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The interpretation of the high-rise question contour in English[☆]

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Abstract

We investigate the meaning of the *high-rise question* contour in English, described in Pierrehumbert (1980) as 'H* H H%'. Previous studies have characterized this contour in terms of speaker attitude or in terms of the relationship of the propositional content of utterances to some aspect of their discourse context. Based on an analysis of naturally-occurring data, we propose that speakers employ H*H H% to convey that the propositional content of the utterance is to be added to speaker and hearer's 'mutual beliefs' (those shared by speaker and hearer and believed by them to be shared), and to question whether the hearer can relate that propositional content to the contents of the hearer's own (unshared) beliefs.

The intonational system of English provides a number of so-called question contours. The most common variety of rising question contour, illustrated with inverted and declarative word order in (1) and (2), respectively, is the 'yes-no question contour'.

- (1) Does the Philadelphia train leave at seven?
- (2) The Philadelphia train leaves at seven?

This contour, described in Pierrehumbert's (1980) description of English intonation as 'L* H H%', is commonly interpreted as conveying a request for a simple *yes* or *no* response. However, the same interpretation does **not** seem appropriate for utterances produced with the same final rise, but with a different type of nuclear accent – the so-called 'high-rise question' contour in English.

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The high-rise question contour, described in Pierrehumbert's theory as H* H H%, is illustrated in (3)–(5):

- (3) Chicago radio station DJ: Good morning Susan. Where are you calling from?
 Caller: I'm calling from Skokie?
 H* H* H H%
- (4) Movie-goer (to companion on leaving theater): So, what did you think of the movie?
 Companion: I thought it was funny?
 H* H* H H%
- (5) CS (to victim's father in 'Silence of the Lambs'):
 Hello. I'm Clarice Starling. I'm with the FBI?
 H* L L% H* H* L L% H* H H%

An intuitive interpretation for the caller's utterance in (3) might be "I'm calling from Skokie. Have you heard of that place?" The interpretation of the high-rise contour in (4) and (5), however, is somewhat more puzzling.

Previous linguistic analyses of the contour in the literature on intonational meaning have characterized it primarily in terms of speaker attitude. R. Lakoff (1975: 17) argues that declarative answers to questions uttered with this contour, as illustrated in examples like (6) (Lakoff's example 13 (1975)), are a feature of 'women's language', and convey hesitancy and deference; "[t]he effect is as though one were seeking confirmation, though at the same time the speaker may be the only one who has the requisite information".

- (6a) When will dinner be ready?
 (6b) Oh ... around six o'clock ...?

Ladd (1980) agrees that this type of high-rise contour conveys tentativeness, hesitancy, and uncertainty. In Gussenhoven's (1983) semantic analysis of English 'nuclear tones', this contour falls into the general class of rising contours, which includes the yes–no question countour as well as the high-rise contour under discussion here. For Gussenhoven, these convey a speaker's 'TESTING' of whether certain information belongs to the shared background of speaker and hearer. In a somewhat different vein, Bolinger (1989) argues that the high-rise contour is commonly used to elicit repetition when a prior utterance has not been fully understood, or "as a ploy to create the impression that the speaker has the knowledge he is supposed to have (and might be embarrassed at not having) and only needs to be reminded of it". Others have characterized the high-rise contour in terms of the relationship of the propositional content of an utterance to some aspect of its discourse context. Gunter (1974), for example, claims that speakers use this contour to convey that the listener should "indicate whether my response is indeed the item in the subject slot of your context sentence". The contour has also been analyzed as a type of 'try marker' (Sacks and Schegloff, 1979; Clark, 1992). Under this account, speakers use this contour to confirm the hearer's understanding of a reference.

