7. Speakers' Conceptions of the Function of Prosody

Anne Cutler

With 2 Figures

7.1 Introduction

The place of prosody in language is, as the introduction to the present volume recounts, one of the most regularly disputed topics in linguistics. The question at issue is: must prosody be reckoned an integral aspect of linguistic structure, or is it in some sense overlaid upon an independent linguistic form? Many disputed linguistic questions, happily, can be enlightened by consideration of psycholinguistic evidence - evidence from patterns of language acquisition, from patterns of language breakdown, from production and comprehension performance - and this question would certainly appear to be one of those. In the present paper evidence from speech production is discussed, which, while not resolving the great issue of the place of prosody in language, does make a small contribution towards its resolution by allowing certain conclusions about what speakers themselves conceive to be the function of prosody in communication.

Fluent speech is accomplished in combination with fluent prosody; disfluencies of any kind in the speech stream can exercise effects on the prosodic contour. The evidence to be considered below concerns the interaction between prosody and one particular variety of speech disfluency, namely the commission of a speech error or slip of the tongue. In particular, the patterns of speech repair - the prosody of repairs, and the repair of prosody - are investigated, and, with respect to prosodic repair, the question of whether the occurrence of a repair is dependent upon the occurrence of an error.

The data on which the arguments are based are taken from the corpus of speech errors assembled by the author over the past eight years, and where appropriate, from other published speech error collections. The author's collection now includes a large number of tape-recorded errors, and the results presented in Sect. 2 derive from an analysis of this auditory corpus.

7.2 The Prosody of Repair

When a speaker perpetrates a slip of the tongue, either the error is noticed, or not. Only in the first case can we expect the presence of the error to affect

the prosody. The speaker has two choices of how to react after detecting the error: either to correct it or not. If the speaker chooses not to issue a correction, it is nevertheless often apparent from momentary hesitation or from disruption of the rhythm of the utterance or of the pitch contour - i.e. from the prosody - that the speaker is aware of the fault. For instance, a speaker uttering

… like the Complex Noun PHRASE Constraint.. [1] (7.1)

failed to correct the erroneous assignment of stress to "phrase" instead of "noun", but betrayed his awareness of the error by faltering on the utterance of "constraint".

However, it is with the prosodic characteristics of error correction that the present section is concerned. Again, the speaker has two choices; that is to say, error corrections fall into two categories. In the first type of correction, the speaker (consciously or not) minimises the disruptive effect of the error on the utterance as a whole, and does not call the audience's attention to the remedial action. In the second type, the correction may be remarked upon explicitly, or in some other way assigned salience in the utterance. Goffman [1981] refers to these two types of correction as "flat" and "strident" respectively[2]; we will refer to them as "unmarked" and "marked". The main advantage of this more neutral choice of terminology is that we avoid the implication borne by the term "strident" that marking must always be achieved via *greater* amplitude and *higher* pitch; in fact, some corrections are clearly set off prosodically - "marked" - by being uttered on a noticeably lower pitch.

An unmarked correction is uttered as far as possible on the same pitch as the original error. This applies whether or not there is a pause preceding the correction, and irrespective of the amount of speech material repeated in the correction (but see below). For instance, both (7.2) and (7.3) were unmarked corrections:

… and bowls the first ball to Mike - Martin Kent (7.2)

That whole seem - (pause) - that whole bit seems …. (7.3)

In (7.2) the speaker, having produced the wrong first name, corrected with only a short pause, and on the same pitch as before. In (7.3), which is

[1] Syllables in upper case are ones which bear lexical stress or sentence accent, according to the context.

