a way that is similar to uses of *and then...* and *so...* in English. In fact, topic-fronting is very common with items like *då* and *sen* 'then'.

4.3 Clefts

Clefting, especially it-clefts, is considered to be a structural strategy to reflect informational partitions. It has been argued that, for example, an it-cleft like (77)a is informationally equivalent to (77)b,

(77) a. It is John who left.
b. [$_F$ JOHN] left.

However, while it is certainly true that (a) and (b) may be informationally synonymous, it is also true that they need not be. Sentence (78)a is informationally synonymous with (78)b, not with (78)c:

(78) a. Why are you so fond of Harry?
It is Harry that taught me how to TANGO.
b. Harry [$_F$ taught me how to TANGO].
c. #[$_F$ HARRY] taught me how to tango.

This is, in fact, one piece of evidence that has led several analysts to believe that the basic role of it-clefts in discourse is not to realize focus-ground oppositions. Delin 1991, for instance, where a number of naturally occurring examples where the nonclefted material is focal (and even where it cannot be assumed by the speaker to be hearer-known) can be found, argues that it-clefts are markers of logical presupposition. Whatever the effects of presupposition in discourse are remains unclear, although she cites the work of van der Sandt 1988 as relevant. Figure (79), where the informational and presuppositional values of several sentences are compared, is adapted from Figure 2 in Delin 1991:

(79)

Utterance	Ground	Focus	Presupposition	Assertion
JOHN left	*left(x)*	$x = j$	—	*left(j)*
John LEFT	*P(j)*	P = *leave*	—	*left(j)*
It was JOHN who left	*left(x)*	$x = j$	*left(x)*	$x = j$
It was John who LEFT	*P(j)*	P = *leave*	*left(x)*	$x = j$

The focus-ground split and the presupposition-assertion split overlap in only one case out of the four possible ones. Remember that in Section 2.2.1 it also argued on independent grounds that the ground could not be identified with a logical presupposition.

4.4 *There*-sentences

In Section 2.3 *there*-sentences were classified as all-focus sentences. Their all-focus status is especially clear in the so-called 'list-reading' class of *there*-sentences, where the postverbal NP is a direct answer to a contextualizing question. This class is illustrated by (80) (from Ward & Birner 1993:12):

(80) S_1: What's on the office desk?
S_2: There's the *telephone*, but nothing else.

Other types of *there*-sentences, like (17)b in Section 2.3, realize all-focus instructions as well, but there is an additional raison d'être behind them. This raison d'être will be discussed in this section.

There-sentences exhibit several syntactic and pragmatic properties along with their core semantic import. Among them, the so-called definiteness restriction on *there*-sentences has been the subject of a large number of studies. Ward & Birner 1993, however, analyzing a corpus of over 100 definite postverbal NPs in *there*-sentences, show that the definiteness restriction, understood as a restriction on formally definite NPs, is epiphenomenal. Definiteness, in the context of the definiteness restriction in *there*-sentences (at least for English), should be understood not as a morphosyntactic category but as an interpretive category analogous to the referential status of familiarity or hearer-givenness.[28] Clearly, the postverbal NP in *there*-sentences must be, in some sense, novel or hearer-new.

Nevertheless, there are different reasons for which a speaker may choose to treat the postverbal NP in a *there*-sentence as hearer-new. There are, of course, the morphosyntactic indefinite NPs that, as expected, realize hearer-new referents. In addition, Ward & Birner identify three classes of definite NPs that occur in *there*-sentences (other than the 'list-reading' examples like (80)): (a) hearer-new tokens of hearer-old types, (b) hearer-new entities with unique identifications, and (c) false definites. These are illustrated in (81) (all examples from Ward & Birner 1993):

(81) a. There was the usual crowd at the beach today.
b. There was the tallest boy in my history class at the party last night.
c. There are all sorts of other false definites. There is every reason to study them. There is the most curious discussion of them in our paper.

It is the hearer-newness of these NPs that licenses their appearing in a *there*-sentence. In (a) the type 'usual beach crowd' is hearer-known, but the particular crowd that was at the beach today is hearer-new. In (b), the entity 'the tallest boy in my history class' is uniquely identifiable due to the inherent nature of the superlative, but it can still be presented as new to the hearer. In (c), the definite NPs are not used in their literal meaning. They are rhetorically used instead of *a lot of other false definites*, *good reasons to study them*, and *a very curious discussion*, which are clearly hearer-new.

Interestingly, there is a fourth class of definite postverbal NPs in *there*-sentences that represents hearer-old referents. They are the so-called 'reminder' type. This type is shown in (82) (from Ward & Birner 1993:8 as well),

(82) There were those neighbors at the City Council meeting yesterday.

