

SENTENCE ACCENT IN INFORMATION QUESTIONS:  
DEFAULT AND PROJECTION<sup>1</sup>

0. INTRODUCTION

This study concerns the formal and pragmatic principles which govern the placement of sentence accent in English information questions (IQs). Examples of variability in the placement of sentence accent are given in (1)–(3). Primary accents are marked by small caps:

- (1) [I went to the mall with Audrey yesterday.]  
 a. What did you BUY?  
 b. What did AUDREY buy?  
 c. What did AUDREY BUY?
- (2) [I heard you went to France.]  
 a. What cities did you VISIT?  
 b. What CITIES did you VISIT?  
 c. What CITIES did you visit?
- (3) a. Who ate my COOKIES?  
 b. Who ATE them?  
 c. WHO ate them?

The principles in question must for example capture the native-speaker's tacit knowledge that sentence (1a) is less pragmatically specialized than (3a). While the speaker could use (1a) in response to an utterance like "I went to the mall yesterday and bought something", in which the buying activity was explicitly mentioned, (3a) would be an infelicitous response to an utterance like "Your COOKIES are gone", in which the cookies were mentioned explicitly. A response to the latter utterance would much more likely take the form of (3b).<sup>2</sup>

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<sup>2</sup> This is not say that (3a) would be unimaginable in such a context. Since there is no grammatical relationship between a sentence and its context it is always possible to conceive of a situation in which an apparently incongruous sequence of utterances becomes normal. For example, the speaker of (3a) could act as if the previous utterance had not been made and present the state of affairs presupposed in (3a) as previously unnoticed.

Accent placement in IQs poses certain formal and conceptual problems which are specific to this category. These problems are aptly characterized by Ladd, in his recent book on intonational phonology:

Various recent works on focus and accent deal uneasily with the accentuation of the WH-words in WHQs. Logic seems to suggest that the WH-word is the focus of the question, and yet, in English at least, the WH-word does not normally bear the most prominent accent. (1996, 170)

In this study we wish to address the conceptual problem alluded to in the above quote. In doing so, we will integrate formal and functional aspects of the problem to a greater extent than has been customary in the generative literature. Attempts at such integration have been rare and timid. In most analyses of focus prosody, the concept of focus itself is not subject to analysis but is simply taken for granted. There is now a near-consensus among researchers that accent placement is a pragmatically driven phenomenon; yet very few attempts have been made to explain the nature of the relationship between sentence accent and focus meaning. Some attempts, like that of Rooth (1991), have suffered from an assumption of iconicity. This assumption leads Rooth to analyze an assertion like *He passed the TEST* as meaningful insofar as it contrasts the test with other items that the subject-referent might fail. The scholarly consensus, however, rejects the assumption that there is a one-to-one relationship between focus and prosodic prominence. Instead, most scholars have embraced some version of a mechanism whereby an accent falling on a single constituent (say a NP object) might signal a wider focus domain (e.g., that of the VP *passed the test*). Furthermore, a variety of scholars have rejected the idea that focus semantics intrinsically involves the notion of contrast (Bolinger 1961, Horn 1981, Lambrecht 1994).

The lack of a conceptual framework within which pragmatic notions like focus are given precise definitions has resulted in much confusion and contradiction in the literature. For example, focus has often been equated with new information and absence of focus with 'given information'.<sup>3</sup> It is therefore not uncommon to read statements to the effect that in a sentence like *Laura kissed the PUPPY* the NP *the puppy*, or its referent, is "new information". Yet it is clear that neither this NP nor the entity it designates can by itself constitute information, whether given or new.

<sup>3</sup> See e.g. the definition given by Selkirk (1984, 200): "Roughly speaking, what is focused in a sentence is understood to be "new information" in a discourse, what is not focus is understood to be "given"." The scare quotes around the terms "new information" and "given (information)" are symptomatic: they indicate that these terms are used as hedges rather than technical terms.

Nor, strictly speaking, can the predicate *kissed the PUPPY* constitute new information. The potential information conveyed by this sentence is expressed neither in the subject nor in the predicate but in the act of linking the two.

Alternative definitions of focus, although avoiding reference to the problematic concept of new information, also encounter problems which stem from a failure to define focus in relational terms. For example, Gussenhoven (1983, 383) defines focus (tentatively) as "the speakers declared contribution to the conversation". Again, it seems to make little sense to analyze our example by saying that the VP *kissed the PUPPY*, or its denotatum, is a contribution to the conversation. This element can be viewed as a conversational contribution only if we understand that it is part of a pragmatically structured proposition, in which the predicate serves to augment the hearers knowledge of the given sentence topic.

The prosodic theory of Culicover and Rochement (1983) provides another example of a conceptual confusion surrounding the definition of focus. This example directly relates to the topic of this paper. In a passage dealing with accent placement in *WH*-questions, Culicover and Rochement (henceforth C&R) argue that the non-*WH* portion of an information question may or may not contain the focus, depending on the utterance context (1983, 140ff.). Their argument is based on the following short dialogue (C&R's examples (16), (17), (18)):

- (4) A: I finally went out and bought something today.  
 A': Bill took me downtown to all the big department stores today.  
 B: Oh yeah? What did you BUY?

(In the original, the question word *What* is indicated as having secondary stress.) C&R contend that in speaker B's response *BUY* "can be said to be focus" in the context of A' but not of A. It is not quite clear how this statement is to be understood, since the authors do not explain what they mean by 'focus'. Presumably their claim is based on the fact that in utterance A the speaker's buying activity is explicitly mentioned, whereas in utterance A' it is only to be inferred. However, it is difficult to see how in either context the proposition that A bought something can be anything but informationally presupposed. Evidently, B cannot inform A that 'A bought something' since A, being the one who did the buying, necessarily knows that proposition. Moreover, even if we assume with C&R that in one of the contexts the accent on *BUY* conveys no focus-related meaning, we still need to know what meaning it *DOES* convey. It

seems odd that the same formal object should contribute meaning to a sentence in one context but not in another.

The purpose of the present study is to provide an explanation of accent placement in English IQs within a coherent conceptual framework. We believe that an adequate explanation must answer at least the following questions:<sup>4</sup>

- (i) What is focus?
- (ii) What is the function of sentence accents?
- (iii) What is the focus portion of a given sentence or proposition?
- (iv) What is the relationship between a given focus portion and the accent pattern of the sentence?

The framework we will use to answer these questions is the theory of INFORMATION STRUCTURE proposed by Lambrecht (1994). This theory concerns the morphosyntactic and prosodic encoding of the identifiability and activation statuses of the denotata of sentence constituents and of the topic and focus relations these denotata have with propositions.

Before we go into the detail of the analysis, it is necessary to state explicitly what the object of our analysis is, and in particular what we mean by 'sentence accent'. One important distinction to draw here is that between accent placement and INTONATION. With C&R (1983), Selkirk (1984), Ladd (1978, 1996), and others, we distinguish sharply between sentence accents, which code aspects of the information structure of a sentence (as defined below), and intonational contours, which express semantic or pragmatic distinctions of a different kind, such as speaker attitude (politeness, surprise, deference, etc.), speech act type (e.g. statements vs. requests), propositional attitudes (belief, ignorance, uncertainty, etc.), and other connotations which are difficult to define.<sup>5</sup> We will comment upon intonational meaning only when it is relevant to distinguish distinct readings of a given IQ (e.g., echo versus corrective, narrow scope versus broad scope).

The independence of accent placement and intonational contour is emphasized also by Pierrehumbert & Hirschberg (1990) (henceforth P&H):

<sup>4</sup> Compare Ladd (1996, 164). Characteristically, Ladd addresses points (iii) and (iv) on our list, but not (i) and (ii).

<sup>5</sup> See C&R (1983, 126): "Location of the nuclear stress can be identified with the focused constituent completely independently of the meaning contribution of the intonation contour"; or, more cautiously, Selkirk (1984, 200): "As for the choice of intonational contour (the choice of particular elements from the tonal repertoire), it appears that, in English at least, this is irrelevant to focus structure". For a useful overview of the different types of intonational meaning see Pierrehumbert and Hirschberg (1990). For a discussion of IQ intonation in particular, see Bartels (1997).

“Stress pattern is independent of tune, in the sense that a given tune can be applied to materials with many different stress patterns and a given stress pattern can be produced with many different tunes” (p. 272). What we refer to informally as sentence accent corresponds in P&H’s system to the pitch accent resulting from alignment of high (H) or low (L) tones with stressed syllables (marked \*). Our small caps thus correspond to H\* or L\* in P&H’s notation. For simplicity, we will also continue the custom of representing sentence accents by (small) caps and of capitalizing whole words rather than syllables. This custom presupposes the existence of lexical rules which assign stress within words. In the unmarked case, the sentence accent will coincide with the lexically stressed syllable of a word. In sentences containing sequences of two or more pitch accents, we will usually only represent the last one, for reasons to be made explicit in Section 2. In P&H’s system, this is the one followed by a boundary tone (marked H% or L%). We will thus not distinguish between so-called ‘primary’ and ‘secondary’ accents, except in a few cases where this distinction has theoretical relevance.<sup>6</sup>

Our analysis will be structured as follows. In the first section, we will discuss some of the relevant literature, giving prominence to a study by Erteshik-Shir (1986) as one of the rare attempts to address specifically the issue of accent placement in WH-questions. In Section 2, we will lay out the relevant principles of information structure, in particular those that pertain to sentence accentuation. In Section 3, we will contextualize the problem of IQ prosody by examining the general problem of describing the function of sentence accent in nonassertoric contexts. In Section 4, we will discuss the problem of ascribing focus status to the denotatum of the WH-word in IQs, and we will argue, in contrast to Erteshik-Shir and other authors, that this element does in fact count as a focus expression. In Section 5, we will apply the principles and concepts laid out in Section 2, 3, and 4 to the sentences given in (1)–(3) above and to additional examples. The analysis we present is based on the notion that pragmatically presupposed propositions have activation and topicality statuses, and that a presupposed proposition is not necessarily one that is under

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<sup>6</sup> It seems possible that, in some cases at least, the difference between high (H%) and low (L%) boundary tones correlates directly with the difference between topic accent and focus accent as defined in Section 2 below. This possibility is suggested by P&H (1990, 279), who observe that a H% tone often announces information to come, while a L% tone marks utterance finality. If such correlations between type of boundary tone and topic or focus status of a given denotatum can be shown to be systematic, the distinction we drew earlier between focus accentuation and intonation contours would not be as clearcut as we have made it out to be. See also the discussion of ‘A’ vs. ‘B’ accents in Ladd (1996, 223f.).

discussion. The analysis rests on the distinction between KNOWLEDGE and TOPICALITY presuppositions.

## 1. PREVIOUS ANALYSES OF ACCENT PLACEMENT IN IQS

In this section, we will summarize and evaluate three studies that deal directly with the issue of focus prosody in IQs. For an overview of research on the focus-prosody relation in general we refer the reader to the excellent summaries in Chapters 5 and 6 of Ladd (1996).

### 1.1. *Culicover and Rochemont (1983)*

In their study of stress and focus in English, Culicover and Rochemont “adopt the position that accent placement is a formal matter, not sensitive to semantic or pragmatic considerations” (1983, 133). This distinguishes their approach from that of what is now the majority of scholars (Bolinger, Schmerling, Fuchs, Höhle, Jacobs, Ladd, Gussenhoven, Selkirk, Lambrecht, and others), for whom there is a direct relationship between accent placement and the informational structuring of propositions in discourse. According to C&R, accent is assigned by syntactic rules, independently of speaker intentions. The authors recognize, however, that certain aspects of accent placement can have “interpretive effect” (p. 133). Applying the convenient labels used by Ladd (1996) to characterize two opposing views of focus prosody – the ATF (“Accent-to-Focus”) and the FTA (“Focus-to-Accent”) view – we can say that C&R represent the ATF view, while most other scholars represent one or another version of the FTA view.<sup>7</sup>

It would lead us too far afield to summarize the rather complex series of rules whereby C&R assign accents to nodes in syntactic structures. For our purposes, the relevant feature of their analysis is that it relies crucially on a version of the ‘Nuclear Stress Rule’ (NSR), which, *ceteris paribus*, assigns accent to the last accentable syllable in a given phrase. As Schmerling 1976, Fuchs 1976, Höhle 1982, Selkirk 1984, and others after them, have shown, NSR-based explanations of focus prosody are by definition unable to account for sentences in which the main accent does not fall at the end of the phrase which contains the focus. One important class of sentences in which this is the case are ‘all-new’ or ‘thetic’ sentences of the

<sup>7</sup> A particularly strong anti-ATF view is espoused by Gussenhoven. According to Gussenhoven, the claim that accent position is a consequence of the lexico-syntactic choices a speaker has made is comparable to the claim that the lexico-syntactic content of a sentence follows from a given intonation contour (1983, 378).

type *The SUN is shining or Her HUSBAND died*, in which only the initial subject bears an accent, even though the entire proposition is in focus.<sup>8</sup> We will return to this issue in Section 5, where we will show that the same problem arises with certain IQs in which an accented object nominal precedes its verb.

One advantage of the ATF approach followed by C&R is that it is able to account naturally for the fact, mentioned in the quote from Ladd at the beginning, that in IQs the sentence portion which is logically the focus is not normally the one that receives the accent. Since for C&R there is no inherent relationship between accent and focus, the focus portion of a sentence need not be prosodically prominent; as a corollary, since accent is assigned by “pragmatically blind” syntactic rules, a given accent need not be interpreted as indicating focus. Thus C&R observe correctly that in the dialogue in (5) the verb in B’s reply can bear primary stress, even though it has been mentioned in the previous sentence:

- (5) A: I’m so excited! Tom took me down to Buckingham Palace today and I got to meet all those soldiers.  
B: Oh really? How many soldiers did you MEET?

The same correct observation holds for C&R’s previously mentioned example cited in (4), which we repeat here for convenience:

- (4) A: I finally went out and bought something today.  
A’: Bill took me downtown to all the big department stores today.  
B: Oh yeah? What did you BUY?

In both (4) and (5) the main accent in B’s reply falls on a lexical item which occurred in the immediately preceding context.

While C&R’s analysis correctly predicts that B’s reply in (4) is appropriate in both contexts, it also predicts, as the authors themselves point out, that the alternative reply in (6) below does not entail a difference in focus construal, and that therefore (6) should be appropriate in the same contexts:

- (6) B’: WHAT did you buy?

The response in (6) is not, however, appropriate in the contexts of (A–A’) in (4). To account for the difference in appropriateness between response B in (4) and B’ in (6), C&R do what is often done when

<sup>8</sup> Below, we will refer to such sentences as ‘sentence-focus’ (SF) constructions. For a critique of various analyses of SF sentences, including C&R’s, see Lambrecht 1994, Ch. 5.

predictions in formal analyses of discourse phenomena are not borne out: they appeal to Grice. The authors claim that, in the context defined by utterance A in (4), reply B', in which the WH-word is accented, carries an implicature that the speaker is disputing the truth of the proposition 'There exists an x such that you bought x'. Such an implicature, they claim, "is tied not to the focal properties of the utterance – which are the same [in B and B'] on the relevant interpretation – but to the peculiar properties of stressed WH words in English" (p. 139, footnote 19). As we will demonstrate in our analysis of sentences like (6) in Section 5, the use conditions on accented WH-words do not involve the implicature described by C&R. This analysis will avoid appeal to ad hoc devices like the implicature claimed by C&R; it will instead explain the prosody of sentences like (6) by the accent-placement algorithm involved in the unmarked cases of IQ prosody.

### 1.2. *Selkirk (1984)*

Selkirk, in her detailed and penetrating contribution to the debate over the prosody-focus relation, does not directly address the logical problem pointed out by Ladd in the passage quoted at the beginning. However she does point to certain unsolved problems involving accent placement in IQs which are directly relevant to the analysis we will present.

The rules Selkirk postulates to account for the relationship between focus and accent placement require that all focus constituents be accented. According to Selkirk, "the presence of a pitch accent correlates with a focus (and thus with "new information"), while the absence of a pitch accent indicates the lack of focus (or "old information")" (1984, 200). This direct correlation between pitch accent and focus is called by Selkirk the 'Basic Focus Rule', which states that "A constituent to which a pitch accent is assigned is a focus". Selkirk's rules thus preclude focus status of unaccented WH-expressions.<sup>9</sup>

In strict opposition to the NSR-based approach followed by Chomsky, Jackendoff, C&R, and others, Selkirk explicitly denies that the NSR

<sup>9</sup> Unfortunately, Selkirk's analysis is plagued by the kind of conceptual and terminological vagueness which we alluded to earlier, making it sometimes difficult to evaluate her claims. For example, she uses the terms 'focus' and 'focused' both in a semantic sense, to indicate a focus portion of a proposition, and in a formal sense, to indicate an accented constituent (see e.g. pp. 206 and 213). Selkirk is aware of the conceptual problems involved in her analysis and refers to her contributions in matters of information structure as "somewhat tentative". In particular she recognizes that her analysis suffers from the lack of an adequate concept of 'topic' (1984: footnote 19).



plays any role in the placement of focus accents. Instead, she opts for a semantically-based FTA approach, in which focus accents are assigned within predicate-argument structures, irrespective of the order in which the predicate and the argument appear. To account for accent placement within phrasal units expressing predicate-argument relations she postulates the ‘Phrasal Focus Rule’ in (7) (1984, 207):

- (7) SELKIRK’S PHRASAL FOCUS RULE:  
 A constituent may be a focus if (i) or (ii) (or both) is true:  
 (i) The constituent that is its *head* is a focus.  
 (ii) A constituent contained within it that is an argument of the head is focus.