[2] Goffman distinguishes between the two types of correction on the level of speaker motivation: a speaker making a flat correction is not embarrassed at the slip, whereas a strident correction expresses the speaker's desire to convince the audience that the slip was neither intended nor characteristic, and to cancel it out as effectively as possible. Whatever the source of the difference, the two types of correction can be easily distinguished in any auditory speech error corpus.

probably an incomplete movement error in which the words "bit" and "seem" swapped places in the utterance, the speaker detected the error in midstream, paused, and then decided to backtrack to the beginning of the phrase. The first three words of the repeat phrase were uttered with the same pitch contour as the original erroneous three-word utterance. Figure 7.1 shows amplitude and pitch traces for (7.2), and it can be seen that error and correction are similar in both respects.

A marked correction, on the other hand, is distinguished by a quite different prosodic shape from that of the original utterance. Typically the correction material is uttered on a higher pitch and with greater intensity than the erroneous material. Examples (7.4) and (7.5) are marked corrections:

You're happy to - WELcome to include it. (7.4)

… then he himself loses the chance, that is, he RISKS the chance of dying…. (7.5)

Although the speaker of (7.4) seems to have detected an error more quickly than did the speaker of (7.5), and although the speaker of (7.5) included an explicit "editing term" [Levelt, 1983] - i.e. the phrase "that is" - while the speaker of (7.4) did not, in both cases the correction material - "welcome" in (7.4), "risks" in (7.5) - was stressed, as if to call the hearers' attention to the correct reading. Figure 7.2 shows amplitude and pitch traces for (7.5), and it can be clearly seen that the correction word is uttered both with higher pitch and with higher amplitude than the original production of the error word.

The markedness distinction, although apparently orthogonal to the time-course of error detection and correction, does interact with the *type* of error being corrected. Just as there is abundant evidence in the speech error literature that the pattern of occurrence of slips of the tongue is not random, so is there abundant evidence that the pattern of speech error correction is determined by a number of factors, touching both the nature of the slip itself and its effect on the discourse in which it occurs. Some types of errors are corrected consistently more often than others; some types are corrected in a consistently different way than others.

For instance, Nooteboom [1980] compared the correction patterns for phonetic errors (errors involving single phonetic segments) and lexical errors (errors involving whole words). He found that although both types of errors were corrected with approximately equal frequency, the form of correction differed across the two error categories in two ways:

(a) there was in general less backtracking - i.e. less repeated material - in the correction of a phonetic error than in the correction of a lexical error; and
(b) corrections of phonetic errors were in general faster - i.e. less material intervened between the first error segment and the first correction segment - than corrections of lexical errors.

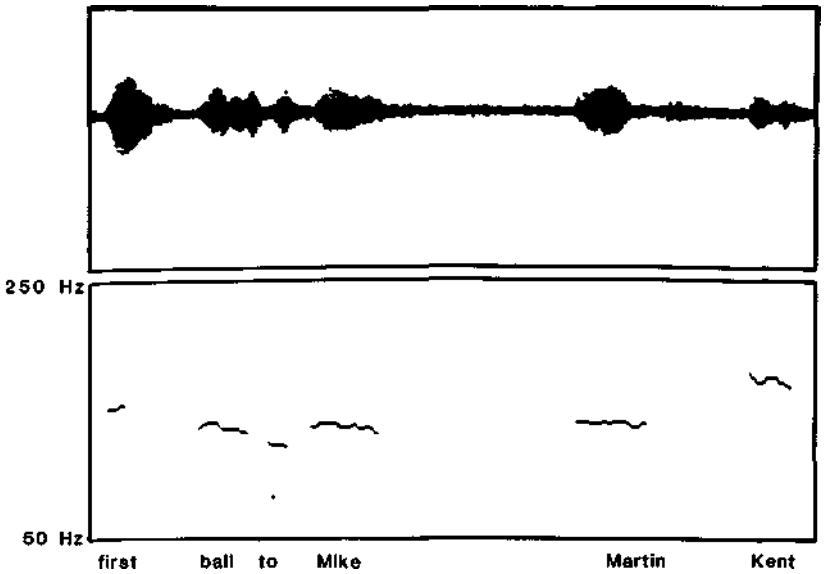

Fig. 7.1. Amplitude *(top trace)* and fundamental frequency *(bottom trace)* plotted against time for a typical unmarked correction. Error word and correction word are similar in amplitude, duration and pitch