Here, a definite *those neighbors* is used because the speaker believes the hearer knows about the entity in question, but the *there*-sentence is licensed because the speaker also believes the hearer is unable to recall it. The postverbal subjects, then, realize referents the speaker believes the hearer cannot access, either because they are hearer-new or because, despite their being already present in his/her knowlege-store, the hearer cannot recall them.

Why should this be so? Given the definition of link in Section 2.3 and elsewhere, there is arguably a single reason behind the postverbal realization of the different types of hearer-inaccessible referents in *there*-sentences. Recall that preverbal subjects are often interpreted as links. For instance, in (16)a, repeated here as (83), *the president* is the link: it points to the file card that is to serve as locus of entry for the oncoming information.

(83) The president$_1$ [$_F$ hates CHOCOLATE].

In (83) the hearer is told to go to the file card for the president and add a record there with the property 'hates chocolate'. In the standard case, the file card the hearer is instructed to go to is hearer-old. So in (83) *the president*, by virtue of its being a definite full NP, tells hearers that they need not create a new file card for the president, but rather that that file

[28] The strength of the definiteness restriction varies from one language to another. In Swedish, where no formally indefinite NPs are allowed in existential sentences, it is strict; in English, as discussed in this section, it is less so; in Catalan, there appears to be no definiteness restriction whatsoever.

card already exists in their knowledge-store (as noted in Sections 2.3 and 4.1 the two roles of *the president* as an informational link and as a referential-status marker are independent).

However, in a situation in which the link phrase denotes a hearer-new referent (or a theoretically hearer-old but inaccessible referent), hearers are confronted with two simultaneous tasks. On the one hand, they are told to (re)create a new file card for the referent introduced in that NP. On the other, they are instructed to use this very file card they are creating as the locus of entry for the oncoming information. While carrying out these two processes at the same time need not be impossible, a dislike for their simultaneous occurrence is reflected precisely in the existence of constructions like *there*-sentences. The role these constructions play is precisely to dissociate the process of file-card creation from the process through which hearer's go to a file card designated as a locus of information entry. By using, for instance, (84)a, a speaker turns a potential link-focus instruction like (84)b into an all-focus instruction with a presentational force,

(84) a. [$_F$ There is a dog sniffing the TRASH can.]
b. [$_L$ A dog] [$_F$ is sniffing the TRASH can.]

With (84)a, the hearer can create the file card for 'a dog' without having to simultaneously use that file card as the locus of information entry, since in this type of all-focus instruction I_s is entered on a temporary all-purpose situation file card.[29]

As expected, while absolutely hearer-new referents are near-categorically excluded from acting as links, the types of formally definite hearer-new phrases discussed by Ward & Birner 1993 may perform this function with less restrictions, especially those that refer to a hearer-old type and those that are uniquely identifiable. Also as expected, indefinite preverbal subjects in Catalan are much worse than preverbal indefinite subjects in English. This is shown in (85), where (b) is pragmatically very odd:

(85) a. Hi ha un gos que ensuma el cossi de la brossa.
there have a dog that 3s-sniff the bin of the trash
'There's a dog (that's) sniffing the trash can.'
b. ??Un gos ensuma el cossi de la brossa.

This is so because preverbal subjects in Catalan, in contrast to English, are necessarily interpreted as links, i.e. the all-focus reading that the appropriately intoned version of (84)b allows is not available in the Catalan (85)b.

It is worth mentioning too that *there*-sentences are not the only construction that performs the dissociating task discussed here. So-called hanging left-detachment has the same effect:

(86) a. So I look out the window and
this guy, he was selling crack right outside the precinct.
b. This guy was selling crack right outside the precinct.

By using (86)a the indefinite phrase *this guy* is isolated. The intonation and connectivity effects of sentences like (86)a suggest that the 'hanging' initial phrase is not integrated in the sentence. The result is that a file card is created for 'this guy' first and then this very same file card can be used as a locus of information entry. Again, the simultaneity of the file-card management process and the informational process is avoided.

[29] As noted, having a hearer-new link is highly disfavored but not impossible, and this is confirmed by the restricted existence of indefinite links. Not all indefinite preverbal subjects are necessarily links, though. They are obviously focal in cases of all-focus thetic sentences discussed in several places in this report.