The rule in (7) accounts, among other things, for the fact, noticed by Chafe (1974), Schmerling (1976), Fuchs (1976), Höhle (1982), and others, that the accent on an argument may be ‘projected’ over its predicate, i.e. that an unaccented predicate expression may form a single focus domain with an accented argument expression (see our ‘Principle of Accent Projection’ in item (22iii) below). Selkirk also postulates a ‘Focus Interpretation Principle’ of the form “F(argument)  $\Leftrightarrow$  new information”, which states that “only the focus of constituents that are *arguments* is relevant to the aspects of intonational meaning where the discourse-relevant distinction between old and new information is represented” (p. 213). The most important empirical consequence of this principle is that accent on a verb “does not matter”, in the sense that a verbal denotatum can be either “old” or “new”, with or without an accent on the verb.

As pointed out in Lambrecht (1994, Ch. 5), Selkirk’s Phrasal Focus Rule and her Focus Interpretation Principle make the wrong predictions in certain crucial cases, which we saw also created problems for C&R (1983). Thus in sentence pairs like the following

- (8)a. The SUN is shining.  
 b. The SUN is SHINING.

Selkirk is forced to say that in (a) only the subject can be new, the predicate being necessarily ‘old information’, whereas in (b) both the subject and the predicate are new (1984, 217–19). This is so because in (a) the subject argument cannot give its focus to the predicate since it is not contained within a single constituent with it (see condition (ii) of Principle (7)). In (b) on the other hand, the subject NP and the VP each would be foci, the former via the Basic Focus Rule (the subject constituent is accented), the latter via condition (i) of Principle (7) (the verb is the head of VP). It is clear that Selkirk’s rules yield the wrong result in the

case of (8): sentence (8a) does have an 'all-new' or 'thetic' reading, while (8b) is a 'categorical' sentence, i.e. one that is articulated into a topic ('given') and a comment ('new') portion.

Besides such formal problems, Selkirk's analysis of (8) creates the kind of logical or conceptual problem we alluded to earlier in our critique of Gussenhoven's approach to similar sentence structures. Indeed, what does it mean for both the subject and the predicate in (8b) to be new information? And, assuming a satisfactory answer to this question, how do these two new pieces of information fit together logically to form the single piece of propositional information which is conveyed by the sentence?

Directly relevant to the topic of the present study is Selkirk's discussion of what she refers to as "certain classic puzzles in the prosody-focus domain". What Selkirk has in mind is the well-known debate in *Language* triggered by Bresnan's 1971 paper "Sentence stress and syntactic transformations", which elicited replies by Bolinger (1972), Berman and Szamosi (1972), and Lakoff (1972), and a rejoinder by Bresnan (1972).<sup>10</sup> The relevant examples discussed by Selkirk are those involving direct and indirect IQs (Selkirk 1984, 241ff.):

- (9)a. John asked what Helen has WRITTEN.  
 b. John asked what BOOKS Helen has written.
- (10)a. Whose have I TAKEN?  
 b. Whose UMBRELLA have I taken?

After demonstrating that Bresnan's analysis of these sentences is inadequate (for reasons having to do with the cyclic application of stress rules in Bresnan's analysis, the details of which do not concern us here), Selkirk acknowledges that her own theory is also unable to account for the contrasts in (9) and (10). The crucial fact here is that in the (b) examples the unaccented verbs seem to form a focus unity with the accented object arguments within the WH phrases *what BOOKS* and *whose UMBRELLA*, even though the predicate-argument pairs do not form single constituents. We will return to this issue in Section 5, where we will propose an account of the phenomenon in (9) and (10) which does not appeal to constituent structure.

<sup>10</sup> See the useful summary in Horne 1985.

### 1.3. *Ertshik-Shir (1986)*

To our knowledge, the most complete and explicit account of accent placement in IQs is that offered by Ertshik-Shir (1986), whom we will henceforth refer to as ES. ES, like the present authors, seeks to account for sentence accent in IQs with a general mechanism – one that operates in assertions as well as questions. In the case of ES's account, this general mechanism is that of DOMINANCE marking. A constituent is said to be dominant if the speaker intends to direct the attention of the hearer to the intension of that constituent by uttering a sentence containing that constituent (p. 120). Via a Sentential Stress Rule, primary stress is placed on the dominant constituent of the sentence (p. 121). According to ES, a dominant constituent “represents a possible future topic of conversation” (p. 124).

The fundamental trouble source, as we see it, is that ES assumes a direct mapping between sentence accent and dominant status. ES does not allow for a sentence accent to be placed by default, nor does she assume a mechanism of projection, whereby a given accent can include the denotata of non-accented constituents in its pragmatic scope (cf. below, (22iii) and discussion). The particular problems that we will examine in this section are: circularity of explanation, with particular reference to IQs containing accented WH-words (1.3.1), the dubious validity of the stress DOME, a concept which plays a central role in the dominance analysis (1.3.2), and the absence of a generalization concerning focus in IQs (1.3.3).

#### 1.3.1. *Circularity and the Problem of Accented Question Words*

Dominance, according to ES, “is meant to cover those cases for which focus is generally used” (p. 120).<sup>11</sup> ES asserts that dominance is not defined in terms of stress. Rather, she says, “primary sentence stress follows from the assignment of dominance” (p. 121). However, ES blurs the distinction between dominance and prosodic prominence in a discus-

<sup>11</sup> Two distinctions that ES draws between her conception of dominance and her understanding of the notion of focus are for us invalid. First, ES states that a dominant constituent (unlike, presumably, a focal constituent) may include presupposed material (p. 120). In fact, as Lambrecht (1994) argues, the same is true of focus: for example items in focus, or within a focus domain, may invoke factive or existential presuppositions. Second, ES states that dominance (unlike, presumably, focus) is not defined in terms of nuclear stress assignment. Under Lambrecht's conception, focus is also defined independently of stress assignment (and, for that matter, any other of its formal realizations). In recent work (1995), ES has reverted to ‘focus’ instead of ‘dominance’.

sion of focus in IQs. In the opening passage of her paper, she says that the WH-word in an IQ functions as the focus of the question "only in a very small number of cases (such as echo questions [whose WH-word is accented, L.M.&K.L.]) and that in all other cases the focus of the question lies elsewhere" (p. 117). In other words, the focus (or, equivalently, the dominant element) is that constituent which bears primary stress. This analysis is circular: we identify a constituent as dominant because it bears accent; it bears accent because it is dominant.

The circularity inherent in the dominance model becomes evident in ES's account of IQs in which the WH-word bears accent, as in (11):

(11) WHO ate the apple? (ES's (37))

According to ES, the WH-word in (11) represents a dominant constituent. This analysis creates a problem since, as ES acknowledges, a WH-word cannot be dominant in the same way as a lexical element. A WH-word has no intension. Therefore it does not make sense to say that in uttering (11), the speaker is directing the attention of the hearer to the intension of *who*. Accordingly, IQs like (11) must be treated as special cases, and the analysis of such questions that is offered by ES is tenuous enough to suggest that dominance is not the appropriate tool for the analysis of (11).

ES claims that a question like (11) can have one of two readings. The first reading is an echo reading, in which the speaker is requesting the repetition of one of the constituents of the hearer's prior utterance (the constituent which would replace the WH-word). The second reading is what ES calls a 'restrictive' one, in which the questioner knows "for a fact that the three people who were sitting in the room are the only ones who have been in the room and are therefore the only possible candidates for the role of apple-eaters" (p. 132). In accordance with Chafe (1976), ES assumes that a sentence can be restrictive (or 'contrastive', in Chafe's terminology) only when there is a limited number of candidates to fulfill a given role, i.e., when the set invoked is restricted contextually.

What unifies the two cases of stressed WH-words, echo and restrictive? According to ES, questions like (11), whether they receive the echo or restrictive reading, "are restricted to occur in a context in which (for each one) a set of possible answers is specified" (ibid). However, this observation cannot be reconciled with the general dominance account in a straightforward way. Let us examine in turn ES's account of the restrictive reading and her account of the echo reading.

In the case of the restrictive reading, assignment of sentence accent to the WH-word is said to follow from the Restrictive Stress Rule (p. 131). This rule requires that a constituent which bears the feature [+Contrast]

be assigned the primary stress. This feature, in addition to features [+Conjunction] and [+Disjunction], is assigned by the principle of 'restrictive dominance', which ES gives as follows (p. 129):

DOM: (Restrictive) A set  $\alpha$  which the speaker specifies by means of his/her utterance of the sentence S is Dominant if the constituents of S corresponding to members of (or the elements of  $n$ -tuples contained in)  $\alpha$  are marked +Conjunction, +Disjunction, or +Contrast.<sup>12</sup>

ES points out that restrictive dominance is a feature not of, "each individual stressed constituent, but rather the restrictive set defined by the sentence" (p. 130). However, while the dominance feature attaches to an evoked set, the feature [+Contrast], among others, attaches to a member or members of this set. The Restrictive Stress Rule operates from the assignment of the contrast feature to an NP representing a member of a restrictively dominant set.

In (12), we see a straightforward application of the Restrictive Stress Rule:

(12) John gave MARY a book.

In (12), the referent of the NP *Mary* is the representative of a contrast set containing possible recipients of a book. In accordance with the principle of restrictive dominance, the element denoted by the NP *Mary* is marked [+Contrast]. In accordance with the Restrictive Stress Rule, the NP receives the primary sentence accent.<sup>13</sup>

What of the application of the Restrictive Stress Rule to (11)? We contend that this rule does not apply here in any obvious way. The principle of restrictive dominance, as given above, states that the feature [+Contrast] attaches to a MEMBER of a contrast set. Restrictive stress thereby also marks a member of a contrast set. It therefore does not mark the contrast set itself. However, this is precisely what it must do in order

<sup>12</sup> ES's original formulation of the principle on p. 129 has the close parens following the second instance of  $\alpha$ . Since this placement renders the statement incoherent, we have moved the close parens to the position preceding the second instance of  $\alpha$ .

<sup>13</sup> Unlike ES, we do not assume that (12) has only a reading in which the referent of the NP *Mary* contrasts with other fillers of the propositional function *John gave x a book*. In addition to this reading, which is accounted for by the Restrictive Stress Rule, there is another reading for which ES has no obvious account: that in which (12) is a reply to a question like *Is John generous with his books?* In this context, the entire VP of (12), *gave Mary a book*, counts as focus domain, but the sentence stress has 'moved left' (onto the NP *Mary*) in order to permit deaccenting of the topical constituent *a book*. This deaccenting of a topical referent will be described below as 'topic ratification' (see Principle (22ii)).

to yield (11), on the restrictive reading, in which an accented WH-word is said to refer to a contrast set. In sum, the problem is that the accented WH-word in (11) cannot be accounted for by the same principle that underlies the assignment of the primary sentence accent in (12). ES's principle of restrictive dominance does not yield a satisfactory account of the prosodic pattern found in (11).

Note that we cannot salvage ES's account of (11) by broadening the principle of restrictive dominance so that a contrast set, in addition to a MEMBER of a contrast set, can receive the contrast feature. If we allowed an NP denoting a contrast set to receive the contrast feature, and thereby restrictive stress, we would make incorrect predictions. Notice (13):

(13) EVERYONE went in a separate direction.

Sentence (13), with primary accent on the NP *everyone*, could not be said to have a reading in which the predicate *went in a separate direction* is a comment about the set of people denoted by *everyone*. However, if we were to accept an analysis in which primary accent can attach to an NP denoting a contrast set (here, the set of travelers, each of whom has a different destination), then we would predict that sentence (13), with the prosodic features indicated, would have the reading described. In fact, it does not. Sentence (13) has only a reading in which *everyone* contrasts with groups of other sizes, i.e., in which *everyone* receives primary accent because it is a MEMBER of a contrast set.

Let us now turn to the echo reading, for which dominance, rather than restrictive dominance, is invoked. It is again difficult to see ES's analysis as a manifestation of the general dominance account. In what way does a request for repetition count as directing the hearer's attention to the intension of the WH-word? ES has the following response (p. 125):

The dominance of the question word . . . indicates that of the constituents uttered in the previous sentence the hearer requests the repetition of the one replaced by the question-word.

The echo question serves to draw the attention of the hearer to the location of an inadequately communicated item. However, drawing the hearer's attention to a slot in need of a filler is not the same thing as drawing the hearer's attention to a future discourse topic. (Recall that for ES, a dominant item is one which is a potential topic of conversation (p. 124).)

Beyond this, there appear to be empirical problems with ES's account of accented WH-words. First, we find no evidence that sentences like (11) have the restrictive reading that ES ascribes to them. No native speakers

with whom we have consulted felt that (11) could be used in the restrictive context described by ES (in which there is a small set of candidates for the role of apple eater). Second, ES fails to account for a prevalent usage of IQs containing accented WH-words. This usage is exemplified in (14):

- (14) “I just want . . . I want to spend time with you . . . I want – to take care of you”. He laughed. “You think I need taking care of?” “I *mean it*”, she said earnestly. “*What* do you mean?” “I mean I can care for you”.

Philip Roth, *Sabbath's Theater*, p. 213 [emphasis in original]

In (14), an IQ containing an accented WH-word (*WHAT do you mean?*) is uttered in response to the hearer's assertion, *I mean it*, which contains unclear pronominal reference (does *it* stand for the proposition that the speaker needs taking care of or for the proposition that the hearer wants to be the caretaker?). This usage is similar to the echo usage in that it expresses the speaker's dissatisfaction with the hearer's previous contribution. Beyond this, however, the two usages are functionally and formally distinct (Bartels 1997). The intent of (14) is not to induce the hearer to repeat his or her previous utterance; the previous utterance was not inaudible, but rather inadequate. Further, this usage does not have the rising sentence-final intonation associated with echo questions (an intonation contour represented by P&H as L\*HH%); it requires the falling sentence-final intonation that is characteristic of assertions and IQs in general (H\*LL% in P&Hs model).

An adequate analysis of accented WH-words in IQs must presumably capture the formal similarity between echo questions and the corrective question in (14). We will argue in Section 5 that the relevant generalization concerns the fact that both echo and corrective questions take a proposition (or, rather, a propositional function) as a ratified topic. In the meantime, however, we emphasize that, like the C&R account, the dominance account fails to provide a theoretically and empirically satisfying account of accented WH-words. The weakness of the account arises from the fact that ES embraces an iconic principle (the sentential stress rule) similar to that endorsed by Bolinger (1954, 1972, etc.), in which the prosodic peak of the utterance marks the information point of the utterance. It is clear, however, that a primary accent may fall on a constituent simply because, due to competing principles, it cannot fall where it ordinarily would.

### 1.3.2. *The Problem of the DOME Pattern*

Any theory of sentence accent must contain an account of 'focus projection' (Höhle 1982), i.e. of the means by which primary accent, falling on a subconstituent, can mark a larger constituent (e.g., VP) as a focal domain (see the discussion in Section 2). ES does not make use of a projection mechanism. Under her iconic sentential stress rule, there is a one-to-one mapping between primary stress and dominance: a dominant constituent, whether or not it is a complex constituent, receives stress. ES's proposal is as follows:

... when the SSR applies to complex constituents such as whole VPs or sentences then the entire constituent is stressed, with secondary stress indicating the beginning of the dominant constituent, and primary stress signalling its completion... [P]rimary stress is assigned to each of the major sub-constituents of the dominant constituent, and rhythm rules subsequently lower the intermediate primary stresses, leaving initial and final stress peaks. (p. 127)

This pattern of distributed stress is referred to by ES as the DOME pattern of stress assignment. A sentence will be assigned the DOME pattern if it, or some subpart of it, is dominant. According to ES, an IQ may also be dominant. In this case, a secondary stress will fall on the WH-word, with primary stress on the last constituent of the dominant complex constituent (in this case, the sentence):

(15) Who gave a book to MARY?

The problem with the DOME analysis is that it requires us to accept the existence of stresses for which we have no evidence. We have no evidence that there is a necessary secondary stress on *who* in (15); this question can certainly be pronounced with such stress, but so could any IQ. Further, we have no evidence that the constituents intervening between *who* and *Mary* have been assigned primary stress. While the object *book* must be prominent if its referent is new to the discourse, the verb *gave* cannot be (see Section 2). Moreover, if *book* designates an already established topic, it cannot receive an accent, even though it is part of the dominant VP (see item (22ii) below). In other words, the dominance analysis, and the sentential stress rule in particular, yield an implausible result for cases in which a projection mechanism is called for.

