

DISCOURSE CONSTRAINTS ON EXTRAPOSITION FROM DEFINITE NP SUBJECTS IN ENGLISH

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Abstract

This paper examines English restrictive relative clauses that are extraposed from definite NP subjects, and their relationship to the discourse context in which they may be uttered. In contrast to previous work on this topic (Huck & Na, 1990, 1992), I demonstrate that extraposed relative clauses need not contain information that is given with respect to discourse context. Rather, extraposed clauses may contain either discourse-given information or discourse-new information. What is critical for extraposition of relative clauses from definite NP subjects is how informative the relative clauses are with respect to the Question Under Discussion as defined by Roberts (1996). In that sense, these extraposed relatives must provide new information with respect to a localized portion of the discourse content, and not with respect to the discourse as a whole. Thus, the acceptability of this particular structure depends not on a syntactic configuration but on local information structure in a discourse.

1. Introduction.

The term *extraposition* refers to a range of syntactic structures, including *it*-extraposition, (of sentential subjects or infinitival clauses), and extraposition from NP subjects or objects, usually of prepositional phrases or relative clauses. The main characteristic of extraposition is that in a sentence, a constituent appears to the right of its canonical (or noncanonical alternative) location. In the following example pairs, the constituent given in italics is subject to extraposition. The first of each pair shows a sentence in its unextraposed form, the second in its extraposed form.

- (1) a. *That he admitted to killing terrorists* really surprised me.
b. It surprised me *that he admitted to killing terrorists*.
- (2) a. *To curb government spending* would be a good idea.
b. It would be a good idea *to curb government spending*.
- (3) a. A law *that would require factories to reduce their emission of air pollutants by 70% over the next 3 years* was enacted during the previous administration.
b. A law was enacted during the previous administration *that would require factories to reduce their emission of air pollutants by 70% over the next 3 years*.
- (4) a. A clown *in pink overalls* wandered into the dining hall.
b. A clown wandered into the dining hall *in pink overalls*.
- (5) a. The countess greeted any man *who had a fortune* courteously.
b. The countess greeted any man courteously *who had a fortune*.
- (6) a. Carson showed a book *with a tattered cover* to the audience.
b. Carson showed a book to the audience *with a tattered cover*.

Example (1) shows “it” extraposition, in which a sentential subject is located at the right edge of the sentence and the subject position is filled with the empty *it*. (2) is similar to (1) except that the extraposed constituent is an infinitival clause. (3) and (4) show extraposition of a relative clause and of a PP, respectively, from NP subjects. (5) and (6) show extraposition of a relative clause and a PP from NP objects.

This paper focuses on extraposition of relative clauses¹ from definite NP subjects, structures that have generally been viewed as either ungrammatical or unacceptable

¹ Extraposition of PPs from definite NP subjects is similarly problematic. Compare

- (i) The cocktail waitress from Miami entered the dining room.
- (ii) ?? The cocktail waitress entered the dining room from Miami.
- (iii) The cocktail waitress in a red dress spilled a drink.
- (iv) ?? The cocktail waitress spilled a drink in a red dress.

(Guéron, 1980; Guéron & May, 1984; Wittenberg, 1987; Culicover & Rochemont, 1990; Huck and Na, 1990, 1992). Compare (7b) with (8b).

- (7) a. A cocktail waitress *who was wearing a blond wig* entered the dining room.
 b. A cocktail waitress entered the dining room *who was wearing a blond wig*.
- (8) a. The cocktail waitress *who was wearing a blond wig* entered the dining room.
 ?? b. The cocktail waitress entered the dining room *who was wearing a blond wig*.

The structures in (7b) and (8b) appear to be similar. Previous work on the syntax of these structures has focused on ruling out sentences such as (8b) by placing constraints on the structural configurations of extraposition at logical form (Guéron, 1980, Guéron & May, 1984, Baltin, 1981, 1983, 1984). Another study (Wittenberg, 1987) accounts for the difficulty in interpretation of sentences such as (8b) semantically using rules of interpretation in a discourse representation theory. Others (Huck & Na, 1990, 1992) have attempted to account for the acceptability of extraposition from definite NPs in terms of the discourse structure in which they may be felicitously uttered. Similar to the last of these studies, the present one is also an examination of the structure of discourse in which sentences with extraposed relatives may be felicitously uttered. In trying to explain the acceptability of extraposition of relative clauses from definite NPs, Huck & Na (1990) claim that the information contained in extraposed relatives must be given with respect to the discourse, in order to match the given status of the definite NP subject that the relative clause modifies. In contrast, I argue that information in an extraposed relative clause may be either given with respect to the discourse or the hearer, or it may be hearer-new and therefore also discourse-new (Prince, 1981), as long as it is the answer to the question under discussion (Roberts, 1996).

The rest of the paper is organized as follows. Section 2 sketches one syntactic account of extraposition that incorporates the definiteness restriction demonstrated above with example (8b). Section 3 covers the pragmatic account of extraposition proposed by Huck and Na (1990). In Section 4, an alternative pragmatic account of the definiteness

(ii) is only acceptable on the reading that the cocktail waitress traveled straight from Miami into the dining room, which is not equivalent to the unextraposed counterpart in (i). (iv) is acceptable only if interpreted such that the waitress spilled the drink into a red dress, whether it was worn by someone or not (or, less plausibly, such that the drink was hiding or otherwise contained inside a red dress when she spilled it). This reading is not equivalent to (i), in which the cocktail waitress is actually wearing a red dress.

Constructing appropriate examples of extraposition from NP of prepositional phrases is trickier than examples with extraposed relative clauses, because the PP can sometimes be construed with the verb phrase.