4.5 A note on intonation

In Catalan-type languages syntactic structure plays an important role in the realization of information packaging. Intonational structure plays a part too, but it is a rather lame one. A focal pitch accent is indeed associated with (a subset of) the focus. This association, however, is not attained via changes in the prosodic structure of the sentence, but rather by performing the necessary syntactic operations on the string so as to fit that prosodic structure. Catalan intonation is indeed 'malleable' and may be used to realize other aspects of interpretation (e.g. illocution) or for metalinguistic purposes, but for focus-related purposes intonational structure is always the same: a focal pitch accent on core-clause-final position.

In contrast, as pointed above, English-type languages may use intonation in an exclusive fashion to represent information packaging. In English, one single segmental string may be associated with different intonational phrasings to realize different informational interpretations. In particular, the focal pitch accent may be realized on different positions in the sentence. Due to this property of English, several researchers have reached the conclusion that there is a straightforward one-to-one relationship between intonational phrasing and accenting and information packaging. Thus, it is not uncommon to encounter the assumption that *all* accenting phenomena must have the same or a similar interpretive import. Nevertheless, when languages other than English are considered such an assumption appears to be less well motivated. For instance, even within the domain of information packaging proper, it is clear that the correlation between prominence and informational interpretation is not one-to-one. As noted, in German, for instance, a bitonal falling pitch accent (H*L) may realize either a focus or a link (cf. Féry 1992). In other words, a single phonological element may realize fairly different informational elements.[30]

An area where the association between pitch accenting and information packaging in English may be taken to undesirable extremes is metalinguistic correction. Examples like (87)a, which reflect a clear correction or repair, may, at first blush, be considered cases of narrow focus, equivalent to the true narrow-focus examples in (87)b or (87)c,

(87) a. We'll use 'EXtension' in this sentence, not 'INtension'.
b. We'll introduce [$_F$ LEX] to Sue.
c. We'll use [$_F$ 'EXTENSION'] in this sentence.

Giving a unified treatment to (a) and (b), however, would not capture the fact that in Catalan these two sentence-types are realized through different structural means. As noted, in Catalan, in real ground-focus sentences the ground elements cannot remain in situ, i.e. they must be detached. In contrast, metalinguistic repairs like (87)a are carried out English-style by merely accenting the lexical item containing the 'incorrect' bit, without any resort to syntax (unlike English, however, within the corrected lexical item, Catalan tends to accent the lexically stressed syllable, not the one where the correction is made). Sentence (88)a is the Catalan equivalent of (87)a and illustrates a metalinguistic correction, while sentence (88)b illustrates a genuine focus-ground structure, equivalent to (87)c. A sentence like (88)a may only be used as a metalinguistic correction, i.e., it is ungrammatical in any 'genuine' linguistic use:

[30] It is not uncommon to run into analyses that provide a single interpretive value to link pitch accents and focal pitch accents, not only in languages where they are phonologically similar, but also in languages like English where they are quite distinct. As Steedman 1991 notes, the problem is compounded by the fact that the term 'focus' is also used, particularly by phonologists, to designate any pitch accent within a phrase.

(88) a. Posarem 'EXTENSIÓ' en aquesta oració, no 'INTENSIÓ'.
1p-fut-put extension in this sentence not intension
'We'll use 'EXtension' in this sentence, not 'INtension''.
b. Ja està! [$_F$ 'EXTENSIÓ',] posarem en aquesta oració!
'That's it! We'll use 'EXTENSION' in this sentence!'

The contrast between (88)a and (88)b is especially clear cut because the metalinguistically corrected element is only a syllable within a lexical item. In cases where the corrected element is an entire lexical item, however, the distinction between a genuine informational structure and a metalinguistic repair is much harder to make. This is particularly so in English, where there are structures, like (89), that are completely ambiguous between a true informational reading and a metalinguistic-repair reading. On one reading (89) is analogous to (87)a and on the other it is analogous to (87)c,

(89) I introduced my EX to Sue (not MALCOLM X).

In Catalan, as expected, there are two structural options available in lieu of English strings like (89). One, (90)a, involves exclusively an English-style prosodic marking and is only acceptable with an unmistakeable repair flavor; the other, (90)b, involves syntactic operations and reflects a true informational interpretation:

(90) a. Vaig presentar el meu EX a la Sió, no el MALCOLM X.
1s-pst-introduce the my ex to the Sió, not the Malcolm X
'I introduced my EX to Sió (not MALCOLM X)'.
b. [$_F$ El meu EX], vaig presentar a la Sió.
'I introduced [$_F$ my EX] to Sió.'