### 1.3.3. *The Problem of Focus in IQs*

As mentioned, ES's account is one in which focus and dominance are roughly equated, and the dominant constituent is that which receives



primary stress, either by the sentential stress rule or the restrictive stress rule. It follows from this proposal that the focus of an IQ will not necessarily be equated with the WH-word, but will instead be equated with the constituent bearing the primary stress (modulo the DOME rule described in the previous section). ES thus rejects the analysis of Rochemont (1978), in which the WH-word represents the focus of an IQ. In Rochemont's analysis, an IQ functions "as a request to the listener to supply the missing NP FOCUS" (p. 36). Rochemont's analysis accords with the view that an IQ like (15) presupposes a propositional function of the form *Someone gave a book to Mary*. The new information (which the person posing the IQ does not purport to be supplying) is the identity of the book giver.

Under the dominance analysis, in which the locus of the focus varies across IQs, there do not appear to be any semantico-pragmatic features which unite IQs. Under the Rochemont analysis, which we will adopt here, all IQs contain a narrow focus (the WH-word), which is defined relative to a presupposed propositional function (expressed by the remainder of the sentence). Again, the problem with the dominance analysis appears to be circularity: dominance (or focus) is defined in terms of primary stress, and primary stress is defined as indicating dominance (or focus). If we assumed instead that a focal constituent need not bear primary stress, then we can preserve the generalization that the WH-word is the focus of an IQ. We must, however, justify the proposal that a WH-word, which does not express new information in any obvious way, represents a focus. Arguments in favor of a Rochemont-style analysis will be given in Section 4.

## 2. PRINCIPLES OF INFORMATION STRUCTURE

In this section, we will lay out the principles of information structure which we will use in the analysis of IQs, in particular those that pertain to sentence accentuation. We will refer to the following concepts as defined in Lambrecht 1994:

- (16) PRAGMATIC PRESUPPOSITION: The set of propositions lexico-grammatically evoked in a sentence which the speaker assumes the hearer already knows or believes or is ready to take for granted at the time the sentence is uttered (see also Stalnaker 1974 and Sperber and Wilson 1979).
- (17) PRAGMATIC ASSERTION: The proposition expressed by a sentence which the hearer is expected to know or believe or take for granted as a result of hearing the sentence uttered.

- (18) **FOCUS:** The component of a pragmatically structured proposition whereby the assertion differs from the presupposition.
- (19) **TOPIC:** A referent which a proposition is construed to be about in a given discourse situation; a proposition is about a referent if it expresses information which is relevant to, and which increases the hearer's knowledge of, this referent.

We distinguish three kinds of **PRAGMATIC PRESUPPOSITION**, which correspond to different kinds of assumptions a speaker may have concerning the addressee's state of mind at the time of an utterance. All three are lexicogrammatically coded in sentence structure. The distinctions among these three presupposition types, especially that between knowledge and topicality presupposition, will play a crucial role in the argument presented in this paper:

- (20) **TYPES OF PRAGMATIC PRESUPPOSITION:**
- a. Knowledge presupposition (KP)
  - b. Consciousness presupposition (CP)
  - c. Topicality presupposition (TP)

**KNOWLEDGE PRESUPPOSITIONS (KPs)** concern the assumed knowledge state of an addressee at the time of an utterance. KPs are what linguists typically have in mind when they use the term '(pragmatic) presupposition'. KPs are grammatically manifested in the complements of factive verbs, in sentential subjects, in various constructions involving open propositions (Prince 1986), in definite descriptions, etc. Under KP we conflate here the notions of 'knowing that P', i.e. knowing some propositional content (German *wissen*) and of 'knowing x', i.e. knowing an entity (German *kennen*). The presupposition associated with the latter kind of knowledge, often referred to as 'existential presupposition', corresponds to the 'identifiability' presupposition of Lambrecht (1994). **CONSCIOUSNESS PRESUPPOSITIONS (CPs)** concern the assumed temporary activation states of the representations of denotata in the addressee's long-term and short-term memory. The mental representation of a referent can be in one of three states: active, accessible, or inactive (Chafe 1987, Lambrecht 1994, Ch. 3). Perhaps the clearest formal manifestation of a CP is the difference between pronominal (or null) and full lexical coding of a denotatum.<sup>14</sup>

<sup>14</sup> A distinction analogous to the one made here between KPs and CPs is made by Prince (1992) in terms of the contrast between 'hearer-old' vs. 'discourse-old' entities. Our 'activation states' of C-presupposed referents correspond, *mutatis mutandis*, to the different

TOPICALITY PRESUPPOSITIONS (TPs) concern the assumed statuses of referents as topics of current interest in a conversation. Of the various ways in which TPs are grammatically manifested in sentence structure only one is directly relevant to the present paper: the prosodic contrast between accented and unaccented referential constituents.<sup>15</sup>

In accordance with Lambrecht (1994), we maintain the distinction between ACTIVATION status and TOPIC status of a denotatum. Activation status is a temporary PRAGMATIC PROPERTY of the representation of a referent in the consciousness of speaker and hearer. An active referent is one which is currently 'lit up' among the inventory of referents known to speaker and hearer at speech time (see Chafe 1987). Such a referent is typically (but not necessarily) coded with a pronoun. Topic status involves a PRAGMATIC RELATION between a referent and a proposition. A TOPICAL referent is one which, due to its salience in the discourse, represents a PREDICTABLE OR EXPECTABLE argument of a predication for the hearer. A referent whose topic role in a predication is considered predictable to the point of being taken for granted by the hearer at utterance time will be called a RATIFIED TOPIC. A ratified topic necessarily has an active referent. However an active referent does not necessarily function as a ratified topic (cf. below, ex. (23) and discussion).

Concerning the notion of PRAGMATIC ASSERTION as we use it here, it is important to understand that it does not coincide with the common use of the term 'assertion' in which this term designates the kind of speech act expressed by declarative, as opposed to interrogative or imperative, sentences (cf. the discussion in Section 4). As defined here, assertion subsumes e.g. propositions expressed by interrogative sentences. The pragmatic assertion expressed by a sentence can be thought of as the effect a sentence has on a hearer's knowledge or belief state. Among the various concepts of information structure, pragmatic assertion is the one that comes closest to the idea of 'new information'.

The FOCUS of a proposition is that denotatum whose occurrence in a proposition makes an utterance into an assertion, i.e. which makes it possible for an utterance to constitute a piece of information. Like topic, focus involves a pragmatic relation between a denotatum and a

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'degrees of accessibility' of referents in Ariel (1988) and to the different positions of referents on the 'givenness hierarchy' in Gundel et al. (1993).

<sup>15</sup> Topic is not held to be equivalent to the grammatical role SUBJECT. A subject may be a focus (at least in English), just as a topic may be an object. The response in sentence (i) illustrates a focal subject and a topical object:

- (i) A: Who saw the PLAY?  
B: MOE saw it.

proposition. But unlike topic, a focus is by necessity an UNPREDICTABLE element of a proposition. Notice that 'focus' is defined here as a PRAGMATIC, not a STRUCTURAL, concept. In particular, focus is NOT defined in terms of prosody. With Culicover and Rochement we hold that prosodic prominence is neither a sufficient nor a necessary condition for focus status of a denotatum. An accented constituent may have a non-focal denotatum, and an unaccented constituent may have a focal denotatum.

Following Lambrecht (1994), we divide assertions into three focus-articulation types: ARGUMENT FOCUS (AF), PREDICATE FOCUS (PF), and SENTENCE FOCUS (SF). The three types are exemplified in (21):

- (21) THE THREE FOCUS-ARTICULATION TYPES:
- a. SOCIETY's to blame. (ARGUMENT FOCUS)
  - b. I slipped on the ICE. (PREDICATE FOCUS)
  - c. Your SHOE's untied. (SENTENCE FOCUS)

The three types express three basic communicative functions: identifying an argument in a presupposed open proposition (AF: IDENTIFICATIONAL function); predicating a property relative to a given topic (PF: TOPIC-COMMENT OR CATEGORICAL function); introducing a new discourse referent or expressing an event involving such a referent (SF: PRESENTATIONAL OR THETIC function).<sup>16</sup> Notice that the three focus types represent (universal) categories of GRAMMAR, with crosslinguistic correlates in sentence structure. Our approach to focus structure differs thus in important ways from theories of focus – such as that developed in Rooth (1992) – in which all foci are 'contrastive' (or, in our terms, 'identificational'), i.e. restricted to a small subset of possible focus structures.

The information structures of (21) are represented in (21'). We represent here only those presuppositional features which are relevant for distinguishing the three types. The term focus domain refers to the phrasal constituent which contains the focus:

- (21)a'. Information structure of (21a): *SOCIETY's to blame*. (AF)  
 Context: He should be pardoned.  
 Presuppositions:  
 KP: x is to blame (for his crimes)  
 TP: The KP 'x is to blame' is ratified

<sup>16</sup> See Andrews (1985, 77ff), who calls the three types in (21) 'focus-presupposition articulation', 'topic-comment articulation', and 'presentational articulation', respectively. For analyses involving the concept of 'theticity', cf. Kuroda 1972, Lambrecht 1987, Sasse 1987, Ladusaw 1995.

Assertion:  $x = \text{society}$   
 Focus: society  
 Focus domain: NP

Sentence (21a) is an IDENTIFICATIONAL assertion. It K-presupposes an open proposition of the form 'x is to blame'. This open proposition has a T-presupposition attached to it, i.e. it is assumed to be construable as the topic with respect to which the assertion is made. The focus portion is the argument which is substituted for the variable: 'society'; this argument distinguishes the K-presupposition from the assertion (cf. Jackendoff 1972). The assertion is the establishment of an identity relation between the missing argument in the KP and the focus. The main sentence accent falls on the focus NP. The topical portion of the sentence is unaccented for the same reason the noun *fault* is unaccented in the semantically related sentence *It's SOCIETY's fault* (cf. item (22ii) and discussion).

The information structure of (21b) is represented in (21b'):

(21b'). Information structure of (21b) *I slipped on the ICE*. (PF)

Context: 'I hurt my foot yesterday'.

Presuppositions:

KP: ----

TP: speaker is ratified topic for comment C

Assertion: C = slipped on the ice

Focus: slipped on the ice

Focus domain: VP

Sentence (21b) is a CATEGORICAL assertion. The subject is a (ratified) topic and the predicate functions as a comment about this topic. The focus domain receiving the main sentence accent is the VP. Within this focus domain, the accent falls on the argument *ICE*, for reasons to be explained later on (item (22iii) and discussion).<sup>17</sup> The assertion consists in establishing a topic-comment relation between the predicate and the subject.

Finally, (21c') represents the information structure of (21c):

(21c') Information structure of (21c): *Your SHOES untied*. (SF)

Context: ----

Presuppositions:

KP: ----

TP: ----

Assertion: your shoe's untied

<sup>17</sup> Here and elsewhere (unless specified otherwise), we use the term 'argument' in its traditional semantic sense, which is neutral with respect to the argument-adjunct distinction.

Focus: your shoes untied

Focus domain: S

Sentence (21c) expresses a THETIC assertion. What distinguishes this sentence from (21a') and (21b') is the absence of a T presupposition: neither the shoe nor its condition has been a topic of conversation. The entire proposition is asserted, hence focus and assertion are coextensive.<sup>18</sup> The accent in SF constructions is assigned by the projection mechanism to be discussed in detail below.

As noted at the beginning, the prosodic structure of IQs presents a challenge to a theory of information structure. Accent placement in IQs cannot be described in terms of the function that is ordinarily attributed to sentence accent, namely FOCUS MARKING. In this analysis, we assume principles for the assignment of sentence accent which do not limit the semiotic function of prosodic prominence to that of denoting focus. The relevant principles relating to the function and placement of sentence accent are given in (22):<sup>19</sup>

(22) GENERAL ACCENT-PLACEMENT PRINCIPLES:

(i) THE DISCOURSE FUNCTION OF SENTENCE ACCENTS: A sentence accent indicates an instruction from the speaker to the hearer to establish a pragmatic relation between a denotatum and a proposition. An utterance must have at least one sentence accent to be informative.

(ii) DISCOURSE CONDITION ON UNACCENTED ARGUMENT EXPRESSIONS: An argument expression is unaccented iff the speaker assumes that its referent can be construed as a ratified topic at the time of the utterance.

(iii) THE PRINCIPLE OF ACCENT PROJECTION: The accent on an argument expression may project its value onto an unaccented

<sup>18</sup> We ignore, as irrelevant for our purposes, the 'existential' K-presupposition evoked in the possessive NP (i.e. that there exists a shoe such that the addressee owns it) as well as the T-presupposition that the referent of the possessive determiner *your* is a ratified topic in the proposition. For a detailed discussion of accentuation in SF sentences cf. Lambrecht (1994, Ch. 5).

<sup>19</sup> For details see Lambrecht (1994, Ch. 5). One principle contained in Lambrecht 1994, called the 'General Phrasal Accent Principle', is omitted here. This principle is a mostly terminological adaptation of Ladd's 'Revised Focus Rule' (1978, 85), which is a revision of Jackendoff's stress assignment rule (1972, 237), which itself goes back to Halliday's 'Tonic-Placement Rule' (1967, 206). In one way or another, these various rules or principles have the purpose of capturing the effect of the NSR. With Schmerling (1976), Selkirk (1984), Ladd (1996) and others, we hold that the NSR is irrelevant to focus accentuation.

predicate expression. In such cases, the predicate and the argument are integrated into an informational unit.

(iv) THE TOPIC-COMMENT PRINCIPLE: If a predicate capable of integration with its argument is not subject to accent projection, i.e. if both the predicate and the argument constituent are accented, the two denotata have a topic-comment relation to each other.

(Strictly speaking, item (22) does not contain four independent principles but rather two principles and two corollaries: (ii) follows from (i), and (iv) follows (*mutatis mutandis*) from (iii). The listing format in (22) is adopted for easy reference.)

Regarding Principle (22i), it is important to understand that the pragmatic relation whose establishment is signaled by the sentence accent can be either a FOCUS RELATION or a TOPIC RELATION. In other words, the denotatum of an accented constituent can be either focal or topical. We will use the term TOPIC ACCENT to refer to a sentence accent which does not signal a focus. A topic accent is assigned to a constituent whose denotatum has a topic relation to the proposition but whose status as a topic has not yet been ratified at the level of the utterance and which therefore does not fall under Principle (22ii). In declarative sentences, a crucial diagnostic for the identification of topic accent is this: it necessarily coexists with a focus accent on the predicate.

The distinction between topic accent and focus accent is a functional rather than a formal one (but see footnote 6 above). The concept of 'topic establishment' derives from the assumption that speakers recognize those sentence-level topics which are less clearly established arguments in a proposition than others. While a topic is taken to be a predictable argument in a predication, predictability is a matter of degree. A referent which has been under discussion throughout the conversation or which is saliently present in the speech situation constitutes a highly predictable argument within a given predication, while one which is simply accessible, which has not previously occupied the topic role, or which has competitors for topic status, is not. A topic expression which has a low degree of predictability often bears a linguistic mark, which may be viewed as a topic-establishing device. By means of such a device, the speaker can establish an element as a topic in the very act of placing that referent in the topic role.<sup>20</sup>

<sup>20</sup> The concept of topic establishment elaborated here and in Lambrecht 1994 is cognate with the concept of SMOOTH SHIFT, a topic-transition type described in Centering Theory (see, e.g., Walker and Prince 1992). Something close to the concept of topic ratification is

Thus in making a predication about a pragmatically accessible but previously undiscussed referent, the speaker can signal that this referent is to be established as a new topic. By the same token, the speaker, in responding to the introduction of a referent, may predicate something of this referent – simultaneously signaling ratification of this referent as a topic. Consider the B responses of (23):

- (23) A: Remember that guy MOE?  
 B: Yeah. His WIFE was a NUT.  
 B': MOE was a NUT.

In these responses the VP *was a NUT* expresses the focus. The subjects *his WIFE* and *MOE* are as yet unratified topics: Moe's wife has not been mentioned before (but is accessible as a topic via the marriage frame), and Moe, who was activated and introduced in focus position in the previous utterance, is not yet taken to be an approved topic of discussion. In both cases, the topic accent is assigned by Principle (22i). (In subsequent discourse about Moe or his wife these individuals are likely to be referred to via unaccented pronouns.) The important point for our purposes is that the accent which appears on the subject NP does NOT signal focus. We know this because the actual focus accent appears as predicted on the object argument within the VP focus domain.

Another diagnostic for the difference between focus accent and topic accent is that deaccenting the focus constituent will necessarily result in different focus construal of a sentence (or else in prosodic ill-formedness), while deaccenting a topic constituent will not have such an effect. For example, if we were to take away the focus accents on the VPs in the B responses of (23), as shown in (23'),

- (23') B: Yeah. His WIFE was a nut.  
 B': MOE was a nut.

the topic accents on the subject NPs would automatically turn into focus accents and the sentences would necessarily receive argument-focus construal, i.e. the predicates would no longer be focal. However if we were to take away the topic accents on the subjects in (23), i.e. if the B replies were as in (23''),

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described within Centering Theory by Brennan (1995), for example, who observes a systematic discourse tendency for entities first introduced as lexical NPs in object position to be reintroduced in the form of full lexical subjects rather than as pronouns, even when use of a pronoun would have allowed the hearer to uniquely identify the new referent.



