Contrastive Accent in Dialogue:
Towards a Presuppositional Analysis

—EXTENDED ABSTRACT—

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1 PROLOGUE

What is the meaning of contrastive accents in dialogue? To answer this question, a number of hurdles have to be taken. To begin with, there is still no consensus in the prosodic literature whether a separately identifiable contrastive intonation exists in the first place. So, before we can even begin to answer the initial question, we have to try and answer a different question: do dialogue participants distinguish contrastive accents from other kinds of accents? While there are various answers to the first question (e.g., Rooth 1992, Hendriks and Dekker 1995, van Deemter 1999, Piwek 1998), this paper is to the best of our knowledge the first where both questions are addressed in combination.¹

2 INTRODUCTION

Consider the following pair of utterances, with small caps indicating an accent:

(1) Push the RED button.
(2) Pick up the blue CYLINDER.

These sentences differ in that the former can only be used in one type of context whereas the latter is suitable in at least two contexts. What is conveyed by (1) is a request from the speaker to push the red button as opposed to some differently coloured candidate button which the addressee might have in mind. The accent on `red' has a narrow focus because its scope is limited to the word it is associated with. On the other hand, (2) may contrast with a previous statement “Don't pick up the blue CUBE, but ...” (in which case the accent on `cylinder' has narrow focus), but it may also be an answer to a question like “what should I do now?” where the accent on `cylinder’ is said to have broad focus, i.e., takes scope over the entire utterance. Ladd (1980:78-79) claims that often an accent with a narrow focus is assigned a contrastive interpretation, and that to some extent the detection of narrow focus is determined by the distribution of accents. If the accent occurs in a non-default position, as in (1), a contrastive interpretation is certified. An accent in default position, of which (2) is an example, is ambiguous without further context between a narrow and

¹We have been working on the prosodic part of this combination for some time. The experimental set-up and the results for Dutch are also described in Krahmer & Swerts (1998, this reader). Additionally, Swerts, et al. (1999, this reader) describe a comparative study of Dutch and Italian data, obtained using the experimental set-up from Krahmer & Swert (1998). This comparison is interesting because the two languages use rather different strategies for the marking of information status.
While these distribution facts are mostly uncontroversial, the existence of additional phonological features which distinguish contrastive accents from more ‘neutral’ accents only marking new information is hotly debated. One reason to expect that such additional features exist is that they could help disambiguate between broad and narrow focus readings such as in (2). Indeed, some maintain that contrastive accents are formally different from other accents, either because the type of accent is different for the contrastive cases or because they are more prominent. Chafe (1974), for instance, mentions the existence of a sudden drop in pitch after the contrastive accent, whereas a non-contrastive accent is more likely to be sustained. Pierrehumbert & Hirschberg (1990) suggested that contrastive accents have an L+H* pattern while novelty accents have an H* form. Bartels & Kingston (1994) were unable to find support for Pierrehumbert & Hirschberg’s suggestion, but found evidence instead that contrastive accents tend to have higher peak heights than novelty accents. The latter finding is in line with the claim that contrastive accents are more ‘emphatic’, in the sense that they are extra high or boosted (e.g., Ladd 1983). Others, however, maintain that contrastive accents do not exhibit specific intonation features: “As far as we can tell from the behaviour of pitch, nothing is uniquely contrastive” (Bolinger 1986:342). We argue that these two opposing views can be reconciled by showing that they apply on different levels.

3 METHOD

For a variety of reasons, it is difficult to judge and compare the various observations mentioned in the introduction (differences in the definition of contrastiveness, methodological differences, etc.). The experimental set-up described in this article tries to mimic the natural conversation, in an attempt to create a common test bed for the various hypotheses. Accordingly, Dutch utterances are elicited in a (semi-)spontaneous manner and studied from both the speaker and the listener perspective by performing distributional and phonetic analyses of the data, the latter consisting of both acoustic and perceptual measurements. The accent patterns were obtained via a simple dialogue game played by four pairs of subjects. The games were played as follows: initially, participant A instructs participant B to select a particularly coloured geometrical figure such as a red square from an available set. After B has performed the required action with this object, she takes over and instructs A to perform an analogous action with another figure, e.g., a blue square. When A and B are out of cards, the game is over. The data thus obtained allow an unambiguous operationalization of the relevant contexts. A property is defined to be new (N) to the conversation if it is mentioned for the first time in the current dialogue game, it is given (G) if it was mentioned in the previous turn and finally a property is contrastive (C) if the object described in the previous turn had a different value for the relevant property. By varying the sequential order, descriptions were collected for the eight speakers in four contexts: no contrast (all new, NN), contrast in the adjective (CG), contrast in the noun (GC), all contrast (CC). Table 1 summarizes the situation. The data were subjected to two kinds of analysis: a distributional and a phonetic analysis. Moreover, a listening experiment was carried out in which eight prosodically naive subjects were presented pairs of phrases in a random order. The pairs were presented in two conditions: complete (entire utterances) and isolated (words). In the former, subjects were asked to focus on either the noun or the adjective and to determine by forced choice which of the pairs contained the most prominent
Table 1: Examples of the four contexts

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NN</td>
<td>(beginning of game)</td>
<td>B: “blue square”</td>
</tr>
<tr>
<td>CC</td>
<td>A: “red circle”</td>
<td>B: “blue square”</td>
</tr>
<tr>
<td>CG</td>
<td>A: “yellow square”</td>
<td>B: “blue square”</td>
</tr>
<tr>
<td>GC</td>
<td>A: “blue triangle”</td>
<td>B: “blue square”</td>
</tr>
</tbody>
</table>

one. In the latter, they had to select (again by forced choice) the most prominent word.