An analogous situation seems to hold for Hungarian too (cf. Horvath 1986:92). A focally accented item must appear in the focus position. If it does not, as shown in (67)a in Section 3.6, the sentence is ungrammatical. It is only acceptable as a metalinguistic repair.[31]

Another area where accent and/or stress appear to play a role in English is in the marking of referential-status, and in particular, in the marking of 'given' and 'new' at the phrasal level. Van Deemter 1992, for instance, states that an NP realizing a novel referent may contain an element (e.g. an embedded NP, an adjective) that is already familiar. In such cases, the part of the NP representing the familiar element is deaccented. In (91) the pitch accent on *the old men* would normally appear on *men*. But since there is a previous mention of *the men*, *men* is deaccented and the pitch accent shifted to the left on to *old* (example adapted from van Deemter 1992:16):

(91) The men in the hospital looked horrible. Especially the OLD men.

Interestingly, such a phenomenon is not attested in Catalan. If a phrase is associated with a pitch accent, that pitch accent is realized on the rightmost stressable item in that phrase, independently of its being previously mentioned in the discourse or not. Compare English (91) with Catalan (92):[32]

[31] Ground-focus sentences with a tail may also have somewhat of a correction flavor to them as a consequence of their informational interpretation. However, while a metalinguistic correction is a correction of a (hearer's) *utterance*, a tailful instruction 'corrects', if anything, some aspect of the hearer's *knowledge*.

[32] Since the string order in the Catalan NP is noun-adjective, the English example has been slightly changed to make the default phrase-final element, i.e. the adjective, the potentially deaccentable item.

(92) Els vells de l'hospital feien pena. Sobretot els homes VELLS.
the old of the.hospital 3p-impf-make pitty especially the men old
'The old people at the hospital looked horrible. Especially the old men.'

It is clear that Catalan and English differ in this respect. Catalan does not have the phrasal deaccenting strategy that English uses in these situations. The focus phrase *the old men* in (91) or *els homes vells* in (92) is realized with a focal pitch accent both in Catalan and in English, as required by the representation of information packaging in each language. In addition, the English phrase has undergone a deaccenting process that appears to be the realization of some referential-status requirement. The Catalan phrase has not, because such a deaccenting process is not available in Catalan. The placement of a pitch accent on *old* and not on *men* in (91), however, has nothing to do with information packaging. The reason behind this (de)accenting phenomenon appears to come from a different pragmatic dimension.

The contrast in (93) and (94) further illustrates the independence of phrasal deaccenting. Example (93)a is from Steedman 1991 and (93)b is its Catalan equivalent:

(93) a. S_1: I know Mary's undergraduate degree is in physics, but what subject is her doctorate in?
S_2: Mary's **doctorate** [$_F$ is in CHEMISTRY.]
L+H* LH% H* LL%
b. S_1: Ja sé que la Maria té la llicenciatura de física, però el seu doctorat de quina especialitat és?
S_2: El doctorat de la Maria [$_F$ és de QUÍMICA.]
the doctorate of the Maria is of chemistry
'Maria's **doctorate** is in chemistry.'

Steedman uses (93)a to illustrate the function of accent within ground and focus. He notes that accenting also plays a role at the phrasal level. He calls the accented element withing the ground, the boldfaced *doctorate* in (93)a, the 'emphasis' and points out that it stands in contrast with another of Mary's qualifications (her undergraduate degree). The deaccented element, *Mary's*, he calls the 'de-emphasis'. There is also emphasis and de-emphasis within the focus: *chemistry* is the emphasis and *is in* is the de-emphasis. In the Catalan (93)b, in contrast, no special accenting pattern is used within the ground.

Compare (93) with (94). Here the context favors a contrast not on *doctorate* but on Mary's instead:

(94) a. S_1: Oh, I didn't know both of them have a doctorate...
S_2: Yes, but
Mary's doctorate [$_F$ is in CHEMISTRY]
L+H* LH% H* LL%
and **Anna's** doctorate is in LAW.
b. S_1: Oh, no ho sabia, que totes dues fossin doctores...
S_2: Sí, però
el doctorat de la Maria [$_F$ és de QUÍMICA]
the doctorate of the Maria is of chemistry
i el (doctorat) de l'Anna és de DRET.
and the doctorate of the.Anna is of law
'**Mary**'s doctorate is in chemistry and Anna's (doctorate) is in law.'

In the answer in the English example (94)a, the accenting pattern differs from the pattern found in (93)a, with *Mary* receiving an accent and *doctorate* being deaccented to reflect the change in emphasis between the grounds in each example. In Catalan, however, there is no change whatsoever in the accenting pattern: (94)b and (93)b are prosodically homophonous, despite differing in terms of emphasis in exactly the same way the English examples differ. Again, English and Catalan contrast.[33]

To summarize, in English several distinct phenomena are structurally realized by means of intonational accenting. Their common structural realization in this language may be taken as evidence to motivate an account where these phenomena are conflated into one single phenomenon, say, information packaging. However, given the fact that these distinct phenomena are realized differently in different languages, the conflating approach loses its main motivation. We are forced to conclude that intonational accenting in English may be the structural realization of a number of pragmatic and even metalinguistic dimensions.