(23'') B: Yeah. His wife was a NUT.

B'': Moe was a NUT.

the only difference would be that the unratified topics would turn into ratified ones. The focus construal of the utterances would not be affected, i.e. the proposition would still have predicate-focus structure. (For further discussion and examples cf. Lambrecht 1994, 307ff.).

Now assuming that non-ratified topic expressions always PRECEDE focus expressions in a sentence (a widely shared assumption, whose validity is argued for in Lambrecht 1994, 199ff.), it follows that in a sequence of two or more accents it is always the LAST one that determines the focus structure of a sentence. In the competition for the cognitively salient final accent position focus outranks topic.<sup>21</sup> This observation concerning the primacy of focus accents over topic accents is closely related to an observation recently made by Ladd (1996, 202ff.) from a slightly different theoretical angle. In a discussion of the notion of 'main accent', Ladd argues that in sequences of two or more sentence accents it is always the last one that is perceived as the most prominent, not because it has any particular phonetic prominence but because it is the one that defines the broadest focus interpretation.<sup>22</sup> It is this fact, he argues, that justifies representing the focus structure of a sentence by capitalizing a single word, ignoring other points of prominence.

Principle (22ii) accounts for the fact that constituents with recently activated referents, like *MOE* or *his WIFE* in (23), may nevertheless be accented. Accentuation of such constituents is required (in accordance with Principle (22i)) when the pragmatic relation between the active denotatum and the proposition is not yet established at the time of utterance,

<sup>21</sup> An anonymous reviewer suggests the following variant of (23) as possible counterevidence against this claim:

(i) A: Remember that guy MOE?

B: Yeah. His DIARY was just published by his WIFE. She got a FORTUNE for it.

On the level of the discourse, Moe's wife is likely to be more accessible or salient, hence more topic-worthy, than his diary. The diary, being pragmatically less salient, should therefore be focal rather than topical. It is important to understand that pragmatic accessibility or relative salience of a referent is only a necessary, not a sufficient, condition for its topic status in a sentence. It is the information structure of the SENTENCE, i.e. principles of grammar, not the actual discourse context, that dictates the topic-focus construal of a proposition. Application of the focus-structure test in (23') and (23'') to (i) will yield the correct result. Deaccenting WIFE in (i) will necessarily result in different focus construal of the sentence; deaccenting DIARY will merely result in pragmatic oddity.

<sup>22</sup> Very similar statements can be found in Höhle (1982) and Jacobs (1992) in the context of their definitions of what counts as a 'normal' sentence accent.

i.e. if the denotatum is either in focus or is an unratified topic. The need for this Principle is particularly clear in the case of accented pronouns (whose referents are by definition discourse-active). One such case is that in which a pronoun represents the focal argument provided in response to an IQ, as in (24):

- (24) A: Who did she see there?  
B: She saw YOU.

Although the denotatum *you* can count as active at the time of the conversation (in an ordinary conversation, speaker and hearer are aware of each other), the pronoun receives the sentence accent since it represents an unpredictable argument of the predicate *see* in the propositional function 'she saw *x*'. Principle (22ii) entails that referential constituents in a sentence are necessarily accented unless the condition in (22ii) obtains.<sup>23</sup> For the argument to be presented below it is important to note that constituents that code presupposed propositions count as referential constituents, and therefore are assigned topic-ratification accent in the same way that nominals receive this accent.

The Principle of Accent Projection in (22iii), which we alluded to earlier in the discussion of Selkirk's focus analysis, accounts for the different behavior of predicates and arguments with respect to sentence accentuation: accent on an argument expression may, in terms of the semiotic function described in (22i), have scope over a predicate.<sup>24</sup> The reverse, however, is not true: accent on a predicate expression cannot have scope over an argument. For example in the PF structure in (21b), *I slipped on the ICE*, the entire VP is focal even though the verb is (relatively) unaccented. If, however, we accented the verb and deaccented the noun in

<sup>23</sup> In making a categorial distinction between pronominal coding as the expression of a cognitive status (activeness) and lack of accent as the expression of a pragmatic relation (topichood) we differ from authors like Givón (1983), Ariel (1988), and Gundel et al. (1993), for whom unaccented pronouns (including null pronouns) represent simply the highest degree of pragmatic accessibility of a referent or the highest point on the givenness hierarchy. We do not think that the referent of an unaccented pronoun can be considered more accessible or more given than that of an accented pronoun. For example, in the discourse situation of (24) we see no evidence that B's addressee, coded with an accented pronoun, is less accessible or less given here than it would be if it were coded as an unaccented pronoun. The impression of lesser accessibility is simply an implicature resulting from the fact that the referent has a focus relation to the proposition.

<sup>24</sup> The ability of an accent to impart its pragmatic value to the denotatum of an unaccented constituent is called 'focus projection' in Höhle (1982), a term now commonly used in the German literature on focus. Since we do not identify focus with accent and since projection occurs not only in focal but also in topical domains, we prefer the term 'accent projection' to 'focus projection'.

(21b), i.e. if the sentence were *I SLIPPED on the ice* (or *I slipped ON the ice*, where the relevant predicate is the preposition) the noun *ice* would be necessarily topical, not focal. Accent projection is a grammatical signal that a predicate and its argument are treated as a kind of conceptual unity for the purposes of information structure. Following Fuchs (1976), we refer to the pragmatic unification of a predicate and its argument as INTEGRATION.

Notice that accent projection, though clearly a principle of grammar, is not a phonological or syntactic rule applying automatically to all predicate-argument structures. Whether predicate-argument integration takes place or not depends on the context and the speaker's communicative intention (and on certain semantic conditions, briefly discussed in Section 5). Accent projection is thus optional. As a result, configurations involving an accented argument and an unaccented predicate have systematically more than one focus construal. For example, (21b) also has an AF reading, in which *ICE* supplies the missing argument for the presupposed open proposition 'I slipped on x'.<sup>25</sup>

As we will show later on, Principle (22iii) applies also to non-declarative sentences, such as IQs. A nice example of an IQ exhibiting pragmatic scope indeterminacy is contained in this well-known anecdote involving a remark made by the bank robber Willie Sutton after his arrest:

- (25) Reporter: Mr. Sutton, why do you rob BANKS?  
Sutton: Because thats where the MONEY is.

Suttons reply to the reporter exploits the pragmatic scope indeterminacy of the question: what was intended by the reporter as VP scope (*rob BANKS*) is facetiously construed by the robber as NP scope (*banks*), giving rise to the implicature that the proposition 'Willie Sutton robs places' is uncontroversial and to be taken for granted.

A crucial feature of Principle (22iii) is that it does not refer to the respective POSITION of predicate and argument constituents. In the US literature on focus, this irrelevance of constituent ordering for accent placement was first observed by Schmerling (1976), in the context of her critique of Chomsky and Halle's (1968) linear rule of stress assignment. Noticing various exceptions to this rule in the form of sequences in which unaccented verbs follow accented NPs, Schmerling proposed the following

<sup>25</sup> The phenomenon described here is often referred to as 'focus ambiguity' (cf. e.g. Jacobs 1991). In the approach taken in Lambrecht (1994), the phenomenon in question follows from the fact that the PF articulation is defined as the UNMARKED focus articulation. As such, it includes its marked counterpart (the AF articulation). Under this approach, PF structures are not ambiguous but rather pragmatically vague or underdetermined.

generalization (p. 82): "Predicates receive lower stress than their arguments, irrespective of their linear position in surface structure." In other words, predicates may fall under the pragmatic scope of their accented arguments, whether they precede or follow them.

Schmerling's generalization is less obvious in a VO language like English than in a language in which OV order is common, as, e.g. German. This is so because absence of prosodic prominence is more clearly perceived when the unaccented constituent occurs AFTER the constituent carrying main accent. For example, the prosodic status of the verb *slipped* in *I slipped on the ICE* is much less clear than that of the noun *ice* in *I SLIPPED on the ice*. Since in English the syntactic environments in which a verb may follow its object are severely restricted (and pragmatically specialized), Schmerling adduces evidence from second-language acquisition in order to demonstrate the validity of her generalization. She observes that English-speakers learning German, while encountering difficulty with the correct word order, have no difficulty assigning accent to objects rather than verbs in such verb-final sentences as *weil ich HANS sah*, 'because I saw HANS': "Once the English-speaker masters the correct order, the correct stress comes automatically. (. . .) Notice, in fact, what happens when English-speakers talk about German; one often hears statements like the following: In German you can't say 'Because I saw HANS; you have to say 'because I HANS saw' " (1976, 84). Schmerling's observation is taken up by Selkirk (1984, Section 5.2.2), who uses German sentences in her argument against NSR-based analyses of focus accentuation.

The effects of Principles (22) (ii) and (iii) can be summarized as follows: while an unaccented (referential) argument expression is marked as coding a ratified topic, an unaccented predicate expression is unmarked for its pragmatic relation to the proposition, i.e. its denotatum may or may not be ratified. This relative 'focus neutrality' of predicates explains the different behavior of verbs and nouns in anaphoric contexts. Consider the minimal pair in (26) (from Lambrecht 1994):

- (26)a. He promised to buy FOOD but he forgot to GET the stuff.  
 b. #He promised to buy FOOD but he forgot to get the STUFF.

In (26a), the final NP is unaccented via (22ii): the NP *the stuff* is anaphoric to the preceding NP *FOOD* and its denotatum has a topic relation to the proposition, thus it can be construed as a ratified (hence unaccentable) topic. By default, the accent which marks the broadest VP focus domain falls on the next available element, which is the verb *GET*. The point here is that *GET* may receive the focus accent in (26a) in spite of the fact that its denotatum has been activated in the immediately preceding discourse

via the verb *buy*. If, on the other hand, the final NP were accented, as in (26b), the sentence would become pragmatically unacceptable because it violates Principle (22ii). (By implicature, in (26b) *the STUFF* is necessarily interpreted as being disjoint in reference with *food*.)

The same point regarding the different prosodic behavior of nouns and verbs is made in the following often-quoted example from Ladd (1978, 81):

- (27) A: Has John read Slaughterhouse Five? (Ladd's ex. (19))  
 B: No, John doesn't READ books.

As in (26), a noun (*books* in B's reply) is unaccented, via Principle (22ii), because its referent is construed as a ratified topic, having been activated by a denotatum in the immediately preceding context (*Slaughterhouse Five*). As a result, the focus accent falls on the verb *READ*. This verb may receive the accent even though its denotatum was mentioned in A's question and is therefore as active as that of the noun *books*.<sup>26</sup>

The reader may have noticed an inconsistency in the way we have applied Principle (22ii) to different examples. In the case of (23), we argued that the topical subject *Moe* was coded as an accented lexical NP upon second mention because this topic was not sufficiently established in the discourse to count as ratified. But in (26)–(27) we argued that the topical object NPs *the stuff* and *books* had to be construed as ratified topics even though they were mentioned only once before. This asymmetry in the treatment of anaphoric subjects and objects is a consequence of the principle of the primacy of focus accents over topic accents which we mentioned earlier. If the object NPs in (26) and (27) were to receive topic ratification accents, they would be the LAST accented constituents in the sentence. As such, they would necessarily be interpreted as foci rather than topics. As argued in Lambrecht (1994, 277ff.), the grammar of English simply does not provide for the possibility of an accented topic constituent following the main focus accent within a single clause.

As for Principle (22iv), we will content ourselves here with a short illustration. Further data involving this principle will be discussed in Section 5. Principle (22iv) is the flip-side of (22iii): while the latter accounts for predicate-argument integration, the former accounts for those cases in which a speaker chooses NOT to resort to integration. By accenting both

<sup>26</sup> The fact that the verbs in sentences like (26) and (27) are accented even though they constitute "old information" is considered an unsolved puzzle by Selkirk (1984) and Ladd (1996). In the information-structure framework adopted in the present study, the problem does simply not arise: sentence accents do not mark new information.

the predicate and the argument in environments in which integration is a grammatical option a speaker can signal that the predicate and the argument are to be construed as separate denotata for the purposes of information structure.

As we just saw, the difference between accented and unaccented predicates is often not noticeable in English because of the rules of English syntax, which place internal arguments after their predicates in most environments. There is, however, one syntactic environment in which absence of accent on a predicate is semantically categorial and perceptually clear-cut. This is the environment found in sentence-focus (SF) constructions. Consider the often-cited minimal pair in (28), originally discussed by Schmerling (1976):

- (28)a. 'Truman DIED (PF) / 'TRUMAN DIED. (PF)  
 b. JOHNSON died. (SF) / JOHNSON DIED. (PF)

While in (28a) both the left-hand and the right-hand versions are PF (or categorial) sentences, the two versions in (28b) are not both SF (orthetic) sentences. This is so because in the PF type the category-defining feature is the focus accent on the predicate, allowing for a cooccurring topic accent on the subject (see also the examples in (23) above). In SF sentences, however, the category-defining feature is the ABSENCE of accent on the verb, signalling conceptual integration of the nominal and the verbal denotatum. The right-hand version in (28b) is therefore necessarily construed as having topic-comment, i.e. binary, articulation. As reported by Schmerling, (28a) was originally used in a context where the referent 'Truman' was an expected argument for the predicate 'die', while (28b) occurred in a situation where the referent 'Johnson' was entirely discourse-new, hence non-topical.<sup>27</sup>

The presence or absence of integration can also be observed VP-internally, though less obviously so. The short discourse in (29) contains an example:

- (29) A: He lives in LAUSANNE.  
 B: I thought he lives in GENEVA.  
 A: No, he LIVES in LAUSANNE, but he WORKS in GENEVA.

<sup>27</sup> It is well-known that subject-predicate integration as illustrated in (28b) is subject to severe semantic and pragmatic constraints. Investigation of these constraints is beyond the scope of the present study. For relevant discussion see e.g. Fuchs (1976), Faber (1987), Lambrecht (1995), Lambrecht and Polinsky (forthcoming). The cross-linguistic study in Lambrecht and Polinsky strongly suggests that the reason integration may take place inthetic SF sentences is that such sentences do not have a VP, thus eliminating the contrast between subject and object.

A's first utterance shows integration of the verb and its object. This utterance would be appropriate e.g. in a general description of the individual referred to as *he*. In contrast, A's second utterance requires a situation where the individual's residence was already under discussion, such as that created by B's remark. In A's second utterance, the accented predicates are thus topical while the accented arguments are focal (see examples (23') and (23'') and discussion). In addition to the difference between integrated and non-integrated predicate-argument pairs, (29) also illustrates nicely the focus ambiguity or vagueness inherent in sequences of unaccented verbs and accented objects: in A's first utterance the denotatum 'live' is inactive or discourse-new, in B's reply it is active or discourse-old. But there is no prosodic difference whatsoever between the two VPs.

To summarize our position on the focus-prosody relation, we assume, with Bolinger (1958, 1972, etc.), Schmerling (1976), Ladd (1978, 1996), Gussenhoven (1983), Selkirk (1984), Fuchs (1984), and many others, that accent placement is determined not at the structural level of syntax but at the semantic level of what Lambrecht (1994) calls the 'pragmatically structured proposition'. By this we mean that the choice of which constituent gets accented in a sentence is made by speakers according to their communicative intentions. In Ladd's dichotomy between the ATF and the FTA camp, we thus fall squarely into the second. However, we maintain that, given the selection of a semantic domain for topic or focus status, the placement of the accent within the corresponding syntactic domain is regulated by rules of information structure, i.e. of grammar (cf. Lambrecht 1994, 242f.). Within the FTA camp, we thus represent what Ladd calls the "structural", as opposed to the "radical", FTA faction.<sup>28</sup>

### 3. FOCUS ARTICULATION IN NONASSERTORIC CONTEXTS

In this section, we will begin to confront the problem of IQ prosody by considering the general class of cases in which sentence accent does not obviously reflect the category 'focus', assuming that focus correlates in one way or another with the conveying of new information. The reader should keep in mind that in the present framework sentence accents have the function of signalling pragmatic relations between denotata and propositions (Principle (22i)). Their function is not defined as that of

<sup>28</sup> One important phonological factor in the assignment of pitch accent within focus or topic domains, which we have ignored in our analysis, is the relationship between accent position and the METRICAL structure of the sentence. For discussion of this relationship, see e.g. Ladd (1996, Section 6.2).

indicating new information. There is thus no necessary relationship between sentence accent and pragmatic assertion ('new information'). Cases in which accents do not indicate focus do therefore not constitute a conceptual problem within the present framework.

One case in which accent does not reflect the category 'focus' is that of adverbial clauses, which generally express K-presupposed propositions. Examples are given in the variants of (21) shown in (30) (the accent-bearing adverbial clauses are in square brackets):

- (30)a. [Since SOCIETY's to blame,] he should be PARDONED.  
 b. [When I slipped on the ICE,] I decided to SUE.  
 c. [If your SHOE's untied,] you ought to STOP.