- (v) The cocktail waitress in a red dress entered the room.
 (vi) The cocktail waitress entered the room in a red dress.

(vi) could be the answer to the question “How did she enter?”

restriction is provided, using five separate discourse examples. Section 5 provides a summary and discussion.

2. A syntactic account of extraposition of relative clauses from definite NPs.

As an example, the structural account of extraposition given in Guéron & May, 1984, (henceforth GM) will be illustrated in this section.²

GM propose a syntactic account in which extraposition is permitted from indefinite NPs, but not from definite NPs. They consider relative clauses to be complements of the definite NP heads from which they have been extraposed, as defined by the head-complement relation given in (9) (GM p.4, example (11)).

- (9) In a sequence of categories $\alpha_i, \beta_i^1, \dots, \beta_i^n$ in a structure Σ , $\beta_i^1, \dots, \beta_i^n$ are complements to α_i only if α_i governs $\beta_i^1, \dots, \beta_i^n$.

A complement to a head is thus defined as being a constituent that is governed by that head. The head-complement relation must apply at LF, in order to account for the fact that the NP and the extraposed relative that modifies it are construed together. An additional rule defines government (10) (GM, p.4 example (12)).

- (10) α governs $\beta =_{df}$ α, β are dominated by all the same maximal projections, and there are no maximal projection boundaries between α and β .

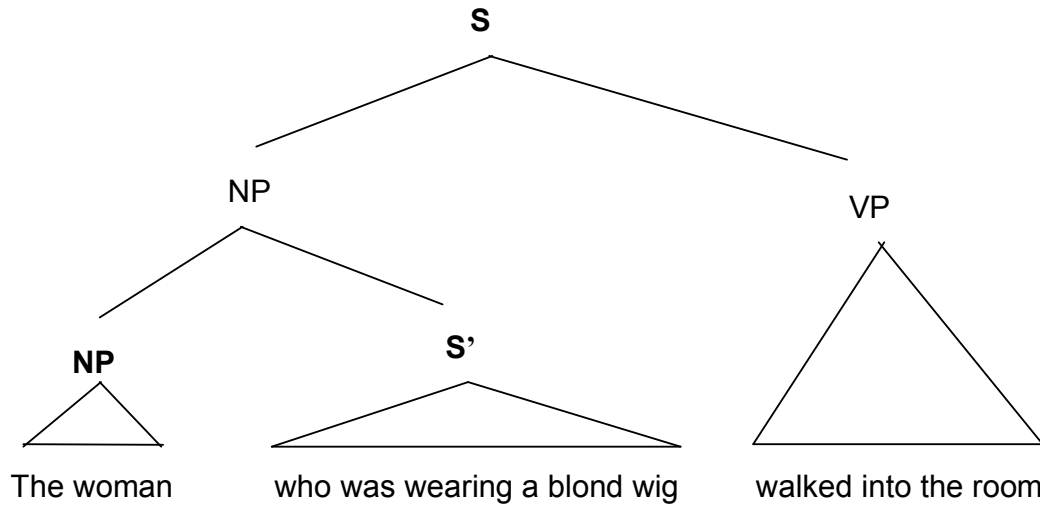
Taken together, the net result is that complements to NPs (i.e. extraposed relatives) must be dominated by all maximal projections (S-nodes) that dominate the NPs themselves. This of course must apply to unextraposed relatives as well. Consider the sentences in (11).

- (11) a. The woman who was wearing a blond wig walked into the room.
 ?? b. The woman walked into the room who was wearing a blond wig.
 c. A woman walked into the room who was wearing a blond wig.

In (11a), illustrated in Figure 1, all maximal projections dominating the NP *the woman* (in this case the **S**) also dominate the relative clause, which is the complement to the NP, in keeping with GM's head complement relation.

Figure 1. Structure of sentence (11a).

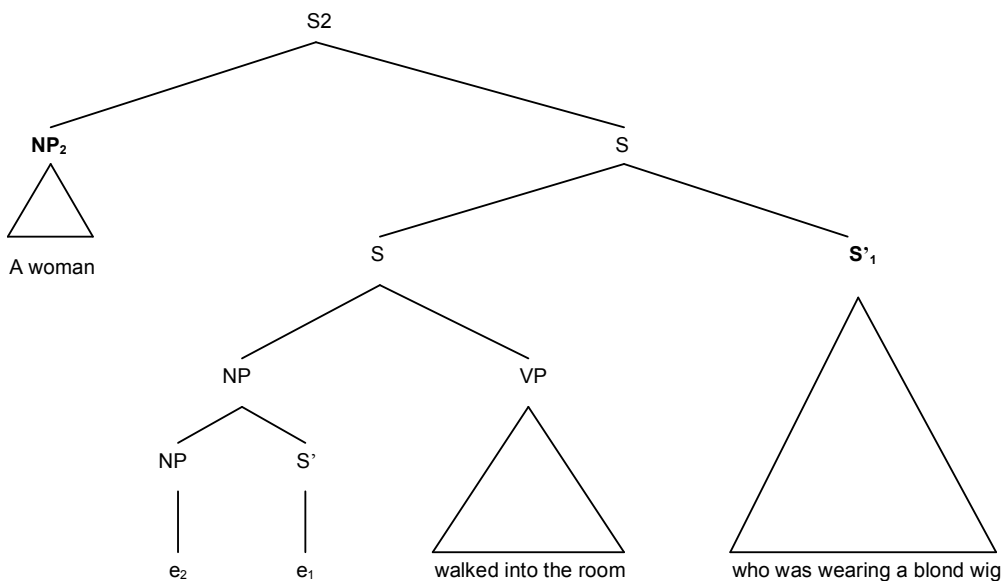
² There are other syntactic accounts of extraposition that will not be discussed here (for a brief review of some, see Wittenberg, 1987). Guéron, 1980 provides a syntactic and semantic account within the Extended Standard Theory, which is the starting point for her 1984 analysis with May described in Section 2 above. Baltin (1981, 1983, 1984) has an alternative structural account, formulating "generalized subjacency." Culicover and Rochemont (1990) develop a structural account, which does not involve movement and in which the structural configuration to be met applies at surface structure, in contrast to Guéron (1980) and Guéron and May (1984), whose analysis involves movement and whose constraints apply at logical form. However, Culicover and Rochemont do not address the definiteness restriction. For a semantic account within the framework of discourse representation theory, see Wittenberg (1987).