Appendices

A Selected references grouped by articulation

- **theme-rheme** (Ammann 1928, Daneš 1968(1957), Firbas 1964, 1971, 1975, Halliday 1967, 1985, Contreras 1976).
- **topic-comment** (Mathesius 1915, Hockett 1958, Strawson 1964, Gundel 1974, 1988, Dahl 1974, Li & Thompson 1976, Kuno 1980, Reinhart 1982, Davison 1984).
- **topic-focus** (Sgall & Hajičová 1977-78 and many others by them and their associates (cf. Hajičová 1984 for a list), von Stechow 1981).
- **focus-presupposition** or **focus/open-proposition** (Akmajian 1970(1979), Chomsky 1971, Jackendoff 1972, Dahl 1974, Rochemont 1978, 1986, Wilson & Sperber 1979, Williams 1981, Prince 1981a, 1984, 1986, Selkirk 1984, Ward 1988, Lambrecht 1987, 1988).
- **oldinfo-newinfo** (Välimaa-Blum 1988).
- **dominance** (Erteschik-Shir 1973, 1979, 1986, Erteschik-Shir & Lappin 1979, 1983).
- **given-new** (Halliday 1967, 1985, Clark & Haviland 1977).
- **categorical/thetic judgments** and **expectation** (Kuroda 1972, Sasse 1987).

[33] Krifka 1991-92 takes the phrasal (de)accenting phenomena illustrated in this section to show that the notions of ground and focus are recursive, i.e. that within the ground there is a further ground-focus split. It seems clear, however, that the pragmatic or semantic motivation for such (de)accenting is quite independent of ground-focus.

B Instruction-types: English and Catalan instantiations

(95) Link-focus sentences: typical topic-comment structures, predicate-focus structures (Lambrecht 1987, 1988), categorical judgments (Kuroda 1972, Sasse 1987).

a. The president [$_F$ hates CHOCOLATE].
El president$_1$ [$_F$ odia la XOCOLATA t_1].
b. The president [$_F$ CALLED].
El president$_1$ [$_F$ ha TRUCAT t_1].
c. The president$_1$ [$_F$ (I) wouldn't BOTHER t_1].
El president$_1$ [$_F$ no l'EMPRENYARIA t_1 *pro*].

(96) All-focus sentences: (a) neutral descriptions (Kuno 1972), news sentences (Schmerling 1976), sentence-focus structures (Lambrecht 1987, 1988), thetic judgments (Kuroda 1972, Sasse 1987); (b) *there*-sentences; (c) predicate-focus sentences where the point-of-entry file card is inherited.

a. [$_F$ The PRESIDENT called].
[$_F$ Ha trucat el PRESIDENT].
b. [$_F$ There are protests in the STREETS].
[$_F$ Hi ha protestes als CARRERS].
c. [$_F$ (He) HATES (it)].
[$_F$ L$_2$'ODIA e_2 *pro*].

(97) Link-focus-tail and focus-tail sentences: narrow focus, constituent focus, typical open-proposition structures (Prince 1986).

a. The president [$_F$ HATES] chocolate.
El president$_1$ [$_F$ l$_2$'ODIA t_2 t_1,] la xocolata$_2$.
b. The president hates [$_F$ CHOCOLATE].
El president [$_F$ t_v la XOCOLATA t_1,] odia$_v$.

Bibliography

Adams, M. 1987. From Old French to the theory of pro-drop. *Natural Language and Linguistic Theory* 5.1-32.

Akmajian, A. 1979 (1970). *Aspects of the grammar of Focus in English.* New York: Garland.

Ammann, H. 1928 (3rd ed. 1969). Die menschliche Rede 2. *Der Satz.* Darmstadt: Lahr.

Andersson, L.-G. 1974. Topicalization and relative clause formation. *Gotheburg Papers in Theoretical Linguistics* 25.

Bland, S. 1980. Topic/comment sentences in English. *Cornell Working Papers in Linguistics* 2.32-49.

Bonet, E. 1990. Subjects in Catalan. *MIT Working Papers in Linguistics (Papers on Wh-movement)* 13.1-26.

Brown, G. & G. Yule. 1983. *Discourse Analysis.* Cambridge: Cambridge University Press.