In these examples, a subordinate clause receives a sentence accent. This accent cannot be described as signaling the focus of the assertion, since there is no new information in the clause. These adverbial clauses are not focal; rather, their K-presupposed propositions serve as circumstantial topics for the main predication. The actual focus is expressed in the main clause (the VP denotatum).

We offer the following explanation for the prosodic structure of the sentences in (30). In accordance with Lambrecht (1994) and Dryer (1996), we assume that K-presupposed propositions have referents. Such propositional referents are stored in long-term memory like entities. And like entities, they must be activated in order to serve as topical or focal arguments for new predications. The sentence accents on the adverbial clauses in (30) are TOPIC ACCENTS, i.e. they have the function of activating the propositional referents of these clauses in order to establish a topic relation between them and the main clause proposition.

Now notice that the POSITION of the accent in these subordinate clauses is the same as in the corresponding assertions: the K-presupposed propositions in (30) show the pragmatic articulations of the corresponding declaratives in (21) (i.e. AF, PF, and SF, respectively). The speaker uses the prosodic structure of the corresponding declarative to evoke that pragmatically structured proposition which is taken as a topical point of departure for the predicate-focus assertions expressed in the main clauses.

How can a presupposed proposition show the same pragmatic articulation, hence the same prosodic structure, as an asserted proposition? The apparent contradiction is easily explained within the present framework. The pragmatic RELATIONS (topic and focus) between predicates and their arguments can be mentally construed independently of the information status of the proposition as presupposed or asserted. Just as in syntax we distinguish between the internal syntax of a constituent (its constituency)



and its external syntax (its distribution), in information structure we can distinguish between the INTERNAL information structure of a propositional denotatum (its pragmatic articulation) and its EXTERNAL information structure (its pragmatic role within a larger proposition).

For example, a K-presupposed proposition can be pragmatically construed as a comment about its subject, just as an asserted proposition can be construed as a comment about its subject. The only difference is that in the case of the presupposed proposition this comment is not new to the addressee; hence, the proposition is not pragmatically asserted (cf. example (30b)). Similarly, an argument in a K-presupposed proposition can be construed as representing the missing element in a propositional function, even if the identity relation between the missing element and the argument is not new to the addressee (cf. (30a)). Finally, an entire presupposed proposition can be conceived of as an event, even if this event is already known to the interlocutors (cf. (30c)).

The point at hand becomes obvious in sentences where the pragmatically construed relation between the K-presupposed proposition and one of its elements is expressed syntactically rather than via prosody. For example, a K-presupposed proposition can be expressed in the form of a cleft sentence. Consider the clefted variants of (30a) in (31):

- (31)a. Since it is SOCIETY that is to blame, he should be PARDONED.  
 b. Since the one to blame is SOCIETY, he should be PARDONED.

Even though in (31a–b) the *since*-clause proposition is K-presupposed at the time of utterance, the clause is syntactically marked as expressing a proposition in which the subject identifies the missing argument in the open proposition 'x is to blame'.

Let us now turn to the issue of IQs. The prosodic problem that confronts us in sentences such as those in (1), (2), and (3) is strongly reminiscent of that of the adverbial clauses in (30): in IQs, the sentence accent again does not appear to mark focus. Notice, for example, the question-answer pair in (32):

- (32) A: What did Mom BUY?  
 B: Mom bought a JACKET.

- (32') Presupposed: Mom bought x.

In A's question, accent falls on the predicate *BUY*, even though the thing bought, rather than the buying, is the unknown element. It is typically assumed that the WH-constituent of an information question is the focus, since IQs have essentially the same information-structure representation

as declarative sentences with argument-focus articulation. Thus A's question in (32) presupposes a propositional function of the form 'Mom bought x', just as the assertion *Mom bought a JACKET* in B's answer presupposes the propositional function 'Mom bought x' (on the relevant non-integrated AF reading).

If in fact the WH-constituent is the focus, as we think it is, then the problem of prosody in IQs is different from that of the adverbial clauses in (30): IQs do have a focused element, an argument, but this argument is such that it does not generally receive the sentence accent. Its structural position is the same as that which is assigned to foci in the so-called 'Focus-Movement' construction (Prince 1981, 1986, Ward 1988). This construction is exemplified in (33):

- (33) (It's the tallest office building in Denver.) *REPUBLIC PLAZA* I think it's called.

However, the Focus-Movement construction is different from the IQ construction, since Focus-Movement does have the standard prosodic features: the focus constituent (here *REPUBLIC PLAZA*) receives the unique sentence accent, as expected from an AF construction, and the material in the presupposition ('I think its called x') receives no accent. In the case of the IQ construction, however, the sentence accent typically falls on a constituent within the presupposition.<sup>29</sup> Thus IQs are an exception to the default interpretive principle that a lone sentence accent is a focus accent (Lambrecht 1994). As we saw, Culicover and Rochement (1983), as well as Selkirk (1984), actually claim that an accent like that on *buy* in (32) is (or can be) a focus accent, but this analysis cannot be upheld: if *buy* is within the presupposition, it can't also represent new information.

In the remainder of this paper, we will attempt to accomplish two things. First, we will defend the analysis of WH-constituents in IQs as focus expressions, against analysts who, like Ertshik-Shir, presume that focus is not relevant to the analysis of IQs (Section 4). Second, we will propose a general algorithm for the assignment of sentence accent in IQs (Section 5). This algorithm involves the application of the principles in (22) to the proposition presupposed by the IQ. Our analysis therefore appeals to the same general accent-placement mechanisms as those found in declarative sentences. In essence, we will argue that the syntactically

<sup>29</sup> The difference between IQs and other structures marking presupposed open propositions, such as the Focus-Movement construction in (24), is also emphasized by Prince (1986, 215), who observes that IQs "differ from all other OP-marking constructions in that the variable does not correspond to the tonically-stressed constituent" (OP = open proposition, KL&LM).

marked AF structure of the WH-question is superimposed on the prosodically marked focus structure of the open sentence expressing the K-presupposition. This focus structure is the same as that of the corresponding declarative sentence containing an indefinite variable instead of the WH-word.

#### 4. FOCUS AND IQS

As we have noted repeatedly, the claim that the question word in an IQ is the focus is potentially controversial. According to the definition in (18), focus is that element within a proposition which makes an utterance into an assertion. However, a question word provides no new propositional information relative to what is presupposed. Nevertheless, cross-linguistic studies, such as that recently conducted by Raymond and Homer (1996), reveal that question words in IQs consistently show up with the formal trappings of focus arguments.<sup>30</sup>

Take for example Basque, according to Manandise 1988. The default word order in Basque is APV (agent-patient-verb). The default word order is shown in (34). However, an argument-focus constituent must appear in immediate preverbal position. This is shown in (35). The Basque IQ construction is formally analogous to the argument-focus construction: the questioned constituent appears necessarily in immediate preverbal position. This is shown in (36):

- (34) Mikelek liburu bat irakurri du.  
*Michael.E book one.A read.PERF AUX.PAST*  
 Michael has read one BOOK.

- (35) Bonba Mikelek egin zuen.  
*Bomb-the.SG.A Michael.E make.PERF AUX.PAST*  
 MICHAEL made the bomb.

<sup>30</sup> Erteshik-Shir suggests that this line of argumentation is not convincing. She argues (p. 119) that occurrence of WH-phrases in focus slots "could follow from the semantic function of question words, but could equally well follow from the fact that the position of the question-word signals the locus of the answer and the answer . . . must necessarily be focused". The claim that the question word by its position signals the locus of the answer is not supported by, e.g., English, in which the question word appears in a preclausal slot. In other words, the fact that a question word receives focus marking has nothing necessarily to do with the syntactic position of the focus in the answer.

- (36) Bonba nork egin zuen.  
*Bomb-the.SG.A who.E make.PERF AUX.PAST*  
 Who made the bomb?

Essentially the same situation obtains in the Mayan language Mam, as described by England (1983). The default word order in Mam is VAP. However, a focal argument in an assertion must appear in preverbal, initial position. Again, the IQ construction is formally analogous: the position for the question word is preverbal, i.e. initial. A similar word order phenomenon is found also in Hungarian (cf. Comrie 1981; Horvath 1986).

Another example of the formal similarity between question words in IOs and argument-focus constituents in declarative sentences comes from spoken French, where interrogative QU-expressions often appear in the focus position of a cleft construction:

- (37) C'est QUOI que tu fais?  
*it-is what that you do*  
 What are you DOING?

Since *c'est*-clefts (like *it*-clefts) mark the clefted constituent as focal, it follows that the interrogative expression *QUOI* in (37) is the focus of the sentence. The use of cleft constructions for IQs is a common crosslinguistic phenomenon (see, for example, Demuth 1987 on Sesotho). It is also found in English, with fronting of the clefted WH-constituent (*What is it (that) you're doing?*). We will return to the use of clefts in IQ constructions in Section 5.

French offers a further argument in favor of the identification of the question word as the focus of an IQ. In spoken French the question constituent may also quite naturally appear in situ, as in (38a):

- (38)a. Tu as acheté QUOI?  
*you have bought what*  
 What did you BUY?
- b. J'ai acheté une VESTE.  
*I have bought a jacket*  
 I bought a JACKET.

(Notice that, unlike its literal gloss in English, (38a) is not an echo question.) As the comparison with the corresponding declarative in (38b)

shows, the *qu*-word of the question appears in the same syntactic position, and with the same prosodic (and intonational) features, as the argument focus of the answer.

There is thus ample evidence that languages treat question words and focused arguments alike. But what is the semantic or pragmatic basis for this identical formal treatment? How can WH-expressions, which have no intension, function as argument foci in the same way as lexical arguments? The answer to this question follows naturally from our definitions of assertion and focus in (17) and (18). For example, the propositional content of the IQ in (1a) *What did you buy?* functions as a pragmatic assertion in the sense that after hearing the question the addressee knows more than before: namely, the fact that the speaker wants to know the identity of the thing that the individual in question bought. As a result of hearing the utterance, the addressee's knowledge state is changed. It is the substitution of the focus *what* for the variable in the presupposed open proposition that creates the change. We can say that utterance of a WH-question pragmatically asserts the desire of the speaker to know the identity of the referent inquired about via the WH-expression. (For a comparable analysis see Rochemont 1978.)<sup>31</sup>

Now that we have established that question words can reasonably be treated as the foci of the IQs in which they appear, let us discuss the principles underlying the assignment of sentence accent in IQs.

##### 5. SENTENCE-ACCENT ASSIGNMENT IN IQS

The general questions here are the following: (i) what is the pragmatic role of sentence accent in IQs if it is not to mark the focus; and (ii) why does this nonfocal accent fall where it does? Our answer to these questions relies crucially on the distinction we drew earlier between FOCUS ACCENT and TOPIC ACCENT.

Before we go into the detail of our analysis we would like to draw attention to a revealing formal and semantic parallel: that between IQs and corresponding declarative sentences containing INDEFINITE expressions involving the morpheme *some* (*someone, something, somewhere, etc.*). We will refer to this class of indefinite expressions as SM-expressions, by analogy with the term 'WH-expression', and in accordance with

<sup>31</sup> Our claim that IQs inform the addressee of the speaker's desire to know the referent of the WH word is consistent with the analysis of IQs, within speech-act theory, as denoting directives. We assume that an IQ not only directs the addressee to provide the identity of the unknown element, but also, in so doing, informs the addressee of the speaker's desire to have this information. The directive function can be said to entail the function of informing.

the convention of writing the determiner *some* as *sm* when it has 'weak' semantic construal (see Milsark 1974).

The parallel between WH-questions and SM-declaratives is illustrated in example (39):

- (39)a. He just went somewhere.  
 b. Where did he go?

In the case of (39a), we can say that the speaker knows an open proposition of the form 'He went to x place'. The speaker does not know (or purports not to know) the identity of the place. However, the speaker assumes that there exists potential identity information in the interlocutors' universe of discourse to complete the open proposition. By the same token, in (39b) we can say that the speaker (as well as the hearer) knows an open proposition of the form 'He went to x place'. Again, the speaker does not know (or purports not to know) the identity of this place. However, here the speaker presumes that someone else, and most likely the hearer, is able to supply this information. In (39), the question constituent *where* or the indefinite constituent *somewhere* set up an expectation for a focal argument, say 'to the store', whose identity the speaker happens not to know but which is known to someone else.

The semantico-pragmatic link between WH-words and SM-words is grammatically reflected in many languages. In Vietnamese, for example, the same set of proforms is used for both question words and SM-indefinites. In Michaelis 1989, these forms are described as denoting unidentified constants. Formal identity, or near-identity, of question words and indefinites is found also in Ancient Greek (*tis* – *tis* 'who?' – 'someone', etc.) and in colloquial German (*was* 'what?' – 'something'). Crucially, SM-words and WH-words also have a PROSODIC feature in common: they are typically (though not necessarily) UNACCENTED. Moreover, in pairs of sentences such as that illustrated in (39), the constituent attracting the accent is systematically the same in the declarative and the corresponding interrogative sentence, as various examples below will show. In (39), for example, the accented constituent is the verb in both sentences (*WENT* and *GO* respectively). The only difference is in the respective position of the WH-word and the SM-expression.<sup>32</sup>

<sup>32</sup> There is one syntactic environment in which WH-words and SM-words differ. While SM-words can occur in postfocal position, WH-words cannot. Compare (i) and (ii):

- (i) I'm GOING somewhere./I'm DOING something./I SAW someone.  
 (ii) \*You're GOING where?/\*You're DOING what?/\*You SAW who(m)?

We attribute this distributional difference to the special status in English of *in situ* WH-

The lack of accent on SM-words and WH-words can be thought of as correlating with a shared pragmatic property: in both cases, there is no commitment on the part of the speaker to the effect that she knows the identity of the referent of the expression. In terms of interpretive instructions used in sentence processing, the lack of accent can be attributed to the same cognitive factor which prevents pronominal variables in general from attracting a sentence accent (Lambrecht 1994): the identification of their referents does not involve the kind of processing effort which is required in matching a lexical description with a specific referent. In the case of pronominal variables, either the referent has already been activated in the addressee's mind (as in the case of personal, demonstrative, or possessive pronouns or determiners) or there simply is no referent that the addressee is expected to identify at the time of utterance (as in the case of WH-words or SM-indefinites).<sup>33</sup>

WH-expressions and SM-expressions thus form a natural semantic (and, in some languages, morphosyntactic) class, whose special (non-)referential status sets them apart from other pronominal expressions. While both classes of pronominal expressions tend to be unaccented, referential pronouns or determiners nevertheless freely receive topic or focus accents in English, whenever their referents are not ratified topics in the discourse. WH-expressions and SM-expressions, on the other hand, are inherently 'unaccentable', in the sense that there is no functional reason to accent them. Since they do not designate specific discourse referents, their denotata need never be ratified. As we will show, they receive sentence accent only by default, not by semantic or pragmatic motivation.

Let us now look at our initial examples of accent-placement variability in IQs. These are repeated in (40–42):

- (40) [I went to the mall with Audrey yesterday.]  
 a. What did you BUY?  
 b. What did AUDREY buy?  
 c. What did AUDREY BUY?
- (41) [I heard you went to France.]  
 a. What cities did you VISIT?  
 b. What CITIES did you VISIT?  
 c. What CITIES did you visit?

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expressions, which require a focus accent for pragmatic reasons (see the discussion of IQs with accented WH-expressions below).

<sup>33</sup> One must be careful here to distinguish between the effort necessary to process the question and the effort necessary to give the requested answer. We are not concerned with the latter.

- (42) a. Who ate my COOKIES?  
 b. Who ATE them?  
 c. WHO ate them?

As in the adverbial clauses in (30), the accents in (40)–(42) fall not on the focus constituent but instead on material within the K-presupposition. For example, a declarative that corresponds to the IQ in (40a) could be something like *You bought a TIE*. In the declarative version, unlike the IQ, accent falls on the focus NP; it does not fall on the verb. Since in the IQ the accent does not fall on the focus constituent, we again assume that the sentence accent is a TOPIC ACCENT.

In posing an IQ, the speaker is signaling that a mutually known proposition is an appropriate topic for further inquiry. In the particular case of IQs, the mutually known proposition is a propositional function.<sup>34</sup> We might informally represent the pragmatic articulation of (40a) as in (43):

- (43) [You bought x]<sub>TOP</sub>, x is [what]<sub>FOC</sub>?

In (43), we see that the open proposition ‘you bought x’ represents a topic, and that the predicate contains a focus (the WH-word). The assertive component of the IQ can be captured by the following paraphrase of (43): ‘Regarding the proposition ‘You bought x’, I want to know what x is’. Notice that a propositional topic like the one in (43) is not necessarily ratified in a given utterance context. If it isn’t, the sentential constituent expressing this topic will receive an accent via Principle (22ii).<sup>35</sup>

What formal and pragmatic principles are involved in the placement of the topic accent in an IQ? As we observed earlier, the problem here is different from the problem of sentence accent in adverbial clauses with K-presupposed propositions, in which accent assignment is essentially the same as in corresponding declarative assertions. In a non-subject IQ, a focal argument or adjunct which would follow the verb in an ordinary declarative sentence is found in the leftward WH-focus position, where

<sup>34</sup> Some confusion may arise from our use of the term *proposition* to refer to a propositional function. We intend the latter term loosely, since the propositional functions which we have in mind contain an indefinite expression rather than an unbound variable. For example, we assume that the IQ *Where did he go?* K-presupposes the proposition (or propositional function) *He went somewhere*.