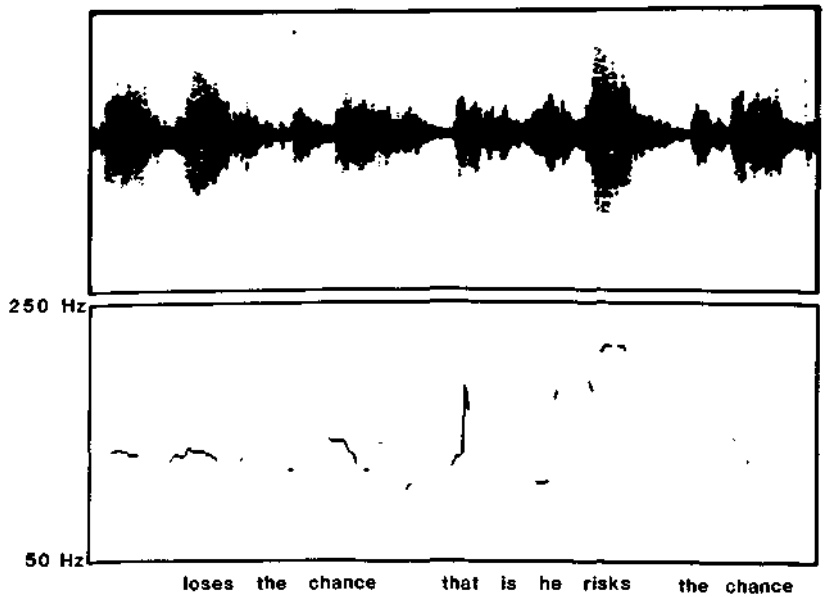

Fig. 7.2. Amplitude (top *trace)* and fundamental frequency *(bottom trace)* plotted against time for a typical marked correction. Correction word has greater amplitude, greater duration and higher pitch than error word

Nooteboom's interpretations of his data invoke the idea of an output-monitoring device as postulated by Laver [1973]. Laver's Monitor decodes utterances as they are spoken and checks them for

(a) linguistic well-formedness and
(b) success at communicating the intended message.

In fact, a monitor which attends to the spoken output only would have to be supplemented by a separate pre-output monitoring device, for which there is evidence in the finding that more real words than would be expected by chance result both from experimentally elicited slips of the tongue [Baars et al., 1975] and spontaneous slips [Dell and Reich, 1981]. Nevertheless the detection and correction rate for slips which have passed pre-output filters can be interpreted as a reflection of the operation of a monitor operating upon the speech output.

The lack of difference between phonetic and lexical errors with respect to frequency of correction is interpreted by Nooteboom as evidence that neither communicative success nor linguistic orthodoxy is an overriding criterion for correction. If the Monitor wanted above all to ensure that communication was not impaired, Nooteboom argues, lexical errors ought presumably to be corrected more often than phonetic errors. If, on the other hand, linguistic well-formedness were all-important, then phonetic errors, which often result in the utterance of non-words, ought to be corrected more often. Instead, claims Nooteboom, the Monitor apparently strives impartially for both adequate communication and conformity to linguistic form.

The later detection point for lexical errors (as reflected in the greater span of utterance before initiation of the correction) in comparison with phonetic errors is explained by Nooteboom in terms of the order of operation of the Monitor's checking routines: he suggests that the utterance is first checked for the linguistic orthodoxy of the phonetic form, and only later for syntactic and semantic appropriateness of units above the word level. The greater amount of repeated material in the correction of lexical as opposed to phonetic errors is assumed to reflect the relative size of the domain of phonetic versus lexical well-formedness. The domain of phonetic well-formedness is the word, so that corrections of phonetic errors only need to restart the word. The domain of lexical appropriateness, however, is at least the phrase (especially since choice of the wrong word may often produce fallout in accommodation of inflections on other words; see e.g. Garrett [1975]), so that backtracking to the beginning of the syntactic constituent is called for.