4 RESULTS

The results of the distributional analysis revealed a clear trend. In the NN case both noun and adjective are always accented, and in most cases the same holds for the CC cases. When one item is given and the other contrasted (i.e., GC and CG) only the contrasted word is accented. Thus, there is no broad/narrow focus ambiguity in our data. Surprisingly, there are a number of utterances in the CC context with only a single accent on noun or adjective. Looking at these exceptional cases revealed that in all cases the speaker made a contrast with his or her own last utterance, thereby ignoring their partners last contribution. Interestingly, all these “egocentric” speakers happen to end their utterances on a high boundary tone, whereas the other speakers uniformly employed low boundary tones. This appears to be in accordance with the general observation that low boundary tones are generally interpreted as signals of the speaker’s intention to give the turn to the other participant.

In the introduction two competing views on contrastive accent were mentioned: the view that contrastiveness is solely determined by accent distribution and the claim that, besides distribution, the accent on the contrasted item is phonologically different from other accents. The experiments described above provides justification for both positions.

On an acoustic level, it appears that single contrastive accents on the adjective are indeed prosodically different from newness accents in the same syntactic position. However, the former have the shape of a ‘nuclear’ accent, whereas the newness accents on the adjective are ‘prenuclear’. In fact, the shape of the newness and the contrastive accents on the noun, both in default, nuclear position, are essentially identical. Thus, apparently, the contrastive interpretation is not associated with a specific prosodic shape but rather with the non-default position of the nuclear accent.

On a perceptual level, it appears that contrastive accents are perceived as more prominent than newness accents on the same syntactic position. However, this only holds true if subjects can listen to the complete utterance. The difference in perceived prominence tends to disappear if the noun or adjective is presented in isolation. This effect might be called prosodic masking: an isolated pitch peak is perceived as more prominent than the same peak presented in the context of an intonationally comparable pitch peak. (The Mt. Everest would be perceived as higher
when encountered in the low lands than in the Himalaya.) It thus seems that the prosodic context (whether or not the relevant accent is preceded or followed by another accent) is the major factor contributing to the perception of a contrastive intonation.2

5 TOWARDS A PRESUPPOSITIONAL ANALYSIS OF CONTRASTIVE ACCENTS

Even though no acoustic evidence for a separate contrastive accent was found, the data obtained in the perception test show that hearers are able to determine a contrastive reading on the basis of intonation. This means that we are now in a position to sketch an answer to the question which initiated this paper. It seems reasonable to assume that speakers signal a contrast relation to enhance the hearer’s processing of their utterance: by marking the information which is contrastive, e.g., “BLUE square,” they seem to say: pick the ‘gestalt’ of the previous square which we discussed and modify the colour value by setting it to blue (compare Levelt 1989:131-132). In our opinion, van der Sandt’s (1992) theory of presuppositions is well suited to model this intuitive idea. The idea that contrastive accents trigger anaphoric presuppositions can also be found in Piwek (1998), where a synthesis is offered of contrastive and newness accents in that both are assumed to trigger alternative assertions (cf. Rooth 1992). While we think that Piwek’s analysis of contrastive accents is interesting, we disagree with the claim that both kinds of accents trigger presuppositions about alternatives. In our opinion this only holds for contrastive accents. This is confirmed by the informal observation that subjects are able to reconstruct the preceding context only in the case of contrastiveness. We propose to represent the phrase “a BLUE square” by the following DRS (where \( \partial \) marks a DRS as presuppositional, and \( \neg \text{blue}(x) \) is shorthand for \( \neg[\ | \text{blue}(x)] \)):

\[
\text{(DRS 1)} \\
\begin{array}{c}
\square \text{blue}(x) \\
\square \text{square}(x) \\
\partial \\
\text{z} \\
\text{square}(z) \\
\neg \text{blue}(z) \\
\text{z} \neq x
\end{array}
\]

Thus, “a BLUE square” asserts that there is some blue square \( x \), and presupposes that there is a different object \( z \) which is also a square, but which is not blue. Typically, this presupposition will be bound by an utterance in one of the previous turns. More precisely, if the utterance ends on

2 Additionally, Swerts, et al. (1999, this reader) described a comparative study of Dutch and Italian data, obtained using the experiment described in the previous section. This comparison is interesting because the two languages use rather different cues for the marking of information status. In Dutch, (a ‘plastic’ language Vallduví 1991) accent distribution is the main discriminative factor: new and contrastive information are accented, while given information is not, and —as argued above— Dutch listeners can distinguish a contrastive intonation from a newness one, because contrastive accents generally were the sole accent in the phrase and always had the shape of a nuclear accent even in non-default positions. In Italian, distribution is not a significant factor, since within the elicited NPs both adjective and noun are always accented, irrespective of the status of the information. However, there is a gradient difference in that “given accents” are perceived as less prominent than the other two, while there is no overall perceptual difference between contrastive and newness accents.
a low boundary tone (L%) the presupposition is to be bound in the previous turn, if it ends on a high boundary tone (H%) it is to be bound in the turn before the previous one (i.e., the previous turn of the current speaker). (DRS 1) would also model the finding that neither the distributional nor the phonetic analysis revealed any essential differences between the NN and the CC contexts: a double contrast would have very little informative content for the hearer as it would urge her to look for a “gestalt” (i.e., accessible discourse referent) which has a different shape and a different colour, which is nearly tantamount to creating an entirely new object and as such has very little descriptive content.

REFERENCES