<sup>35</sup> An approach similar to the one taken here is hinted at in Prince 1986. Prince observes that IQs differ from other constructions marking presupposed open propositions in that they ‘do not require that the OP they represent be salient but simply shared’ (p. 215). This is analogous to saying, in our terminology, that the open propositions of IQs are K-presupposed but not necessarily C-presupposed. Prince’s approach differs from ours in that she does not distinguish between a ‘salient’ (i.e. activated) referent and a ratified topic.



it is inherently unaccentable. Therefore, the potential domain for VP accentuation is distinct from what it is in the corresponding declarative sentence.

Let us refer to the clausal material in an IQ which follows the leftward WH-element as the OPEN SENTENCE (OS). In an IQ, the pragmatically construed denotatum to which accent assignment applies is the open proposition expressed in the OS. Given Principle (22ii), any ratified topic arguments (or adjuncts) within the OS will be unaccented. As a result, the accent will fall on the verb instead of the argument, as it does in (26) and (27) above. Essentially the same situation obtains if an argument which would receive a focus accent in a declarative sentence is instead found in the leftward WH-focus position. For example, while in (44) the projection operation that takes place in the OS of the IQ in (a) is identical to that in its declarative PF-analog in (b),

- (44)a. What did he buy at NORDSTROM?  
 b. He bought some stuff at NORDSTROM

in (45), projection only occurs in the VP of the declarative in (b) and not in the OS of the IQ in (a):

- (45)a. When did they LEAVE?  
 b. They left at FIVE.

In (45a), the verb receives the main sentence accent because there is no other element in the OS for the accent to fall on.

As mentioned, the placement of the sentence accent in an IQ will be determined, as in declarative sentences, by the interaction of Principles (i)–(iv) in (22). In a declarative sentence, the syntactic domain for accent placement is the entire sentence S, and this S expresses an assertion. The sentence accent signals the focus, i.e. that denotatum which distinguishes the assertion from the presupposition. The accent signals that portion of the proposition expressed by S which is not contained within the presupposition. In an IQ, the syntactic domain for accent placement is the OS, and this OS expresses a K-presupposed open proposition. Here the sentence accent signals a topical denotatum, which distinguishes two presuppositions from each other, the KP (the presupposed open proposition) and the TP (the set of topical elements within KP that are ratified). The accent thus signals that portion of the KP expressed in the OS which is not contained within the TP.

IQs involve only one construction-particular prosodic principle, which requires that if a constituent within the OS can receive the sentence accent via (22), the WH-focus cannot receive such an accent. (As stated at the

beginning, we are ignoring the issue of a possible secondary accent on the WH-constituent.) The effect of this principle is that the WH-constituent, while receiving syntactic focus-marking, does not generally receive prosodic focus-marking. As mentioned, this resistance of the WH-focus to accentuation is motivated by the same principle that generally keeps indefinite expressions of the SM-type from receiving the sentence accent.

Let us now look at the way in which our proposal applies to our three sets of examples (40)–(42). Item (40a') contains a representation of the information structure of (40a), *What did you BUY?* As before, we represent only those pragmatic features which are relevant for the point at hand. Like all sentences in which the accent falls within the VP, (40a) is compatible with more than one pragmatic construal, depending on which portion of the VP denotatum is taken to be already ratified in the utterance context. This includes VPs whose only constituent is the verb (see Selkirk 1984, 208f.). The information-structure representation given in (40a') shows three contexts for (40a):

(40)a'. Sentence: *What did you BUY?*

Contexts:

- (i) I went to the mall with Audrey yesterday.
- (ii) I went to the mall with A. yesterday and stole something.
- (iii) I went to the mall with A. yesterday and bought something expensive.

Presuppositions:

KP: You bought

TP: Context (i): 'you' is ratified

Contexts (ii/iii): 'you' did something (at the mall)' is ratified

Assertion:  $x = \text{what?}$

Focus: what

In (40a'), as in the following examples, the equation in the Assertion line is meant to express the notion, discussed in Section 4, that the information conveyed by an IQ is the communication of the speaker's desire to know the identity of the missing argument in the open proposition.

The representation in (43) suggests the means by which accentuation in all three contexts can be described in accordance with Principle (22i). The formula in (43) is repeated here for ease of exposition:

(43) [You bought  $x$ ]<sub>TOP</sub>,  $x$  is [what]<sub>FOC</sub>?

Principle (22i) states that the discourse function of a sentence accent is to

establish a pragmatic relation between a denotatum and a proposition. In the case of (40a), the denotatum is the open proposition 'you bought x', which serves as a topic relative to the assertion 'x = what?' An accent falling within the OS of the IQ in (40a) thus signals that the hearer is to establish a pragmatic relation (that of topic) between the open proposition expressed by the OP and the assertion. As predicted, the accent falls on the same element as in the corresponding declarative sentence involving a SM-pronoun: *You BOUGHT something*.

In all three construals of (40a), the sentence accent is assigned to the sentence-final verb *buy* via the general accentuation principle (22i). Given the ratified-topic status of the subject 'you', the verbal denotatum is the only one whose relation to the proposition needs to be established. Context (i) induces a BROAD construal, in which the only ratified element is the topic 'you'. Context (ii) induces a NARROW construal, in which the proposition 'hearer bought something' is construed against the background of a specific alternative in the context (here 'hearer stole something'). This construal is referred to by ES as 'restrictive', and is also often referred to as 'contrastive'.<sup>36</sup>

The fact that (40a) is compatible also with context (iii) presents a problem for accounts like Chafe's (1987) or Dryer's (1996), in which sentence accent indicates activation of a denotatum, rather than establishment of a pragmatic relation. In context (iii), the proposition 'hearer bought something' would presumably be active at the time of the utterance of (40a) since the hearer has expressed this proposition in the immediately preceding utterance. If active status of the propositional denotatum were the only criterion for deaccentuation, the verb *buy* in context (iii) would not receive an accent. In fact, it does. We claim that the accent on the verb in context (iii) is a topic-ratification accent, like that on the NP *Moe*

<sup>36</sup> The narrow or contrastive reading (ii) of (40a) has an INTONATIONAL possibility distinct from that of the broad readings (i-iii). A strong intonational possibility for (40a) would involve the melody which Liberman and Sag (1974) refer to as the CONTRADICTION CONTOUR. P&H (p. 293) view this term as a misnomer. They argue that the tune at issue (which they represent as the pattern L\*LH%) is not used to express a rejection of a previous utterance but instead to "convey that H should already be aware of what S is saying". P&H's analysis does not obviously extend to IOs pronounced with the L\*LH% tune. The analysis must be revised to include reference to PRESUPPOSITIONS associated with utterances bearing the contour, e.g., the presupposition of (40a) 'You bought something'. If an IQ like (40a) is uttered with the 'contradiction contour', this contour cannot be said to express S's belief that H should already be AWARE of the proposition that s/he bought something. Clearly, H is aware of this proposition. We would therefore prefer to say that if (40a) receives the L\*LH% tune, the utterance expresses S's belief that the presupposed proposition 'I bought something' is of greater interest to S than another proposition invoked by H. In the case of context (ii), this proposition is 'I stole something'.

in (23B'). In uttering (40a), the speaker ratifies the propositional topic 'Hearer bought something' which was introduced as a focus in the context utterance. Since this propositional topic is not yet ratified, Principle (22ii) cannot apply.

The need to recognize a topic-ratification accent for the open proposition in context (iii) of (40a) is further demonstrated by the short discourse in (46):

- (46) A: Last night, I ate at an Ethiopian RESTAURANT.  
 B: What did you EAT there?  
 B': #WHAT did you eat there?

If activeness of a denotatum were the only reason for not accenting a constituent, it would be difficult to account for the necessary presence of a sentence-final accent in B's reply. In (46) the denotatum of the presupposed open proposition 'You ate x (at an Ethiopian restaurant)' has been activated as a focus in A's utterance. Therefore, the constituent corresponding to this denotatum in B's question should not receive an accent. However, as (46b') shows, the reply in which this constituent is unaccented is pragmatically ill-formed. We maintain that this reply is inappropriate because the propositional topic 'You ate something', although activated, does not yet count as a ratified topic of conversation at the time the question is asked. Since Principle (22ii) cannot apply, the constituent expressing the propositional topic must be accented.

Let us now compare (40a) with (40b). In (40b) the single sentence accent falls on the subject. As argued in Lambrecht (1994), subject-accented sentences represent the only prosodic pattern in English which is not amenable to predicate-focus construal. (40b) therefore has only a narrow reading. (40b') shows the information structure of (40b):

- (40)b'. Sentence: *What did* AUDREY *buy*?  
 Context: I went to the mall with Audrey yesterday. I bought some shoes.  
 Presuppositions:  
 KP: Audrey bought  
 TP: 'Someone bought' is ratified  
 Assertion: x = what?  
 Focus: what

In (40b), the accent on *Audrey* is the result of substituting the referent 'Audrey' in the KP for the variable 'someone' in the TP. The NP *Audrey* receives accent by the general principle (22i), which requires that an unrated denotatum be accented. The verb *buy* remains unaccented via

Principle (22ii): the propositional topic 'Someone bought something' is ratified. As predicted, the prosodic pattern of (40b) is analogous to that of the declarative sentence *AUDREY bought something*, in which *AUDREY* functions as an argument focus.

Let us now look at example (40c), in which both the subject and the verb carry an accent. (40c) has two accents because it contains two pragmatically construed denotata whose relation to the proposition needs to be established. This sentence represents the topic-comment pattern exemplified in (23) (*His WIFE was a NUT, MOE was a NUT*), in which the topic receives an accent because it does not count as ratified at utterance time. Recall that in sequences of two or more accents it is always the last one that is categorial, hence perceived as the most prominent. The accent on *AUDREY* may therefore be perceived as relatively weak, unless it is intentionally given prosodic prominence. Sentence (40c) is represented in (40c'):

(40)c'. Sentence: *What did AUDREY BUY the other day?*

Context: Interlocutors know that Audrey went shopping some time ago, but have not recently discussed this fact.

Presuppositions:

KP: Audrey bought x the other day

TP: ----

Assertion: x = what?

Focus: what

The difference between (40c) and (40a–b) is that in (40c) the TP is null: the entire shopping-event proposition is inactive in the discourse.<sup>37</sup> Sentence (40c) has in common with construal (i) of (40a) that the buying activity has not yet been activated in the context. The predicate *buy* must therefore be accented. Sentence (40c) has in common with (40b) that 'Audrey' is not yet a ratified topic. Hence the necessary accent on the subject *AUDREY*. The corresponding SM-sentence would be *AUDREY BOUGHT something the other day*. As for the adverbial phrase *the other day*, it is of the deictic type (like *now*, *yesterday*, etc.) which does not need to be activated in order to serve as a ratified scene-setting topic (cf. Halliday 1967, Lambrecht 1994, Ch. 5). It therefore can go unaccented.

<sup>37</sup> Strictly speaking, the TP is not null in (40c): in order to make (40c) felicitous, talk about the referent 'Audrey' must be somehow expected in the utterance context. Since this feature is not directly relevant for distinguishing (40c) from (40a–b) we are ignoring it in our representation.

It is important to acknowledge that in (40) the subjects (*you* and *Audrey*) are TOPIC expressions. These questions are about the referents of the subject NPs, which were either mentioned in the preceding utterances (as in (40a–b)) or are taken to be pragmatically accessible (as in (40c)). In asking the questions, the speaker wants to increase her knowledge of the subject referents and their activities. The only difference between *you* in (40a) and *AUDREY* in (40b–c) is that the referent ‘you’ is a ratified topic while the referent ‘Audrey’ is only accessible in the discourse; the NP *Audrey* thereby requires accent via (22i). The accent on *AUDREY* in (40b–c) does not entail focus status of the referent. The focus is in all cases ‘what’.

The nonfocal status of ‘Audrey’ in the proposition can be demonstrated with syntactic tests. Consider first the English detachment construction in (47a) and its French equivalent in (47b):

- (47) [I went to the mall with Audrey yesterday and bought some shoes.]  
 a. A: And *AUDREY*, what did *SHE* buy?  
    B: *AUDREY* (she) bought a *TIE*.  
 b. A: Et *AUDREY*, elle a acheté *QUOI*?  
    B: *AUDREY* elle a acheté une *CRAVATE*.

Left-detachment is generally acknowledged to be a topic-establishing device. In (47), the accent on the left-detached NP *AUDREY* in speaker A’s question has the function of establishing the topic ‘Audrey’ in the discourse, while in speaker B’s declarative reply the function of the accent on the NP is to ratify this topic. The topic function of ‘Audrey’ is more obvious in the spoken French version in (47b): here we have no difficulty analyzing *Audrey* as a topic NP because the interrogative word *QUOI* appears *in situ*, and hence receives the focus accent via Principle (22iii). It would make little sense to claim that ‘Audrey’ is a topic in French but not in English. The reason we tend to think of ‘Audrey’ as focal in (40b) is that the single accent in a simple clause normally has the function of signaling the focus. However, this reasoning does not apply in the present example: the topic *Audrey* is the only accented constituent in the sentence simply because there is no other constituent which could bear the accent without changing the information structure of the sentence.

Another syntactic test demonstrating the nonfocal status of *AUDREY* in (40b) is clefting. If *AUDREY* were an argument focus in (40b), it should be possible to make it the focus of an *it*-cleft. Notice the facts in (48).

- (48)a. What is it that Audrey bought?

- b. \*What is it Audrey that bought?
- c. \*What is it that it is Audrey that bought?

As (48a) shows, the WH-expression itself can be clefted, as expected from our analysis of WH-words as argument foci. However it is impossible to cleft the subject NP *AUDREY*, as shown in (48b–c), independently of whether the WH-constituent itself is clefted (as in (48c)) or not (as in (48b)). (49) shows that the situation is essentially the same in French, where cleft constructions in IQs are the unmarked type of question formation:

- (49) STANDARD FRENCH:
- a. Qu'est-ce qu'Audrey a acheté?  
what is it that Audrey has bought
  - b. \*Qu'est-ce que c'est Audrey qui a acheté?  
what is it that it is Audrey who has bought
- SPOKEN FRENCH:
- c. Audrey a acheté QUOI?  
Audrey has bought what
  - d. \*C'est Audrey qui a acheté QUOI?  
it is Audrey who has bought what
  - e. C'est QUOI qu'Audrey a acheté?  
it is what that Audrey has bought
  - f. \*C'est quoi que c'est Audrey qui a acheté?  
it is what that it is Audrey who has bought

Whether the QU-element appears in its weak (or clitic) form *qu(e)* within the fixed question expression *qu'est-ce que*, as in (49a), or in its strong form *quoi* in the non-standard *in-situ* construction (non-clefted in (49c), clefted in (49e)), the subject NP *Audrey* cannot be clefted.<sup>38</sup>

If we agree that the WH-expression of an IQ functions as an argument focus, non-focus status of an accented constituent in the non-WH portion of an IQ is a logical necessity. Since the WH-constituent represents an argument focus, any focus relation between the proposition and an argument other than the WH-word is preempted. There is only one possible focus per sentence, although there may be more than one accented constituent within a given focus domain (cf. Lambrecht 1994, 326ff.).

By the same token, there is no possible THETIC construal for an IQ sentence with an accented WH-subject. Given the well-known constraint

<sup>38</sup> Example (49d) is instructive in that it shows that the ungrammaticality of the starred sentences in (48)–(49) is not due to some SYNTACTIC constraint on WH-extraction from relative clauses: the relative clause in (49d) contains no 'gap'.

on transitive predicates in subject-accentedthetic sentences of the kind illustrated in (21c) (*Your SHOE's untied*), there is only one accentable NP available in such sentences – the subject. In the IQ version of such a sentence, this single argument will by necessity be the WH-word. However, being a pro-form, a WH-word cannot serve as the focus of athetic sentence: the presentational function of such constructions excludes any nonlexical focus argument (cf. Lambrecht 1987). Notice, for example, the IQ version of (22c) in (50):

(50) WHAT's untied?

In (50), the subject is necessarily an argument focus, i.e. an open proposition 'something is untied' is necessarily presupposed, and nothetic construal is possible. The same is true of the corresponding sentence containing a SM-pronoun instead of the WH-word: the declarative sentence *SOMEthing's untied* can no more receive athetic interpretation than the interrogative sentence in (50).

We will now turn to the analysis of the sentences in (41) (=2)). These sentences differ from the ones in (40) in that the WH-word functions here as a determiner within a NP rather than as an argument of the verb. This fact creates an unusual situation concerning the relationship between information structure and constituent structure in these sentences. Even though in *What cities did you visit?* the noun *cities* is syntactically part of the initial WH-phrase, pragmatically it belongs to the presupposition: in all prosodic instantiations of the sentence the open proposition 'You visited x cities' is K-presupposed. Consider the sentences in (51). If we target the direct object NP in (51a) for IQ formation, we can either question the entire NP, yielding (51b), or we can question the determiner alone, yielding (51c):

- (51)a. I visited [some cities].  
 b. [What] did you visit?  
 c. [What cities] did you visit?  
 d. \*[What] did you visit [cities]?