While these interpretations seem to capture certain aspects of the meaning of the high-rise contour, e.g., confirmation-seeking, tentativeness, and uncertainty, they fail to capture a crucial distinction between high-rise contours and general rising question contours – namely, that this contour functions to assert information while also inviting a response. In Pierrehumbert and Hirschberg's (1990) compositional account of intonational meaning, the high-rise question contour is analyzed as an injunction to the hearer to add information to the set of beliefs shared by speaker and hearer, and believed by them to be so shared (their mutual beliefs), while conveying that the relevance of that information for the hearer is being questioned. In this paper we propose an alternate account of the meaning of the high-rise question contour, within the Pierrehumbert and Hirschberg framework, based upon an analysis of naturally-occurring data. This new analysis accommodates the role of the speaker's beliefs about the hearer's own private belief space in an account of the meaning of the high-rise contour. Before presenting this account, we briefly review the prosodic and pragmatic account of the high-rise question contour found in Pierrehumbert and Hirschberg (1990).

In Pierrehumbert's theory of English intonation (Pierrehumbert, 1980; Beckman and Pierrehumbert, 1986), intonational contours are described as sequences of high and low tones in the fundamental frequency (F_0). 'Pitch accents' fall on some stressable syllables, marking the lexical items with which they are associated as intonationally prominent. There are six types of pitch accent for English: two simple tones – high and low – and four complex ones. The high tone, the most common pitch accent in English, is realized as a peak on the accented syllable. It is represented as F^* , where the 'H' indicates the type of accent and the '*' indicates that the tone is aligned with a stressed syllable. L^* accents occur much lower in the pitch range than H^* accents and are phonetically realized as local F_0 minima. 'Intermediate phrases' are composed of one or more accented items plus a 'phrase accent', which may also be high (H) or low (L), and which controls the pitch from the final pitch accent to the end of the phrase. One or more intermediate phrases constitute an 'intonational phrase', which ends in a high ($H\%$) or low ($L\%$) 'boundary tone'. The domain of the intonational contour is the intonational phrase. So, when we describe the high-rise question contour in Pierrehumbert's terms as $H^* H H\%$, we mean that it is characterized by one or more high pitch accents, a high phrase accent, and a high boundary tone. The yes–no question contour is similarly characterized by a high phrase accent and a high boundary tone – but exhibits low pitch accents – $L^* H H\%$.

In Pierrehumbert and Hirschberg's (1990) account of the meaning of intonational contours, variation in intonational meaning is related to variation in choice of pitch accent, phrase accent, and boundary tone. Within this framework, contours are chosen by speakers to convey relationships among current, prior, and subsequent utterances and to convey relationships between the propositional content of utterances and speaker and hearer's mutual beliefs, i.e., those beliefs that come to be shared by speaker and hearer as a direct result of the conversational interaction (Clark and Marshall, 1981; Joshi, 1982). The overall meaning of a contour is composed of the meanings of its pitch accents, phrase accents, and boundary tone.

Pitch accents in this theory convey a speaker's beliefs about the information status of discourse referents, modifiers, and predicates associated with these accents by virtue of their alignment with the text of the utterance – and the relationship of this information status to speaker and hearer's mutual beliefs. For example, H* accents mark information to be added to these mutual beliefs, while L* accents mark information that is salient, but not to be added to those beliefs. Phrase accents convey a speaker's beliefs about the relationship among the intermediate phrases of an utterance. For example, a high (H) phrase accent conveys that an intermediate phrase is to be interpreted as closely related to one that follows it. Finally, boundary tones convey a speaker's beliefs about the directionality of interpretation of intonational phrases. A high (H%) boundary tone, for example, can be used to convey that an intonational phrase is to be interpreted with respect to another intonational phrase that precedes or follows it. Under this compositional analysis, then, the high-rise contour – H* H H% – is employed by a speaker to convey that the propositional content of the utterance should be added to speaker and hearer's mutual belief space and that this information is to be interpreted with respect to a subsequent phrase. On the other hand, the yes–no question contour – L* H H% – is used to convey that information which *is* salient should nonetheless *not* be added to the mutual belief space, with the same forward directionality of interpretation.