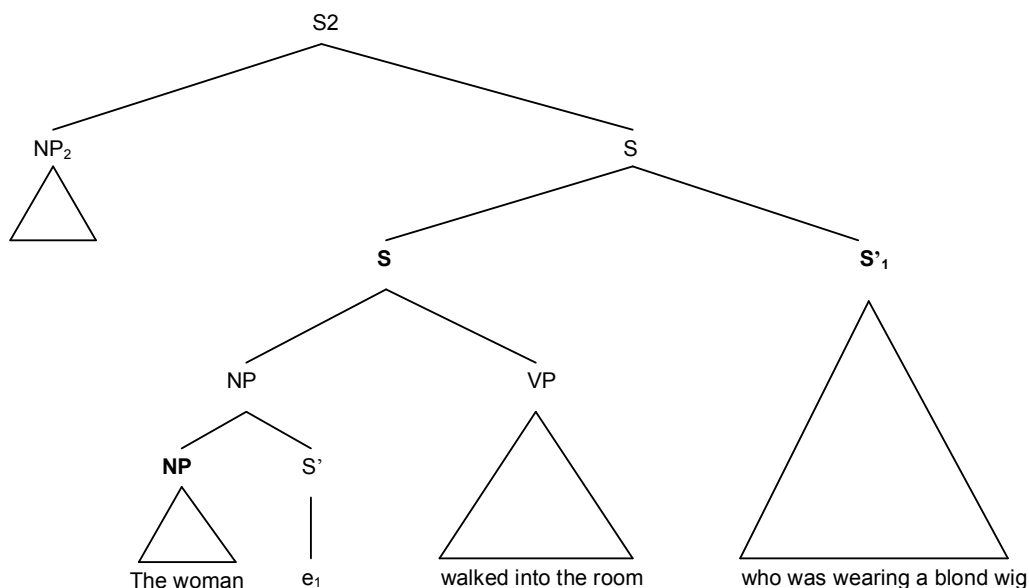


GM account for the difference between (11b) and (11c) by proposing a movement rule at LF which moves quantified NPs, but not deictic or definite NPs, leftward to a position adjoined to S. The movement rule will apply in (11c), such that the new S node created by the adjunction (S2, see Figure 2a) dominates both the NP and the relative clause that modifies it. In (11b), the rule will not apply, leaving the definite NP in situ (Figure 2b).

Assuming that the extraposed constituent adjoins to S, the extraposed constituent will no longer be dominated by the original S node, which dominates the definite NP subject.

Figure 2.
(a) Sentence (11c)



(b) Sentence (11b).

There are problems with GM's account. For example, using standard constituency tests, Culicover and Rochemont (1990) provide evidence showing that an extraposed phrase may be adjoined to VP and not to S. If they are right, GM's quantifier raising rule will not rule out sentences like (11b).

Reinhart's (1983, p. 150 ff.) analysis of sloppy identity suggests that definite NPs should also be subject to quantifier raising, in order to account for sentences such as (12).

- (12) The exchange student enjoys her classes and so does the woman from IBM.

There are three possible interpretations of this sentence. In one interpretation, the referent of *her* is neither the *exchange student* nor the *woman from IBM*, in which case both the exchange student and the woman from IBM enjoy someone else's classes. In a second interpretation, the woman from IBM enjoys the exchange student's classes. In a third, the sloppy identity reading, the exchange student enjoys her classes and the woman from IBM enjoys not the exchange student's classes, but her own classes, which are not the same as the exchange student's. Expressing this interpretation at LF requires expressing the predication as a lambda abstraction (13) whose arguments are the definite NPs, as shown in (14) (to match the surface structure Reinhart places the arguments before the lambda abstraction instead of after them).

- (13) $\lambda x (x \text{ enjoys } x' \text{'s classes})$

- (14) The exchange student ($\lambda x (x \text{ enjoys } x' \text{'s classes})$) and the woman from IBM ($\lambda x (x \text{ enjoys } x' \text{'s classes})$)

If definite NPs must be allowed to undergo quantifier raising, GM's quantifier raising rule will no longer account for the difference between extraposition from definite NPs and extraposition from indefinite NPs, in a sentence such as (15).

(15) ?? The woman hates her neighbors who lives across the street and so does the lady who lives on the corner.

Culicover and Rochemont (1990) argue against GM's quantifier raising rule in part by pointing out the following example (16) (Culicover & Rochemont, 1990, p. 36, fn. 28). GM's quantifier raising rule would not apply to the deictic *that*, and thus (16) would be wrongly ruled out by their account.

(16) That man just came into the room that I was telling you about.