The relevant fact in (51c) is that even though only the determiner is targeted for WH-status, the noun *cities* must be fronted along with it. This noun thus belongs to the OS without forming a constituent with it. The grammar of English does not allow for the discontinuous constituent structure in (51d), where the non-questioned portion of the object NP has remained in situ. The ungrammaticality of (51d) is, however, not a logical necessity. For example, the Latin equivalent of (51d), shown in (51'), is a well-formed sentence:



(51') [Quas] visisti [urbes]?  
*what.FEM.ACC.PL visit.2SG.IND.PERF city.FEM.ACC.PL*

What cities did you visit?

Given its relatively free word order, Latin permits the direct-object noun to remain in situ, as part of the OS. Compared to English, Latin allows for a closer fit between the formal requirements of syntax and the pragmatic requirements of information structure. In English, as is often the case, the requirements of syntax win out over those of information structure. What is done by syntax in Latin is done by prosody in English (cf. Lambrecht 1994, Introduction).

In (41a'), we see a representation of the information structure of (41a). Among the possible construals of (41a) we represent only the broadest and the narrowest:

(41)a'. Sentence: *What cities did you VISIT?*

Contexts:

- (i) I heard you went to France and visited various cities.
- (ii) I heard you avoided Paris on your trip to France.

Presuppositions:

KP: You visited *x* cities (in France)

TP: Context (i): 'you' and 'cities' are ratified topics

Context (ii): 'you did something with respect to cities  
(in France)' is ratified

Assertion: *x* = what?

Focus: what

In (41a), both the subject 'you' and the object 'cities' are ratified topics at the time of utterance. Both constituents are therefore unaccentable by Principle (22ii). The sentence accent falls on the verb *visit* by default. As pointed out above, the NP which codes the argument focus, *what cities*, contains not only the focus (*what*) but also an active and topical referent, expressed by the N *cities*. This phenomenon is accounted for by Lambrecht (1994, 217 and passim), who argues that syntactic focus phrases may contain topical denotata (see also Selkirk 1984, 211). Topic phrases, on the other hand, cannot contain focal denotata.

The first, broad, reading of (41a) is analogous to construal (iii) of (40a): the propositional topic 'you visited some cities', though activated by the previous utterance, does not yet count as ratified, therefore an accent is required via (22i). In the second, narrow, reading, the propositional topic 'you visited some cities' is construed as contrasting with an alternative proposition, 'you avoided some city', which was activated in the context

utterance. (On this reading, the question word *what* is likely to receive a secondary accent, making it more prominent than *cities*.) Both on the narrow reading and on the broad reading, 'visiting' is part of an unratified topical denotatum, the KP 'you visited some cities'; therefore, via Principle (22i), this mutually known denotatum must be established by means of an accent. In both cases, the corresponding declarative containing a SM-determiner is *You VISITED some cities*. Again, the principles used to explain the accentual pattern of the IQ (41a) are the same as those accounting for the SM-declarative.

In the first context, sentence (41a) illustrates the relative 'focus neutrality' of predicates compared to arguments: as in the declarative sentences in (26) and (27), the verb receives the sentence accent even though its denotatum has been activated in the immediately preceding discourse. The accent on the verb follows from Principle (22ii): in the ratification of the K-presupposed propositional topic 'You visited some cities', the noun *cities*, which has an immediate discourse antecedent, could NOT receive the accent. Notice the difference in appropriateness between the two responses in (52):

- (52) [I heard you visited some cities in France.]  
 a. What cities did you VISIT?  
 b. #What CITIES did you visit?

The appropriate response in (52) is the one in which the noun *cities* remains unaccented. If a nominal referent is construed as a ratified topic the noun must remain unaccented, as per Principle (22ii). Hence (52b) is pragmatically ill formed.

As for example (41b), it differs from (41a) only in that the referent 'cities', though an accessible topic, is not taken to be fully ratified at utterance time. Therefore the noun receives a secondary accent, in addition to the main accent on *visit*. One possible (though somewhat contrived) discourse context in which ratification of the noun denotatum is necessary is that in which 'cities' belongs to a set of potential arguments for a set of potential predicates. Such a context is provided in the representation in (41b'):

- (41)b'. Sentence: *What CITIES did you VISIT?*  
 Context: On my trip to France I visited all kinds of cities and castles but I skipped several places I had originally planned to see.

Presuppositions:

KP: You visited *x* cities (in France)

TP: 'you did something with respect to places (in France)'  
is ratified

Assertion: *x* – what?

Focus: what

In the context chosen for (41b), the argument 'cities' contrasts with other potential places to visit, e.g. castles, and the predicate 'visit' contrasts with its potential negation 'not visit'. Notice that the corresponding declarative sentence involving a SM-determiner would NOT be *You VISITED some CITIES*. In this sentence, the NP *some CITIES* would necessarily be focal, since it constitutes the last accented constituent of the sentence (cf. ex. (29) and discussion). The SM-sentence corresponding to (41b) is therefore the topicalized structure *Some CITIES you VISITED*. We will return to the issue of topicalization below.

Let us now turn to the information structure of (41c). As in (41a), there is more than one possible pragmatic construal, depending on the context:

(41)c'. Sentence: *What CITIES did you visit?*

Contexts:

(i) I heard you went to France.

(ii) I heard you were in France, and you visited some Roman ruins.

Presuppositions:

KP: You visited *x* cities

TP: Context (i): you is ratified topic

Context (ii): 'you visited some place (in France)' is  
ratified

Assertion: *x* = what?

Focus: what

In both construals of (41c), broad and narrow, the NP *cities* receives accent via (22i): a non-established argument must be accented. The subject *you* is unaccented, as in (41a), via Principle (22ii). Now notice that the verb *visit* receives no accent either. This fact is unproblematic under the narrow construal of context (ii). On this construal, the denotatum 'visit' is part of the ratified topic 'you visited some place in France'. Therefore *visit* does not receive a ratification accent.

A problem arises with context (i). In this context, the open proposition 'you visited *x* cities' is cognitively accessible, since going on a trip to a

given location typically involves visiting sites at the location. This cognitive accessibility justifies treatment of the open proposition as K-presupposed. However, unlike context (ii), in context (i) this open proposition is neither active nor (a fortiori) ratified. Therefore, we would expect the verb *visit* to receive accent in the first context. Contrary to our expectations, the verb has no accent. It would seem, therefore, that the accent on *cities* in (41c) is sufficient to signal the speaker's desire to establish the entire propositional topic 'you visited some cities'.

We are faced with the following problem: both in (40b) (*What did AUDREY buy?*) and in (41c) (*What CITIES did you visit?*) an unaccented predicator follows an accented argument. But while (40b) can only receive a narrow interpretation (in which the verbal denotatum is taken to be already ratified), (41c) is compatible both with the narrow interpretation of context (ii) (in which the verbal denotatum is ratified) and the broad interpretation of context (i) (in which the verbal denotatum is not yet part of the ratified topic). The situation parallels the one in the corresponding declarative versions containing indefinite SM-expressions: while *AUDREY bought something* has only AF construal, *You visited some CITIES* has either AF or PF construal.

The case of (40b) is easy enough to explain: (40b) has only the narrow interpretation because the sole sentence accent falls on a subject argument. As we mentioned earlier, subject-accented sentences are the only AF sentences which cannot receive an alternative PF interpretation. Accent on an argument may have the predicate within its scope only if the argument is an internal (nonsubject) argument. (We ignore here the special case of subject-accentedthetic sentences; cf. ex. (28) and footnote 27). This fact is consistent with the general interpretive principle that a verb tends to form a tighter semantic bond with its internal arguments than with its external argument, as in the interpretation of idioms (see Nunberg, Sag and Wasow 1995).

In explaining why (40b) only has a narrow reading we have, however, not explained why (41c) can have a broad reading. While the possibility of lack of accent on the verb *visit* in (41c) is allowed for by Principle (22iii), which provides that verbs with non-ratified denotata may lack accent, we still need to explain how *visit* can be within the pragmatic scope of an argument (*CITIES*) that PRECEDES rather than follows it and that does not form a constituent with it. The explanation is in fact contained in our Principle (22iii), provided that we interpret this principle in purely semantic terms, i.e. independently of the syntactic configuration in which the predicate and its argument appear in a sentence. Such an interpretation is in accord with our theory of information structure. While the principles

of information structure find their formal expression in morphosyntax and in prosody, they do not apply directly at the structural level of the sentence. Rather they apply at the level of what is called the 'pragmatically structured proposition' in Lambrecht (1994). The semantic structures which serve as input to the rules of morphosyntax and phonology are thus propositions which have previously served as input to the rules of information structure.

Given this view of the relationship between information structure and sentence form it is irrelevant whether an argument forms a constituent with its predicate or not, in order for predicate-argument integration via accent projection to be possible. In the case of (41c), it does therefore not matter for the discourse-pragmatic construal of the sentence that the accented argument expression under whose pragmatic scope the predicate falls is not a sister to the verb but occurs instead in WH-position. This view allows us to account in a straightforward way for Selkirk's "classic puzzles" in (9) and (10) above, which constituted recalcitrant exceptions to Selkirk's theory. Items (9) and (10) are repeated here for convenience:

- (9)a. John asked what Helen has WRITTEN.  
 b. John asked what BOOKS Helen has written.
- (10)a. Whose have I TAKEN?  
 b. Whose UMBRELLA have I taken?

Recall that Selkirk's second 'Phrasal Focus Rule', quoted in (7), requires that a predicate and its argument form a constituent in order for projection to be possible. As noted by Selkirk herself, this rule makes it impossible to account for the fact that in the indirect and direct IQs in (9b) and (10b) the predicate-argument pairs can receive broad, i.e. integrated, readings. Within the present theory, this difficulty does not arise.<sup>39</sup>

<sup>39</sup> By the same token, we can account for other unsolved puzzles from the debate triggered by Bresnan's 1971 paper, such as those in (i) and (ii):

- (i)a. We have PLANS to follow. (Bresnan 1971)  
 b. We have plans to FOLLOW. (alternatively: We have PLANS to FOLLOW.)
- (ii)a. Which TURN should we take? (Bresnan 1972)  
 b. Which turn should we TAKE? (alternatively: Which TURN should we TAKE?)

Both in (ia) and (iia), a NP (*plans, turn*) is integrated with a predicate (*follow, take*) which follows it and which does not form a constituent with it. It is worth noting that a non-integrated reading in (ia) is obligatory if the sentence is understood as meaning 'We are planning to follow': since in the latter reading the unaccented VP *to follow* functions not as a predicate but as an argument, it cannot receive focus value from the preceding accented predicate.

In our analysis of sentence (41b), which contains a secondary topic accent on *cities*, we mentioned that the declarative counterpart of this sentence is a TOPICALIZATION structure. This parallel between questioned and topicalized object NPs deserves further analysis. Let us compare the IQs in (41) with the topicalization structures in (53) below; (41) is repeated for easy comparison. For the purpose of the argument, (41a) is shown with a secondary accent on *WHAT*, a possibility we mentioned in the analysis of (41a')

- (41)a. *WHAT* cities did you VISIT?  
 b. What *CITIES* did you VISIT?  
 c. What *CITIES* did you visit?
- (53)a. *THOSE* cities you VISITED.  
 b. Those *CITIES* you VISITED.  
 c. #Those *CITIES* you visited.

The prosodic and information-structural similarity between (41a–b) and (53a–b) is striking. In both cases, an accented object argument in WH or COMP position is paired with an accented predicate which appears later in the sentence. And in both cases, there is no possible predicate-argument integration. Instead, the relationship between the argument and its predicate is that of a topic to its comment. Both pairs of examples illustrate the Topic-Comment Principle (22iv), which states that predicate-argument integration is cancelled if the predicate constituent is accented. Since the accent on the verb is the last one in the sentence, its presence is criterial. Removing it would alter the focus structure of the sentence. In the case of (41), lack of an accent on the verb would signal integration, as in (41c). In the case of (53), the result would be necessary argument-focus construal of the sentence.<sup>40</sup>

In the topicalization construction in (53), the existence of a topic-comment relation between the object argument and the verb is well known. Less obvious is the existence of such a relation in the case of the IQs in (41). To understand the information structure of (41a–b) it is useful to remember the discussion in Section 3 concerning focus-construal in non-assertoric contexts. In (41a–b), as in all IQs, the WH-element constitutes

<sup>40</sup> The fact that, unlike (41c), (53c) has no possible integration reading (it necessarily receives the AF construal of a Focus-Movement sentence, of item (33)), is predicted by our theory. For the leftward NP to be construed as a topic, a subsequent focus accent on the predicate is required to mark the comment portion of the sentence (the denotatum of the 'gapped' VP *visited*). Moreover, there is no functional motivation for an integration reading of (53c) because such a reading is available in the canonical SVO version of the sentence (*You visited those CITIES*).

the focus portion of the sentence. It is the presence of this element that makes the proposition expressed by the sentence into a pragmatic assertion, namely the assertion of the speaker's desire to know the identity of the referent questioned via the WH-word (cf. Section 4). The sentence minus the WH-expression, i.e. the OS, contains the presupposition (the K-presupposed open proposition). This presupposition is in turn pragmatically articulated, not into a presupposed and an asserted portion, but into a ratified and a non-ratified presupposed portion. By its external information structure, the OS constitutes the presupposition which contrasts with the pragmatic assertion; by its internal information structure it constitutes a topic-comment structure. Just as the declarative sentences in (53a–b) are divided into a topic portion (*some cities*) and a comment portion (*you visited*), the open sentences in the IQs in (41a–b) are divided into a topic portion (*cities*) and a comment portion (*did you visit*). The difference is that in the first case the comment is asserted, while in the second case it is itself presupposed.

With this analysis in mind, we would like to propose an analysis for another well-known focus puzzle, the notorious pair of IQs in (54), which was first used by Ladd (1978, 82f) in his discussion of the notion of default accent:

- (54) [So you're a linguist?]  
 a. How many languages do you SPEAK?  
 b. How many LANGUAGES do you speak?

(Alternative prosodic instantiations of (54a), involving secondary accents, are *How many LANGUAGES do you SPEAK?* and *How MANY languages do you speak?* We will ignore these versions here. We will also ignore the possible narrow readings of both sentences.) Syntactically and prosodically, (54a) and (54b) are exactly parallel to (41a) (*What cities did you VISIT?*) and (41c) (*What CITIES did you visit?*). The information structure of (54a) is represented in (54a'):

- (54)a'. Sentence: *How many languages do you SPEAK?*  
 Context: I hear you are a linguist?  
 Presuppositions:  
 KP: 'You speak x many languages'.  
 TP: 'you' and 'languages' are ratified topics  
 Assertion: x many = how many?  
 Focus: how many

In (54a), the K-presupposed predicate-argument pair 'speak languages' is marked as non-integrated via the presence of an accent on the verb. As

a result, the predicate is construed as a comment with respect to two ratified topics, 'you' and 'languages'. (54a) could be paraphrased roughly as follows: '(As a linguist) you deal with languages, and I want to know how many you speak'.<sup>41</sup> The information structure of (54b) is given in (54b'):

- (54b'). Sentence: *How many LANGUAGES do you speak?*  
 Context: I hear you are a linguist?  
 Presuppositions:  
 KP: You speak x many languages  
 TP: 'you' is ratified topic  
 Assertion: x many = how many?  
 Focus: how many

In (54b), the same K-presupposed predicate-argument pair 'speak languages' is marked as integrated via lack of accent on the verb, and this integrated pair serves as a comment for the ratified topic 'you'. A rough paraphrase of (54b) would be: '(As a linguist) you speak different languages, and I want to know how many'.

We have said that the verb in IQs like (41c) or (54b) may remain unaccented because its denotatum is integrated with that of a preceding accented NP representing an internal argument. This is not to say, however, that all verbs MUST remain unaccented in this situation. It is difficult to circumscribe the set of contexts in which the verb of an OS that represents a non-ratified propositional topic may be integrated with its argument. We suggest that the verb can lack accent only if the semantic association between it and its arguments denotes a conventional scene. Notice the examples in (55):

- (55) [Speaker produces two shirts for addresssee to examine.]  
 a. Which SHIRT do you like?  
 b. Which SHIRT do you HATE?  
 c. #Which SHIRT do you hate?

In (55a), the verb of the OS (*like*) is unaccented as a consequence of the fact that the proposition 'you like one of the shirts' is a reasonable assumption. In (55b), accentuation of the verb *hate* reflects the fact that the proposition 'you hate one of the shirts' cannot be readily assumed in the same context. Since this latter proposition is not easily assumed, the verb

<sup>41</sup> In Lambrecht (1994, Ch. 4) it is argued that in sentences with more than one topic, the comment is not construed with respect to each separate topic but with respect to the presupposed relationship between these topics.



and the object do not enter the kind of conceptual unity which is required for integration to occur. Sentence (55c) is therefore unacceptable in the broad reading.<sup>42</sup>

We now turn to our third set of examples, repeated here for convenience:

- (42)a. Who ate my COOKIES?  
 b. Who ATE them?  
 c. WHO ate them?