Chafe, W.L. 1976. Givenness, contrastiveness, definiteness, subjects, topics, and point of view. In C. Li, ed. *Subject and topic*, 25-55. New York: Academic Press.

Chierchia, G. & S. McConnell-Ginet. 1990. *Meaning and grammar.* Cambridge: The MIT Press.

Chomsky, N. 1971. Deep structure, surface structure, and semantic interpretation. In D. Steinberg & L. Jacobovits, eds. *Semantics*, 183-216. Cambridge: Cambridge University Press.

Clark, H. and S. Haviland. 1977. Comprehension and the given-new contract. In R. Freedle, ed. *Discourse production and comprehension*, 1-40. Hillsdale, N.J.: Lawrence Erlbaum Associates.

Cohen, A. & J. 't Hart. 1967. On the anatomy of intonation. *Lingua* 19.177-192.

Contreras, H. 1976. *A theory of word order with special reference to Spanish.* Amsterdam: North-Holland.

Contreras, H. 1991. On the position of subjects. In S.D. Rothstein. ed. *Perspectives on phrase structure: Heads and licensing* (*Syntax & Semantics 25*), 63-79. New York: Academic Press.

Culicover, P. & M. Rochemont. 1983. Stress and focus in English. *Language* 59:123-165.

Dahl, Ö. 1974. Topic-Comment structure revisited. In Ö. Dahl, ed. *Topic and Comment, contextual boundedness and focus* (*Papers in text linguistics* 6), 1-24. Hamburg: Helmut Buske.

Daneš, F. 1968 (1957). Some thoughts on the semantic structure of the sentence. *Lingua* 21.55-69.

Davison, A. 1984. Syntactic markedness and the definition of sentence topic. *Language* 60.797-846.

van Deemter, K. 1992. What's new? Semantic notions of 'new information' for intonational focusing. IPO Eindhoven manuscript.

Delin, J. 1991. Presupposition and shared knowledge in *it*-clefts. Submitted to *Language and Cognitive Processes.*

Diesing, M. 1992. *Indefinites.* Cambridge: The MIT Press.

Erteschik-Shir, N. 1973. *On the nature of island constraints.* MIT Ph.D. dissertation.

Erteschik-Shir, N. 1979. Discourse constraints on dative movements. In T. Givón, ed. *Discourse and syntax* (*Syntax & Semantics* 12), 441-467. New York: Academic Press.

Erteschik-Shir, N. 1986. Wh-questions and Focus. *Linguistics and Philosophy* 9.117-49.

Erteschik-Shir, N. & S. Lappin. 1979. Dominance and the functional explanation of island phenomena. *Theoretical Linguistics* 6.41-85.

Erteschik-Shir, N. & S. Lappin. 1983. Under stress: A functional explanation of English sentence stress. *Journal of Linguistics* 19.419-53.

Fernández-Soriano, O. 1989. Strong pronouns in null-subject languages and the Avoid Pronoun Principle. *The MIT Working Papers in Linguistics* (*SCIL I*) 11.228-239.

Féry, C. 1992. Focus, topic and intonation in German. Arbeitspapiere des Sonderforschungsbereichs 340, # 20

Firbas, J. 1964. On defining the theme in functional sentence perspective. *Travaux linguistiques de Prague* 1.267-280.

Firbas, J. 1971. On the concept of communicative dynamism in the theory of Functional Sentence Perspective. *Brno Studies in English* 7.12-47.

Firbas, J. 1975. On the thematic and the non-thematic section of the sentence. In H. Ringbom et al., eds. *Style and Text. Studies presented to N.E. Enkvist*, 314-334. Stockholm.

Garrod S. & A.J. Sanford. 1982. The mental representation of discourse in a focussed memory system: Implications for the interpretation of anaphoric noun phrases. *Journal of Semantics* 1.21-41.

Givón, T. 1983. Introduction. In T. Givón, ed. Topic continuity in discourse, 5-41. Amsterdam/Philadelphia: John Benjamins.

Givón, T. 1992. The grammar of referential coherence as mental processing instructions. *Linguistics* 30: 5-55.

Grosz, B. 1981. Focusing and description in natural dialogues. In A.K. Joshi, B. Webber & I. Sag, eds. *Elements of discourse understanding*, 84-105. Cambridge: Cambridge University Press.

Grosz, B., A.K. Joshi & S. Weinstein. 1987. Toward a computational theory of discourse interpretation. University of Pennsylvania manuscript.

Gundel, J. 1974. *The role of topic and comment in linguistic theory.* University of Texas Ph.D. dissertation.

Gundel, J. 1988. Universals of topic-comment structure. In M. Hammond et al., eds. *Studies in syntactic typology*, 209-239. Amsterdam/Philadelphia: John Benjamins.