An observation made in both Guéron & May (1984) and Culicover & Rochemont (1990) is that the acceptability of at least some of these structures seems to rely upon their interpretability with respect to the discourse context. Additionally, Culicover and Rochemont (1990, p. 30) point out that some examples involving extraposition require a certain stress pattern, making clear that they mean not lexical stress but a broader sentence level stress, whose exact pattern is a function of discourse context. Both observations suggest that specific characteristics of the discourse structure in which these sentences are felicitous warrant further examination.

Two studies (Huck and Na, 1990; Miller, 2001) consider extraposition specifically with respect to discourse structure. Miller (2001) analyzes *it*-extraposition, of sentential subjects and infinitival clauses, such as shown in previous examples (1) and (2). In most of his examples (all from corpora), extraposition is optional from a syntactic point of view, since the sentences have the same meaning in either structural configuration. His main finding is that if the content of the potentially extraposed phrase reiterates material in previous discourse context, it is not extraposed, but remains in its initial location (nearer the beginning of the sentence), whereas if the information contained in the extraposed phrase is going to be elaborated on in subsequent discourse, it is extraposed. He views this as a way to keep the discourse coherent, flowing from information already stated to information that is newer.

Huck and Na (1990, 1992) examine the context of sentences with extraposed relative clauses from NP subjects. Because the present study builds on the observations made by Huck and Na (1990), their account is discussed in some detail in Section 3.

3. A pragmatic account of extraposition of relative clauses.

Rochemont, (1986, Ch.4) claims that definite NPs from which relative clauses have been extraposed appear to require a stringent set of discourse conditions. He assumes that the structures themselves are well-formed, but whether or not they can be interpreted depends on finding the appropriate context for them, though he does not discuss what the possible contexts might be. Huck and Na (1990) attempt to do just that: determine the right context for sentences with extraposed phrases. Section 3.1 reviews the pragmatic account of extraposition proposed by Huck and Na, (1990), and the theory

they adopt is outlined in Section 3.2. In Section 3.3, some problems with Huck and Na's (1990) analysis are described.

3.1. Huck and Na's (1990) claim regarding the definiteness restriction.

Like Rochemont (1986), Huck and Na (1990) (henceforth HN) take the view that the acceptability of sentences with phrases that are extraposed from definites is dependent on their discourse context. It follows that the restriction on their occurrence need not be accounted for in the syntax. Rather, their acceptability should be explained in pragmatic terms. Let us look at one of their examples (HN's example (6), p. 54).

(17) The guy just came in that I met at TRENO'S yesterday.³

According to HN, (17) is acceptable when some part of the extraposed relative has an intonational prominence⁴: in this case, the word *Treno's*. They describe a context in which the speaker has been talking about two people, one of whom he met at *Treno's* and one of whom he met somewhere else, e.g. at *Andrea's*. If the first of these two people walks in, the speaker could felicitously say (17); the emphasis on *Treno's* signals contrast with the person he met at *Andrea's*.

In the example just described, the NP subject refers to a person already in the common ground of the discourse - the speaker was already talking about this person. The information contained in the relative clause is not new, because the interlocutors know, from explicit mention in the conversation, that the speaker met one guy at *Treno's* and one at *Andrea's*.

HN reason that extraposed relatives will not work when there is a mismatch in information status between the definite NP and the relative clause. Citing Heim (1982), among others, they claim that use of the definite NP implies that its referent is familiar to participants in the discourse. More specifically, they state (HN: 60, n 14): "a definite NP is acceptable when the identity of its referent is calculable from the information given." In (17), the definite NP *the guy* has been explicitly mentioned at some point in the discourse, so the referent of the NP is present in the common ground. In addition, according to HN's description of the context for (17), both interlocutors know that the speaker met two people, one of those people at *Treno's*, so the property expressed by the relative clause, "meeting x at *Treno's*," is in the common ground as well. Since HN agree with Heim (1982) that definite NPs presuppose that the referent is calculable from discourse information, the information status of the definite NP will always be such that the referent of the NP is present in the discourse context somehow. If they assume this,

³ Throughout this paper, critical intonational prominence on words will be expressed by printing the word in capital letters.

⁴ HN actually use the word "stress," here and throughout their paper, instead of "intonational prominence." I am convinced that what they mean is not word-level (lexical) stress, but an actual pitch accent. For the purposes of this paper lexical stress will be distinct from the term "pitch accent." "Pitch accent" is what I believe Culicover & Rochemont (1990, p.10) to mean when they refer to a "broader sentence-level stress" which is apparently related to discourse context and required of certain sentences with extraposed phrases. I will use the term pitch accent to mean intonational prominence, over and above word-level stress. A pitch accent tends to be aligned to the stressed syllable of the word bearing it (Pierrehumbert & Hirschberg, 1990, Beckman, 1996).

then the only way for a mismatch to be generated, according to their view, would be to have the property expressed by the relative clause be new with respect to the discourse.

To summarize HN's position, extraposition of relative clauses from definite NPs is acceptable as long as the information in the relative clause is given in the discourse, so that it is congruent with the given nature of the definite NP.

3.2. Huck and Na's (1990) theory of focus.

To account for examples such as (17), HN need a way of determining when a phrase conveys new information, and when it conveys given information. Recall that one crucial factor in the acceptability of (17) was that a word in the extraposed relative clause, *Treno's*, needed to be uttered with a pitch accent to signal contrast between the person the speaker met at Treno's and the person the speaker met at Andrea's. HN note that contrastive information tends to be given in discourse. Recognizing the importance of intonation to signal contrastive (given) information in example (17), they develop a theory of focus to account for the acceptability of sentences with relative clauses extraposed from definite NP subjects. Following Rochemont (1986), they assume that extraposed phrases are in a focus position. Extraposition is one of the class of structures that Rochemont (1986, Ch 4) describes as constructional focus.