While this account appears to capture some intuitions about the distinction between high-rise questions and yes–no questions, in particular the distinction between adding vs. not adding information to speaker and hearer's mutual beliefs, we have identified additional distinctions of meaning. In particular, we propose that speakers employ the high-rise question contour both (1) to convey that the propositional content of an utterance is to be added to speaker and hearer's mutual beliefs, and (2) to elicit information about whether the hearer can relate this propositional content to information in the hearer's own private belief space. A similar analysis of the meaning of the yes–no question contour would predict that L* H H% is used to convey that information that *is not* to be added to speaker and hearer's mutual beliefs should be related to information in the hearer's private beliefs. Simply put, while the high-rise contour can be seen as an injunction to hearers to update mutual beliefs and to relate those updated beliefs to their private beliefs, the yes–no contour marks information as salient but *not* mutually believed, and instructs hearers to relate this information to their private beliefs.

Returning to the examples introduced above, then, how does this analysis account for our original intuitions about their interpretation? In (3), we can say that the caller employs H* H H% to provide an answer to the DJ's question about where she is calling from, instructing the DJ to add this information to their mutual beliefs. In addition, the caller questions whether or not Skokie is familiar to the DJ. That is, is Skokie represented in the DJ's own private beliefs? Similarly, in (4), the companion's response can be interpreted under our account as conveying the information that the companion found the movie funny, while at the same time asking the questioner to relate this to his private beliefs; i.e., "I thought it was funny. How does that compare with your assessment?" And in (5), we interpret Starling's utterance as an instruction to add information about her institutional affiliation to the information

she believes that she and the victim's father mutually believe, while asking the father to relate that to his private beliefs (e.g., the fact that his child was murdered and that agencies like the FBI are investigating the crime).

In support of our account of the meaning of the high-rise question contour, note that, when the information marked by the contour to be added to speaker and hearer's mutual beliefs is clearly already part of those beliefs, or when a speaker already believes that a hearer can relate this information to his/her private beliefs, the high-rise contour is infelicitous. The exchange in (7) is odd, since the caller has no apparent reason to doubt that a Chicago DJ in Chicago could locate Chicago in his private belief space:

- (7) Chicago radio station DJ: Good morning Susan. Where are you calling from?
Caller: #I'm calling from Chicago?

And, in (8), the companion's initial chuckle has already signalled his assessment of the movie to the questioner:

- (8) Movie-goer (to companion on leaving theater): So, what did you think of the movie?
Companion (chuckling): #I thought it was funny?

Thus, *both* the absence of information from the mutual belief space *and* the absence of plausible uncertainty about the hearer's relating this information to his/her private beliefs appear to be felicity conditions on the use of high-rise.

We have proposed a new account of the meaning of the high-rise question contour in English, based upon the compositional account of this contour developed in Pierrehumbert and Hirschberg (1990). This account, while compatible with the earlier analysis, refines its account of how the high phrase accent and boundary tone of H* H H% are employed to relate the propositional content of an utterance to other information in the discourse. Recall that, for Pierrehumbert and Hirschberg, in both high-rise and yes–no question contours the high phrase accent and boundary tone convey that a phrase is to be interpreted with respect to a subsequent phrase. For the high-rise question contour, we have proposed an alternative analysis in which information that a speaker wishes added to speaker and hearer's mutual beliefs is to be interpreted instead with respect to the hearer's private beliefs. We have also suggested how such an approach might be extended to the analysis of the high phrase accent and boundary tone in yes–no question contours; to wit, salient information *not* to be added to speaker and hearer's mutual beliefs is to be sought in the hearer's private beliefs – e.g., by answering a question. If indeed our account of these question contours holds, it seems possible that a more general revision of Pierrehumbert and Hirschberg's account of the meaning of phrase accent and boundary tone is in order. Perhaps instead of relating the interpretation of phrases to the interpretation of other phrases, the tonal features associated with phrases should better be seen as relating the interpretation of phrases in some way to speaker or hearer's private beliefs.

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