Gundel, J., N. Hedberg & R. Zacharski. 1992. Cognitive status and the form of referring expressions in discourse. University of Minnesota manuscript.

Hajičová, E. 1984. Topic and Focus. In P. Sgall, ed. *Contributions to Functional Syntax. Semantics and Language Comprehension* (*LLSEE* 16), 189-202. Amsterdam/Philadelphia: John Benjamins.

Halliday, M.A.K. 1967. Notes on transitivity and theme in English, part II. *Journal of Linguistics* 3.199-244.

Halliday, M.A.K. 1985. *An introduction to functional grammar.* London: Arnold.

Hannay, M. 1991. Pragmatic function assignment and word order variation in a functional grammar of English. *Journal of Pragmatics* 16:131-155.

Hawkins, J.A. 1991-92. Syntactic weight versus information structure in word order variation. *Linguistische Berichte*, Suppl. 4:196-219.

Heim, I. 1982. *The semantics of definite and indefinite noun phrases.* University of Massachusetts Ph.D. dissertation.

Hockett, C.F. 1958. *A Course in Modern Linguistics.* New York: Macmillan.

de Hoop, H. 1992. *Case configuration and noun phrase interpretation.* Rijksuniversiteit Groningen Ph.D. dissertation.

Horne, M. & C. Johansson. 1991. Lexical structure and accenting in English and Swedish restricted texts. *Lund University Working Papers in Linguistics* 38:97-114.

Horvath, J. 1986. *FOCUS in the theory of grammar and the syntax of Hungarian.* Dordrecht: Foris.

Humphreys, K. 1993. Given and new information: a terminological minefield. University of Edinburgh manuscript.

Jackendoff, R. 1972. *Semantic interpretation in generative grammar.* Cambridge: MIT Press.

Jacobs, J. 1984. Funktionale Satzperspektive und Illokutionssemantik. *Linguistische Berichte* 91:25-58.

Karttunen, L. 1976. Discourse referents. In J. McCawley, ed. *Syntax & Semantics* 7, 363-385. New York: Academic Press.

Kiss, K. 1981. Structural relations in Hungarian, a 'free' word order language. *Linguistic Inquiry* 12.185-213.

Kiss, K. 1986. The order and scope of operators in the Hungarian sentence. In W. Abraham & S. de Meij, eds. *Topic, focus, and configurationality*, 181-214. Amsterdam/Philadelphia: John Benjamins.

Komlósy, A. 1986. Focussing on focus in Hungarian. In W. Abraham & S. de Meij, eds. *Topic, focus, and configurationality*, 215-226. Amsterdam/Philadelphia: John Benjamins.

Krifka, M. 1991-92. A compositional semantics for multiple focus constructions. *Linguistische Berichte*, Suppl. 4:17-53.

Kuno, S. 1980. The scope of the question and negation in some verb-final languages. *CLS* 16.155-69.

Kuroda, S.-Y. 1972. The categorical and the thetic judgment: Evidence from Japanese syntax. *Foundations of Language* 9.153-85.

Lambrecht, K. 1987. Sentence focus, information structure, and the thetic-categori-cal distinction. *BLS* 13.366-82.

Lambrecht, K. 1988. When subjects behave like objects: A markedness analysis of sentence focus constructions across languages. Expanded version of a paper read at the 1987 LSA Meeting, San Francisco.

Landman, F. 1986. Pegs and alecs. In F. Landman, *Towards a theory of information*, 97-155. Dordrecht: Foris.

Li, C.N. & S.A. Thompson. 1976. Subject and Topic: A new typology of language. In C.N. Li, ed. *Subject and Topic*. New York: Academic Press. Pp. 457-589.

Mathesius, V. 1915. O passivu v moderní angličtině. *Sborník filologický* 5.198-220.

van Oosten, J. 1986. *The nature of subjects, topics, and agents*. Bloomington: Indiana University Linguistics Club.

Partee, B.H. 1991. Topic, focus, and quantification. *Cornell Working Papers in Linguistics* (*SALT I*) 10:159-187.

Pesetsky, D. 1987. *Wh*-in-situ: Movement and unselective binding. In E. Reuland & A. ter Meulen, eds. *The representation of (in)definiteness*, 98-129. Cambridge: The MIT Press.

Prince, E.F. 1981a. Topicalization, Focus-Movement, and Yiddish-Movement: A pragmatic differentiation. *BLS* 7.249-64.

Prince, E.F. 1984. Topicalization and Left-dislocation: A functional analysis. In S.J. White & V. Teller, eds. *Discourses in reading and linguistics. Annals of the New York Academy of Sciences*, vol. 433:213-25.