HN distinguish between informational focus (information that is new with respect to the discourse), contrastive focus (information that constitutes a different subpart of an utterance which is otherwise identical to some other utterance in the discourse), and interrogative focus (information being questioned). For the purposes of this paper, only informational and contrastive focus need be considered in detail. Whether or not focus is informational, contrastive or interrogative depends on their rules of focus interpretation.

3.2.1. Focus Interpretation

HN adopt a filing system similar to Heim's (1982) to model discourse, where a file card corresponds to an entity in the discourse.

3.2.1.1 Informational Focus

HN define informational foci as clauses which either cause new file cards to be added to the discourse filing system, or which cause a new proposition to be added to a card already created. As an example, imagine that (18) is uttered at some point preceding the utterance of (17) in the conversation.

(18) I met an unemployed ad executive at Andrea's party last weekend.

.....

(17) The guy just walked in that I met at TRENO's yesterday.

In this discourse, the indefinite NP *an ad executive* is an informational focus, because it causes a new file card to be added to the discourse filing system. Until the utterance of this NP, the discourse referent does not exist in the common ground. All

information about the ad executive, such as the fact that the speaker met him at Andrea's party, is entered on the card.

Index: 1
 1 = 'ad executive'
 1 is unemployed
 speaker met 1 at Andrea's party last weekend

3.2.1.2. Contrastive Focus

A contrastive focus is that constituent in a new sentence, which differs from another constituent in an otherwise identical sentence already present in the discourse. (19) shows a sentence pair (HN's examples (14) and (16)) illustrating contrastive focus.

- (19) a. Did a guy come in here who was holding a rabbit?
 b. Did a guy come in here who was holding a duck?

(19b) is identical in its interpretation to (19a), with the exception that *duck* replaces *rabbit*, so *duck* is the contrastive focus of (19b).

3.2.2. Focus Assignment Rules

In addition to focus interpretation rules, HN adopt focus assignment rules from Rochemont (1986) and Selkirk (1984). One focus assignment rule, adopted from Selkirk (1984), states that a constituent bearing a pitch accent is a focus, and a focused constituent has a pitch accent somewhere in it.⁵ Given HN's assumption that an extraposed phrase is in a focus position (Rochemont, 1986), it will necessarily have a pitch accent somewhere within. This rule allows them to guarantee the presence of a pitch accent in the extraposed phrase, to signal contrast with something else in the discourse.

To rephrase HN's argument, a relative clause can be extraposed from definite NPs as long as it is a contrastive focus and not an informational focus. If it is an informational focus, it conveys new information, and is therefore not given with respect to the discourse content. Since the content of the relative clauses must be given, the pitch accent within it, according to the focus assignment rules, would have to be one that signals contrast of the word bearing the pitch accent with some other entity in the discourse.

3.3. Problems with HN's Analysis

3.3.1. Extraposed phrases need not always have pitch accents in them.

The focus assignment rule that ensures that an extraposed phrase is necessarily focused and will necessarily have a pitch accent in it is apparently adopted by HN in

⁵ Huck and Na (1990) only discuss intonationally marked focus, aside from noting Rochemont's constructional focus view of constituents that have undergone rightward movement.

order to account for the observation that phrases extraposed from definite NPs are typically uttered with a pitch accent somewhere in them.

There are exceptions to this, however. HN themselves give an example indicating that there are cases in which a phrase extraposed from a definite NP need not have such intonational prominence. (HN: 58-59, examples (14) and (19), repeated below as (20) and (21)).

- (20) Did a guy come in here who was holding a duck?
 (21) No, but a GIRL came in here who was holding a duck.

Here, the contrast is between the words *guy* and *girl*, conveyed by a pitch accent on the word *GIRL*. This word is not inside the extraposed relative. This forces them to add a qualification to their rule: namely, that if there is a focus somewhere else in the sentence, as in (21), the extraposed phrase itself does not have to contain one. Their rule about extraposed phrases is thus challenged.

Recall that HN assume that an extraposed phrase is necessarily focused, and that focused phrases necessarily have a pitch accent somewhere in them. Perhaps, then, there are cases in which extraposed relatives are not focused, and Rochemont's (1986) assumption should be dropped?⁶ With the qualification motivated by (20-21), given a contrastive focus somewhere other than inside the relative clauses, there could be a contrastive focus in the relative clause, but there need not be (does that mean they could be focused, but need not be?). It is difficult to devise a counterexample to test this rule, given that it allows for two of two possibilities: there either is or is not a contrastive focus inside the relative clause.

3.3.2. Extraposed phrases can express information that is discourse-new.

Sentences (22) and (23) comprise a discourse in which the extraposed relative clause in (23) conveys information that is new with respect to the discourse. The setting of the conversation is Speaker B's house. Speaker A has been to Speaker B's house several times.

- (22) *Speaker A*: Weren't there five bottles on that shelf when I was here the other day?
 (23) *Speaker B*: Yeah, but during the earthquake, the TWO fell to the GROUND that were CLOSEST to the EDGE.

Speaker A remembers five bottles, but has no way of knowing what has happened to the two that are missing until Speaker B tells him. Thus, the information in the relative

⁶ It is important to keep in mind that in English, it is difficult to utter a long string of words without any pitch accents at all (Beckman, 1996). Example (21) could be so uttered, especially at a rapid speech rate, though it is more likely that another pitch accent would fall within the extraposed relative. If there were a pitch accent in the relative clause, in addition to the pitch accent conveyed by the contrast in the matrix clause, it might convey focus, of some type, or it might simply be there because of the length of the utterance.

clauses is new to Speaker A. This discourse will be discussed in greater detail in the next section, along with other example discourses.