This set is different from the first two in that the WH-word is here the SUBJECT. This entails that there is no overt syntactic difference between the declarative and the interrogative versions of these sentences. As a consequence, we do not need to make reference to the open-sentence concept in describing the operation of the relevant accent rules. In cases where a complete predicate phrase receives an accent, the principles determining accent placement will apply to the same syntactic string found in corresponding declarative sentences.

Item (42a') represents the information structure of (42a). Again, we mention two readings, one broad, one narrow:

- (42)a'. Sentence: *Who ate my COOKIES?* (= (42a))  
 Contexts:  
 (i) The jar is empty!  
 (ii) I know someone ate my chocolate.

<sup>42</sup> The existence of semantic constraints on predicate-argument integration is demonstrated also by the following German contrasts, involving *verb-final* sentences:

- (i) Er ist auf die STRASSE gestürzt. (PF or AF)  
*he is on the.FEM.ACC street rushed*  
 He rushed into the street.
- (ii) Er ist auf der STRASSE gestürzt. (AF only)  
*he is on the.FEM.DAT street fell*  
 He fell in the street. / It is in the street that he fell.
- (iii) Er ist auf der STRASSE GESTÜRZT. (PF only)  
 He fell in the street.

While (i) has the unmarked PF articulation, allowing for alternative AF construal, (ii) only has an AF reading. For PF construal of this sentence, a second accent is required on the verb, as shown in (iii). Similar facts are discussed for Dutch in Hoekstra and Mulder (1990). As these authors observe, the contrast between (i) and (ii) involves the argument-adjunct distinction. This distinction is considered criterial also by Selkirk (1984). However, Jacobs (1992) quotes German examples which show that integration is sometimes possible with adjuncts and sometimes impossible with arguments (as in the case of (55b) above). Analysis of the various semantic factors involved is beyond the scope of the present study.

Presuppositions:

KP: x ate my cookies

TP: Context (i): ----

Context (ii): 'Someone ate something of mine' is ratified

Assertion: x = who?

Focus: who

In (42a) the topic accent falls on the noun *COOKIES* via the basic accentuation principle (22i). The noun must receive the accent since Principle (22ii) is not applicable: 'cookies' is not a ratified topic. The verb *ate* remains unaccented in accordance with Principle (22iii), since 'cookie-eating' is the kind of denotatum that readily permits integration. In Context (i), triggering broad construal, the entire KP 'x ate my cookies' needs to be established as the topic of the question. There is no TP in the sentence (except for the ratified-topic status of the possessor 'my', which we have ignored throughout this paper). In context (ii), involving narrow construal, the verb is unaccented because its denotatum is part of the ratified proposition 'someone ate something of mine'.

(42b') contains the information structure of (42b). As in the case of (42a), we mention a broad and a narrow reading:

(42)b'. Sentence: *Who ATE them?*

Contexts:

(i) My *COOKIES* are gone!

(ii) I don't care who *MADE* my cookies.

Presuppositions:

KP: x ate my cookies

TP: Context (i): referent of *them* ('my cookies') is ratified

Context (ii): 'x did something with respect to my cookies' is ratified

Assertion: x = who?

Focus: who

In both the broad and narrow construal of (42b), the accent falls on *ate* by default, in accordance with Principle (22ii): the pronoun *them*, referring to the ratified topic 'cookies', cannot receive accent. The corresponding declarative SM-sentence, *Someone ATE them*, also illustrates the operation of (22ii). In the broad construal (i), only the referent of the pronoun *them* is ratified. In the narrow construal (ii), both this referent and some activity involving it is ratified. In this reading, the denotatum 'ate' is construed as contrasting with the denotatum 'made' in the context sentence.

Finally, (42c) illustrates a marked prosodic pattern which merited considerable discussion in Section 1.3: that pattern in which the sentence accent falls on the WH-word itself. The explanation for this pattern follows naturally from our analysis: the WH-word receives the sentence accent just in case at utterance time the entire knowledge presupposition is a ratified topic, i.e., just in case the KP and the TP are identical.

This pattern is appropriate in a number of conversational contexts. One natural context for (42c) is the echo context mentioned in Section 1.3 (example (11) and discussion), (56) illustrates such a context:

- (56) A: My brother ate them.  
B: WHO ate them?

Unlike the examples analyzed so far, the point of the utterance in (56) is not to ratify the propositional topic expressed in the KP ('x ate them'). At the time the question is uttered, the KP is already taken for granted as a topic, i.e. KP and TP coincide. Therefore no topic-ratification accent is required. As we observed in Section 1.3, the intent of an echo question like (56) is to induce the hearer to clarify an utterance by repeating part or all of it. The information structure of (56) is analyzed in (56'):

- (56') Sentence: *WHO ate them?*  
Context: B has not heard the argument of whom 'ate them' is predicated.  
Presuppositions:  
KP: x ate them  
TP: KP 'x ate them' is ratified  
Assertion: x = who?  
Focus: WHO

In (56), the accent falls by default on the only element in the sentence which is not contained in the TP, namely the focus expression *WHO*.

A different pragmatic motivation for accenting the WH-expression in an IQ is illustrated in (57), a variant of (40a) in context (iii):

- (57) A: I went to the mall and bought something.  
B: I KNOW you bought something. WHAT did you buy?

The crucial difference between (57B) and (40a) (*What did you BUY?*) lies in the fact that in (57) speaker B has already established the propositional topic 'You bought something' in her preceding utterance ('I know you bought something'). This propositional topic now counts as ratified at the time the question is asked; therefore, the constituent expressing it must remain unaccented, in accordance with Principle (22ii). As a result, only

the (focal) WH-word can receive the accent. The information structure of the relevant sentence in (57B) is represented in (57'):

- (57') Sentence: WHAT did you buy?  
 Context: I KNOW you bought something.  
 Presuppositions:  
 KP: You bought x  
 TP:KP 'You bought x' is ratified  
 Assertion: x = what?  
 Focus: what

In (57), the reason for accenting the WH-word is not metalinguistic, as it was in (56). The point of B's question in (57) is not to request clarification for some inaudible or otherwise unclear portion of the previous utterance. Rather the point is to request the identity of the referent of a pronominal expression (*something*).

A similar pragmatic motivation as in (57) is at work in example (14), which we quoted at the beginning of our paper. Example (14) is repeated here for convenience:

- (14) "I just want . . . I want to spend time with you . . . I want – to take care of you". He laughed. "You think I need taking care of?" "I mean it", she said earnestly. "What do you mean?" "I mean I can care for you".  
 Philip Roth, *Sabbath's Theater*, p. 213 [emphasis in original]

As in example (57), the point of the IQ (*WHAT do you mean?*) is for the addressee to clarify the referent of a pronominal expression used in the previous utterance (*it*).

Thus, the denotatum of a WH-expression can hardly be said to be 'more focal' or to convey 'newer information' when the question word is accented than when it is not accented, contrary to what is claimed or implied by Culicover and Rochement (1983) or Selkirk (1984). The reason for the presence of a sentence accent on a WH-word is fundamentally the same as in declarative sentences in which the focus accent has "moved leftward" via Principle (22ii): the accent falls where it does not because the denotatum of the accented constituent is pragmatically more important – or because, in ESSs terms, it is dominant – but because the accent has no other place to go, given the pragmatically unaccentable nature of the

element or elements following it. The accent falls on the WH-word not by a principle of iconicity but by default.<sup>43</sup>

Again, there is a striking functional parallel between WH-words and SM-words. A SM-word will, like a WH-word, receive accent only by default, as in the attested example in (58a) or in the made-up dialog in (58b):

- (58)a. Cafeteria cashier: Are you waiting for a TRAY?  
 Customer: No, I'm waiting for SOMEONE.
- b. A: No one ever gets tenure at Yale.  
 B: Well, they must give tenure to SOMEONE.

In the response in (58a), the propositional function 'I'm waiting for x' is K-presupposed. In (58b) the K-presupposition is 'they give tenure to x'. What motivates the accent on the SM-word in both cases is that the given KP constitutes a ratified topic at utterance time, having been established in the immediately preceding utterance. Since the accent cannot fall within the portion of the sentence representing the KP, it falls on the SM-word by default.

As argued in Lambrecht 1994 (p. 291ff.), the impression of CONTRASTIVENESS we receive from sentences containing accented WH-constituents or other accented pronominal expressions arises not through a rule or principle of grammar but through a GENERALIZED CONVERSATIONAL IMPLICATURE (cf. Horn 1981): since the referent of a pronominal constituent is construed as active by definition, and since active referents strongly tend to function as ratified topics, hence to remain unaccented, an accent on a pronominal constituent is naturally interpreted as a special signal, warning an addressee that the referent is selected over some potential or expected alternative in the universe of discourse – hence the impression of contrastiveness. We hold that categories like 'contrastive focus' or 'contrastive topic', though descriptively useful, are not categories of grammar (Lakoff (1971) makes a similar point).

As we have seen, there are a number of discourse motivations for using the marked prosodic pattern in which the WH-word of an IQ receives accent. These distinct motivations have distinct INTONATIONAL correlates: as mentioned, an echo question like (56) has a rising sentence-final intonation contour, while in a corrective question like (57) the sentence-final intonation contour is falling. However, we claim that all sentences with accented WH-expressions have one essential pragmatic feature in com-

<sup>43</sup> For discussions of the mechanism of default accentuation see Ladd (1978), (1996), Fuchs (1984), Hirschberg (1990), and Dirksen (1992).

mon: the accent falls on the WH-expression because at the time of utterance the propositional function in the KP is an already ratified topic.

There is another type of context in which the OS represents a ratified topic, but in which the sole sentence accent falls on an auxiliary rather than on the WH-word. An attested example is given in the last line of (59):

- (59) A: I don't think he made the offer with the intention of following through.  
 B: No.  
 A: So why DID he make the offer?

We propose that the accent pattern in this IQ is licensed by the pragmatically specialized prosodic construction illustrated in the polemic assertion in (60B):

- (60) A: You don't like children.  
 B: I DO like children!

As argued in Lambrecht 1994 (Chapter 2), accent is placed on the main auxiliary (here *do*) just in case a negative version of the proposition has been uttered or implied in the preceding context. This contextual-negation requirement is an inherent pragmatic feature of this prosodic construction. Thus the sentence *I DO like children!* in (60B) C-presupposes that the proposition 'speaker doesn't like children' has been activated in the discourse context. The sentence asserts then that this C-presupposed proposition is not true.<sup>44</sup>

In the particular case of the IQ in (59), the negation presupposition of the accented-auxiliary construction is combined with the presuppositions inherent in the WH-question. In the context sentence of (59), the negation has narrow scope, i.e. it extends only over the adjunct denoting cause (with the intention of following through). It is this negated causal adjunct that prompts the WH-focus of the IQ. A representation of the information structure of A's question in (59) is given in (59')

- (59') Sentence: Why DID he make the offer?  
 Context: His reason for making the offer was not intention to fulfill it.  
 Presuppositions:  
 KP: He made the offer for x reason

<sup>44</sup> For discussion of the prosodic type in (59) see also Bolinger (1971, 46ff.), Jackendoff (1972) and Fuchs (1984). Bolinger refers to the accent on DID in (59) as 'rectification accent'.

CP: 'He didn't make the offer for y reason' is active  
 TP: KP 'He made the offer for x reason' is ratified  
 Assertion: x reason = what reason?  
 Focus: why

As the representation in (59') shows, the proposition 'He made the offer for some reason' is a ratified topic at the time of the utterance of the IO in (59). Given the ratified status of this proposition, we might expect accent to fall on the WH-word. However, the sentence accent falls on the auxiliary. We propose that the specialized prosodic structure characteristic of polemic assertions, which requires accent on the main auxiliary, takes precedence over the more general Principle (22ii), which has the effect of placing the accent on the WH-word.

## 5. CONCLUSION

We have proposed an analysis in which the prosodic structure of IQs is accounted for with the same mechanism used to describe the placement of sentence accent in declarative sentences. This analysis resolves the conceptual problem of IQ accentuation, as posed by Ladd (1996) in the introduction. While IQs contain a focus, the focused word belongs to a semantico-pragmatic class of expressions, also containing SM-words, which does not fit the general accentuation principle in (22ii) and which, under ordinary pragmatic circumstances, are therefore unaccented. Thus, IQs do not contain a focus accent; instead, we have argued, the sentence accent of an IQ represents an independently motivated type: the topic-establishing or -ratifying accents observed in declarative contexts to co-occur with focus accent. By reference to Lambrecht's (1994) distinction between knowledge- and topicality-presuppositions, we motivated an analysis in which the open proposition presupposed by an IQ may or may not represent an established topic.

The principles in (22) derive their generality from the fact that they do not pertain to focus marking *per se*, but instead to a more general function of sentence accents, described in (22i). The remaining principles concern accentual default and projection. Principle (22ii) prevents an accent from falling where it otherwise would, resulting in default accent placement. Thus, IOs containing an accented WH-word do not reflect the 'dominant' status of the WH-word, but only the unaccentable status of an OS which represents a ratified propositional topic, as per Principle (22ii). Principle (22iii) captures the projection mechanism whereby sentence accent, falling on a given argument, may function to mark the information status of a

larger syntactic predicate-argument domain. As we have emphasized, this principle of accent projection does not make reference to linear order, and is therefore suited to account for the projection interpretation associated with IQ examples like (41c), which involve a WH-constituent whose accented nominal head bears the sole sentence accent. Principle (22iv) underlies those cases in which verb and argument are not integrated as an information unit; this principle not only accounts for the interpretive effect of a second accent in an IQ like (41b) and in topicalization, but also provides a coherent account of the accentual contrast pairs which have been much debated in the literature since Bresnan (1971).

The account that we have provided here is of the type referred to by Croft (1995) as a mixed formal-functional analysis. The position of the sentence accent in IOs and other sentences is determined neither exclusively by iconic principles nor exclusively by formal rule. Rather, the position of the sentence accent is determined by the application of interacting formal principles which incorporate categories of information structure.

#### APPENDIX: ADJUNCTS AND THETIC CONSTRUAL OF IQS

In the discussion of the accented adverbial clauses in example (30) we observed that a K-presupposed proposition replicates the focus structure of a corresponding pragmatically asserted sentence. For example, it makes sense to assume that a thetic proposition such as (21c) (*Your SHOES's untied*) gets stored in the memory of the speaker/hearer not only as a proposition but as a pragmatically structured proposition, i.e. as a representation of a surprising event. After all, what makes the denotatum of the proposition memorable is precisely its event character. When this by-now known event gets recalled, it is recalled as an event, and the presupposed proposition denoting it carries this event character with it.

As we demonstrated with respect to example (50) (*WHAT's untied?*), thetic construal is not possible in IQs where the subject argument is a WH-word. The argument-focus function of the question word clashes with the sentence-focus structure of the thetic proposition. However, in the case of WH-constructions in which the WH-word has an ADJUNCT rather than argument function, thetic construal of the proposition is sometimes possible. For example, the declarative thetic sentence in (21c) can appear in the form of an IQ, as in (i):

- (i) Why's your SHOE untied?

The corresponding declarative version of (i) containing a SM-determiner is *Your SHOE's untied for some reason*, which also permits thetic construal. The information structure of (i) is represented in (i'):

- (i') Sentence: *Why's your SHOE untied?*  
 Context: speaker looks at addressee's feet  
 Presuppositions:  
 1. KP: your shoe is untied for x reason  
 2. CP: ----  
 3. TP: ---- (proposition is thetic)  
 Assertion: x = why?  
 Focus: why



In (i), *SHOE* receives the unique sentence accent because inthetic propositions the subject and the verb are integrated. If the VP in (i) were accented, i.e. if the sentence were as in (ii)

(ii) Why's your *SHOE* UNTIED?

we would necessarily interpret the open proposition as having topic-comment articulation, via Principle (22iv), with the subject NP being construed as a topic and the VP as a comment about this topic ('Speaking of your shoe, why is it untied?'). The question would not be about an event but about an entity. In this case, the corresponding declarative with an indefinite SM-determiner would be the PF sentence *YOUR SHOE'S UNTIED for some reason*.

In (iii), we see further examples of IQs whose K-presupposed propositions can receive athetic interpretation.

- (iii)a. When did the *ICE* melt?  
 b. How did the *MONEY* disappear?  
 c. Where did the *CAR* break down?

However, when *where* is a locative or directional argument of the predicate, nothetic construal is possible, as predicted:

- (iv)a. *JOHN* lives here. (thetic construal possible)  
 b. Where does *JOHN* live? (thetic construal impossible)

The impossibility of thethetic construal in (ivb) follows from the fact that the corresponding declarative without the WH-word (*John lives*) is ill-formed (in the intended meaning *where live* means 'dwell' rather than 'be alive'). The locative *here* in (iv-a) is an obligatory topical argument of the predicate. If this topical argument is converted to interrogative *where*, it necessarily takes on the function of an argument focus, leading to a clash between two focus articulations.

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