Prince , E.F. 1986. On the syntactic marking of presupposed open propositions. *Parasession papers, CLS* 22:208-222.

Puskás, G. 1992. The *wh*-criterion in Hungarian. Université de Genève manuscript.

Reinhart, T. 1982. Pragmatics and linguistics: An analysis of sentence topics. *Philosophica* 27.53-94.

Rigau, G. 1988. Strong pronouns. *Linguistic Inquiry* 19: 503-511.

Rochemont, M. 1978. *A theory of stylistic rules in English*. New York: Garland.

Rochemont, M. 1986. *Focus in Generative Grammar*. Amsterdam/Philadelphia: John Benjamins.

Ronat, M. 1979. Pronoms topiques et pronoms distinctifs. *Langue Française* 44.106-128.

Rosselló, J. 1986. *Gramàtica, configuracions i referència: per una teoria alternativa del pro-drop romànic*. Universitat de Barcelona Ph.D. dissertation.

van der Sandt, R. 1988. *Context and Presupposition.* London: Croom Helm.

Sasse, H.-J. 1987. The thetic/categorical distinction revisited. Linguistics 25:511-580.

Schlobinski, P. & S. Schutze-Coburn. 1992. On the topic of topic and topic continuity. *Linguistics* 30:89-121.

Selkirk, E. 1984. *Phonology and syntax.* Cambridge: MIT Press.

Sgall, P. & E. Hajičová. 1977-78. Focus on Focus. *Prague Bulletin of Mathematical Linguistics* 28.5-51, 29.23-41.

Sgall, P., E. Hajičová & J. Panevová. 1986. *The meaning of the sentence in its semantic and pragmatic aspects.* Dordrecht: Reidel.

Sidner, C.L. 1981. Focusing for interpretation of pronouns. *American Journal for Computational Linguistics* 7:217-231.

Solà, J. 1992. *Agreement and subjects.* Universitat Autònoma de Barcelona Ph.D. dissertation.

Stalnaker, R. 1978. Assertion. In P. Cole, ed. *Pragmatics* (*Syntax & Semantics* 9), 315-332. New York: Academic Press.

Stechow, A. von. 1981. Topic, Focus and local relevance. In W. Klein & W. Levelt, eds. *Crossing the boundaries in linguistics*, 95-130. Dordrecht: Reidel.

Steedman, M. 1991. Structure and intonation. *Language* 67:260-296.

Strawson, P.F. 1964. Identifying reference and truth-values. Reprinted in D. Steinberg & L. Jacobovits, eds. *Semantics*, 86-99. Cambridge: Cambridge University Press.

Svoboda, A. & P. Materna. 1987. Functional sentence perspective and intensional logic. In R. Dirven & V. Fried, eds. *Functionalism in linguistics*, 191-205. Amsterdam/Philadelphia: John Benjamins.

Szabolcsi, A. 1981. The semantics of topic-focus articulation. In T.M.V. Jannsen & M.B.J. Stokhoj, eds. *Formal methods in the study of language*, 513-540. Amsterdam: Mathematisch Centrum.

Välimaa-Blum, R. 1988. *Finnish existential clauses: their syntax, pragmatics and intonation.* Ohio State University PhD dissertation.

Vallduví, E. 1991. Catalan as VOS: Evidence from information packaging. To appear in J. Ashby et al., eds. *Linguistic Perspectives in the Romance Languages*, 335-350. Amsterdam/Philadelphia: John Benjamins.

Vallduví, E. 1992a. *The informational component.* New York: Garland.

Vallduví, E. 1992b. A preverbal landing site for quantificational operators. *Catalan Working Papers in Linguistics* 2.319-343.

Ward, G. 1988. *The semantics and pragmatics of preposing.* New York: Garland.

Ward, G. & B. Birner. 1993. *There*-sentences and information status. Paper presented at the 1993 LSA Meeting in Los Angeles.

Webber, B.L. 1982. So what can we talk about now? In M. Brady & R. Berwick, eds. *Computational models of discourse*, 331-371. Cambridge: The MIT Press.

Williams, E. 1981. Remarks on stress and anaphora. *Journal of Linguistic Research* 1.1-16.

Wilson, D. & Sperber, D. 1979. Ordered entailments: An alternative to presuppositional theories. In C.K. Oh & D. Dinneen, eds. *Presupposition* (*Syntax & Semantics* 11), 299-323. New York: Academic Press.

Zaenen, A. 1984. Contrastive dislocation in Dutch and Icelandic. Cornell University manuscript.