To summarize thus far, HN's claim that extraposed phrases are necessarily focused, and necessarily contain a pitch accent, is undermined by example (21). Further, it is not the case that the content of the relative clause must be given or in contrast with given information.

4. Extraposition from definites, reconsidered.

As noted previously, Rochemont, (1986, Ch.4) assumes that sentences in which relative clauses have been extraposed from definite NP subjects are well-formed, and that they require stringent discourse conditions in order to be acceptable. He does not discuss what the appropriate discourse contexts might be. Intuitively, he states that extraposed phrases are presentational in the sense that they provide information, though he does not go into detail about the nature of this information.

Using example discourses, I show that extraposed relatives serve a discourse function by providing information that answers the immediate (local) question under discussion (Roberts, 1996). In contrast to Huck and Na (1990), what is critical for extraposition is not the information status – given or new with respect to the discourse as a whole - of the content of the relative clause and its relationship to the same information status of the definite NP. It is true that the definite NP and the relative clauses must match. That is, if the definite NP is discourse-old, then the property expressed by the relative must also be discourse old, otherwise it would not be possible to identify the referent of the definite NP. In cases where the content of the relative clause is new, the definite NP must also be new with respect to the discourse.⁷ However, this fact has no bearing on whether or not extraposition is acceptable, as will be demonstrated in Section 4.5.

This section begins with comments on intonation in Section 4.1, followed by a review of how definite NPs are licensed in Section 4.2. Section 4.3 discusses given-ness and newness of discourse referents from the point of view of the discourse and the hearer. Section 4.4 explains the question under discussion so that it may be used to account for the examples with extraposed relatives discussed in Section 4.5. The examples in Section 4.5 are fabricated, but Section 4.6 shows one example sentence which was found in a newspaper article, and which provides support for the main claim of this paper, that a relative clause extraposed from an NP subject answers the immediate question under discussion.

4.1. A word about intonation

The role of intonation in understanding spoken language is important, since intonation conveys information about the discourse context in which the sentence so uttered is felicitous. For a discussion of the role of prosodic focus as conveyed by pitch

⁷ In the case of a new discourse referent being introduced with a definite NP, the existence of the referent is accommodated. This is described in greater detail in section 4.5, for example Discourses 3 and 4.

accent, see Roberts (1996) and Selkirk (1995). For a description of intonational contours and their meanings, see Pierrehumbert and Hirschberg, 1990. Others (Rochemont, 1986, Culicover and Rochemont, 1990, Huck and Na, 1992) have observed that sentences with extraposed relative clauses are acceptable if pronounced in a certain way, with pitch accents in certain constituents, and it is very likely that the pitch accents signal the relationship of the accented items to the discourse.

While intonation is significant, it is omitted from this study so that the properties of the information structure in the discourse can be worked out by themselves. Intonational prominence in all relevant examples will be indicated by putting words that bear pitch accents in capital letters. This is done in order to recognize that certain pronunciations of these sentences are necessary. However, an explanation of the exact functions of those pitch accents and other prosodic characteristics such as phrasing is beyond the scope of this paper.

4.2 Definite NPs

About the use of definite NPs, HN say only that the referent of the definite must be calculable from the discourse information. Roberts (2002) gives a detailed account of how definite NPs may be licensed. She defines two terms: strong familiarity and weak familiarity.

The plain term “familiarity” originates with Heim (1982), who says that definite NPs presuppose familiarity. For Heim (1982), this meant that the referent of a definite NP would be accessible to interlocutors, either because it had been introduced via explicit utterance of an indefinite at a prior point in the discourse, or because it was or became perceptually accessible to all interlocutors.

Roberts (2002, pp. 14-15) defines a taxonomy of familiarity in which strong familiarity and four sub-types of weak familiarity are distinct. A strongly familiar NP has as antecedent a discourse referent introduced by the explicit utterance of an NP. An example is given in (24)

- (24) There is **a** squirrel that comes to my office window every day. This morning, **the** squirrel was carrying an acorn in its mouth.

Referents which are accessible in the discourse, but not licensed because of explicit mention of an indefinite NP earlier in the discourse are termed weakly familiar. There are four kinds of weak familiarity. An NP can be weakly familiar if the entity referred to is perceptually accessible to interlocutors. This includes cases in which entities enter or are in the discourse space, such as a bird flying by, a person approaching the speakers, or some event occurring within earshot and sight of the speakers. For example, if a group of people are having a conversation in a room lit by an overhead light, and this light flickers, it would be possible for one of the interlocutors to ask (25).

- (25) What’s wrong with **the** light in here?

An entity which is globally familiar in the general culture or at least familiar to the to the discourse participants because of common experiences is also weakly familiar. For instance, at the present time, it is possible to refer to “**the** war with Iraq” in a conversation among people who have been following the news.

An entity can be weakly familiar if it is introduced into the discourse because its existence is entailed by the discourse context. Example (26) illustrates this.

- (26) Every faculty office has a computer in it. In Shari’s office, **the** computer was making strange noises.

The first sentence in (26) may be uttered as is written, or it may be common knowledge among the interlocutors that every faculty office is equipped with a computer. In the second utterance, once we have begun by saying “In Shari’s office,…” the shared knowledge of the interlocutors that Shari is a faculty member entails that her office must have a computer in it, and so it can be referred to with a definite NP.

The fourth way that weak familiarity is realized is by giving a functional interpretation to the definite description with a familiar and salient argument. The example given by Roberts (2002, p.3 (5)) for this case is the following:

- (27) There is a statue on **the** dashboard of this car.

According to Roberts (2002), *the dashboard of ...* is a relational function, whose argument is *car*. Other such functional relations exist, such as the broiler (of an oven), the furnace (of a house or other building which typically only has one furnace), the water heater (of a house), the hard drive (of a computer), the heart (of a living creature), and the steeple (of a church).

Roberts (2002) concludes this section of her paper by stating that referents of definite NPs must be weakly familiar, where weak familiarity subsumes strong familiarity. Hers is a precise account of what it means to be “calculable from the discourse information” as HN put it.

There are times when accommodation is necessary before an NP’s referent is recoverable. Roberts (2002) offers the following example (28) (Roberts, 2002, p.11, (19)).

- (28) John was murdered yesterday. The knife lay nearby.

There are a number of ways that people can be murdered, and once the hearer interprets the second sentence, s/he will accommodate the fact that John was stabbed to death. Once this has been accommodated, the context will entail the existence of a knife.

For the example discourses that follow in Section 4.4, the definite NP subjects will be familiar in one of the ways described above, except for two discourses in which the referent of the definite NP subject will be recoverable via accommodation, because its referent is being newly introduced into the discourse.

4.3. Given-ness vs. newness

It is useful to distinguish three types of given/new: given/new with respect to the discourse, given/new with respect to the hearer, and given/new with respect to the question under discussion.

Prince (1981) distinguishes between given/new with respect to the discourse and given/new with respect to the hearer. Information that is new with respect to the hearer is necessarily new with respect to the discourse, because we expect interlocutors to keep track of the information discussed in any conversation. However, information that is given with respect to the hearer need not be given with respect to the discourse. For example, a member of a family that owns a dog may begin a conversation by asking another family member (29).

(29) Have you fed **the** dog yet this evening?

The definite NP *the dog* is new with respect to this discourse, because this is its first mention in this particular conversation. With respect to the interlocutors (hearers), it is old information, since the referent of *the dog* is a known member of the family.

Information that is old with respect to the question under discussion is a part of the question under discussion (QUD), or on the QUD stack. Information that is new with respect to the question under discussion is at least a part of the answer to the QUD. In order to understand what it means to be old or new with respect to the question under discussion, it is necessary to explain how the question under discussion is defined.

4.4. The question under discussion.

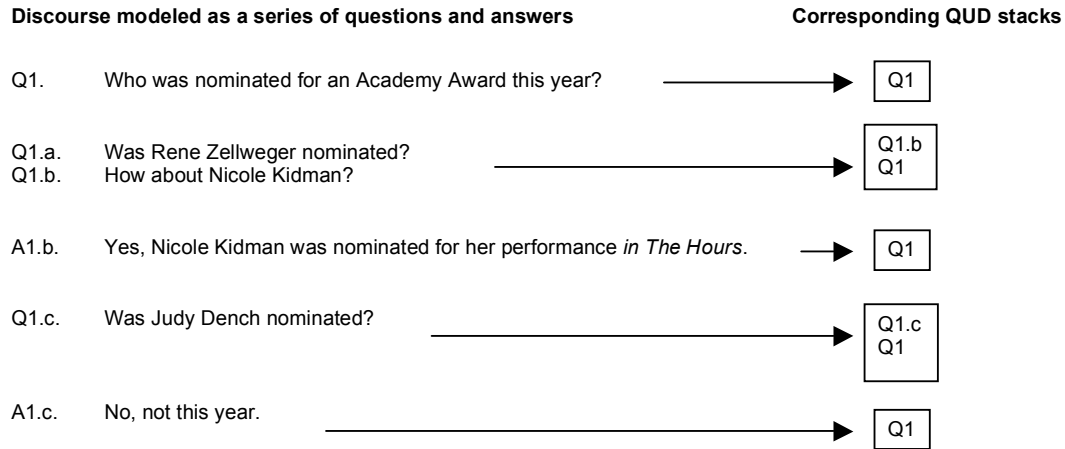
In Roberts' (1996) theory of information structure in discourse, discourse is modeled as a series of questions and answers to those questions. Her theory defines a "question under discussion" as well as an "immediate question under discussion," both of which are illustrated in this section. This section provides a short, basic description of these. For a detailed formal account of the theory, the reader is referred to Roberts (1996).

The **question under discussion**, or QUD, is defined as a function from the set of questions and answers that make up a discourse to ordered subsets of accepted questions. When a question is asked and accepted (or accommodated, in the case of an implicit question), that question is added to an ordered QUD stack. This question stays on the stack until it is answered, or until it is deemed unanswerable by the speakers. If a sub-question of the first question is asked, it is also added to the stack. The stack is ordered such that questions asked later in the discourse are higher on the stack than questions asked earlier. This process is illustrated in Figure 3 with the following short discourse in (30).

(30) Q1. Who was nominated for an Academy Award this year?
Q1.a. Was Rene Zellweger nominated?

- Q1.b. How about Nicole Kidman?
 A1.b. Yes, Nicole Kidman was nominated for her performance in *The Hours*.
 Q1.c. Was Judy Dench nominated?
 A1.c. No, not this year.

Figure 3. A series of four QUD stacks at various points in the discourse (30).



Female Oscar nominees are the topic of this conversation, and since the interlocutors accept the topic of conversation, Q1 (the broader question under discussion) is added to the stack. The second QUD stack shown in Figure 3 is what the QUD stack looks like after utterance of Q1.b. Q1.a and Q1.b are sub-questions of Q1. According to Roberts' theory, answering a sub-question entails partially answering Q1. A complete answer to Q1 would include answering all of the possible sub-questions of Q1, or at least the set of sub-questions that interest the interlocutors. Q1.a. is asked but not accepted (because none of the interlocutors provide an answer), and so it is not added to the stack. Q1.b, on the other hand is accepted - we know this because it will be answered by the next utterance - and so it does get added to the stack. At this point in the discourse, Q1 is the question under discussion, and Q1.b is the immediate question under discussion.

When A1.b is uttered, it answers Q1.b. After utterance of A1.b, the corresponding question, Q1.b, is removed from the stack, and the QUD stack is as shown in the third box in Figure 3. Q1 is not removed, because it has not been completely answered yet. Another sub-question, Q1.c is asked. At this point in the discourse, Q1.c is added to the stack (the fourth box in Figure 3). A1.c answers this question, and after utterance of A1.c, Q1.c gets popped from the stack.

It is worth noting that real conversations are rarely this explicit and simple. For example, a person is unlikely to enter her office in the middle of the morning and ask (31) (though it isn't impossible to do so).

- (31) Q1. Does anyone want to go and get coffee?

- Q1a. Jane, do you want to get coffee?
 Q1b. Kris, would you like to get coffee?
 Q1c. How about you Anne, would you like to get coffee?

More likely the person asking the question will only ask the big question, Q1, and assuming that Jane, Kris and Anne are in the office and heard her, each will answer either yes or no. So the discourse is more likely to proceed as shown in (32).

- (32) Q1. Does anyone want to go and get coffee?
 A1a. No, thanks, I have to run to a meeting.
 A1b. *Kris says nothing but looks up from her work long enough to smile and shake her head, indicating "No, thanks."*
 A1c. Oh, yeah! - as soon as I finish this writing this message.

As (32) illustrates, the sub-questions may not be asked explicitly, but they are implicit, and can be modeled using the question-answer paradigm.

Often, there are no explicit questions asked in a discourse. Even the coherence and the flow of information of this kind of discourse (including monologues, which essentially consist of a person telling another person a long story) can be modeled by posing questions which all of the assertions that make up the discourse answer. This will be the case in the example discourses in Section 4.4.

As stated in the previous section, information can be given or new with respect to the broad question under discussion, and also with respect to the immediate QUD. If information is given with respect to the QUD, it is part of the QUD, or on the QUD stack. Information that is new with respect to the question under discussion is (at least a) part of the answer to the QUD. In the case of relative clauses extraposed from definite NP subjects, the extraposed relative must be new with respect to the immediate question under discussion. In other words, the content of the relative clause must answer the immediate question under discussion. The noun phrase head itself should be a part of the QUD. In order to avoid confusion with the terms discourse-given/new and hearer-given/new, I will use "informative and non-informative with respect to the QUD" rather than given/new with respect to the QUD. This choice of terminology is also consistent with Rochemont's (1986) intuition that extraposed relatives present information.

4.5. Analysis of example discourses.

Four sample discourses are illustrated in this section. A sentence with a relative clause extraposed from a definite NP subject is part of each discourse.⁸ In analyzing the information structure of these sentences it will become clear that the extraposed relative is an answer to the immediate QUD, and that the NP subject that the relative modifies is part of the QUD.

⁸ It is worth noting that extraposition is not obligatory in any of these examples. The unextraposed structures are grammatical in each example discourse.

Before proceeding to the four example discourses, HN's example (17), printed again as (33), is reconsidered using the question-answer paradigm described in Section 4.4.

(33) The guy just came in that I met at TRENO'S yesterday.

Recall that there are two persons in the common ground. The speaker met one person at Andrea's and one person at Treno's. If the second person enters the room, the speaker can felicitously utter (33), even without someone explicitly uttering the question under discussion (34).

(34) Which guy just walked in?

The definite NP is licensed because the referent is strongly familiar (as defined by Roberts, 2002): this person has been talked about earlier in the conversation. The noun phrase head of the relative clause, *the guy*, is already a part of the QUD (*which guy?*), and therefore not informative with respect to the QUD. What is informative is the property expressed by the relative clause, namely the property of having been met by the speaker at Treno's the previous day.

By simply specifying the given-ness of the definite NP subject and the given-ness of the information conveyed by the relative clause, the discourse function of the extraposed relative is missed. Use of the QUD stack allows a modeling of the discourse that is localized enough to show this function.⁹

Discourse 1 has an informational structure similar to HN's example. The definite NP subject is discourse-given.

Discourse 1. *Setting:* Terry, a doctor, is telling Jan about her trip out of town to a nationwide conference on heart disease prevention, which was attended by doctors from around the U.S. In addition to presentations, panel discussions, etc., recreational activities were scheduled and conference attendees could take part in these activities. One particular evening, a group of the conference participants chose to attend a football game, while several others went to a Tony Bennett concert. Terry was not feeling well, so rather than go to either event she returned to her hotel room and went to bed early. The next morning, she noticed that some of the doctors were in a disagreeable mood.

(35) *Terry (continuing):* I'm still not certain, but I think THOSE DOCTORS were sulking who had been at the FOOTBALL game the night before. Paul told me later that it was a bad game, and their team lost.

⁹ Guerón (1980) observes that extraposition is more acceptable in sentences with presentational predicates, also known as verbs of appearance. The predicate *came in* in (33) functions here as a verb of appearance. The verbs in this class are described by Rochemont (1986) as serving no other purpose in the sentence than to set a scene for the subject, or introduce the subject into the discourse. An explanation for why extraposition is easier in sentences using verbs of appearance is beyond the scope of this paper. However, in the four example discourses in this section, verbs of appearance are not used, in order to ensure that the proposed analysis using the QUD is not dependent on their presence.