The same pattern of correction frequency, speed of correction, and amount of backtracking as reported by Nooteboom holds for phonetic and lexical errors in the auditory corpus being discussed here. However, the phonetic/lexical distinction is also reflected in an interesting way by the distribution of error corrections on the markedness dichotomy. Briefly, unmarked corrections can be of either kind, phonetic or lexical; but all of the

marked corrections in the present corpus fall into the lexical category[3]. The difference is statistically significant.

Like the other differences which Nooteboom identified, the fact that lexical errors may be marked but phonetic errors are always unmarked would appear to be a function of domain - the domain, in this case, of accent placement. Marking a correction is, in effect, applying accent to it[4]. The function of accent, when it is applied to a lexical item which replaces another lexical item in an otherwise identical syntactic context, is to express contrast; thus the speaker of (7.4) could as well have said "not HAPpy, but WELcome", the speaker of (7.5) "not LOSes, RISKS". However, accent can only be applied to words - not to sounds. The replacement of erroneously produced sounds would thus not be expected to be marked, since sounds cannot be accented separately within a word. The function of accent being to highlight one word with respect to others in the same syntactic configuration, the domain of accent placement is necessarily the phrase. Marking, being the application of accent to a correction, is thus not an available option for the correction of phonetic errors, since the domain within which these are specified is too small to satisfy the conditions for the determination of accent placement.

This is nevertheless not the whole story. Although all phonetic error corrections are unmarked, many lexical error corrections are too - in the present corpus only 38% of lexical error corrections are marked. Inspection of the corpus reveals no obvious characteristic of lexical errors which correlates with marking; for instance, as mentioned above, the marked and unmarked corrections do not appear to differ on either of Nooteboom's measures (delay of correction or amount of backtracking). Nor is there a difference as a function of the type of error (omission, substitution, blend, etc.), nor as a function of the semantic relationship of error word to target word (substitution of a word from the same semantic field, as in (7.2), versus substitution of an antonym, for example).

It is possible that an extended sample of error corrections would reveal correlations not detectable in the present analysis. It is also possible - though

[3] The lexical category here includes syllables (one marked correction) and morphemes (one marked correction). The phonetic category includes three prosodic errors (lexical stress and sentence accent). In all other errors single words or sounds were moved or replaced.

[4] Marking may, as pointed out above, be realised in several different ways - by longer relative duration, noticeably higher or lower pitch, noticeably higher or lower amplitude, or a combination of pitch, amplitude and durational effects. Accent, similarly, is conceived to be an abstract entity which may have several alternative modes of acoustic realisation. (See the introduction to this volume for further discussion.) The terms "marked" and "unmarked" have not simply been replaced here by "accented" and "unaccented", however, since to do so would obscure the distinction between accent which derives from the normal process of prosodic structure assignment in speech production, and accent which is applied to mark a repaired production. Some corrections are accented but not marked - if a lexical error occurs on the word bearing the main accent in an utterance, then an unmarked repair will be similarly accented. A marked repair would assign *more* or *less* prominence to the correction word.

scarcely testable - that an explanation lies in the characteristics of the individual conversation in which each error occurred, i.e. that speakers mark a correction when they fear that the error is particularly likely to disrupt communication of their intended message. This, of course, would suggest a revision of Nooteboom's conclusions; ensuring unimpaired communication may indeed be somewhat more important to the Monitor than ensuring linguistic well-formedness. Interestingly, the present corpus includes several cases in which an initial unsuccessful unmarked attempt at correction was followed by a second, marked correction, as in (7.6):

The mechanism with which, er, at which - BY which an error occurs.... (7.6)

The next section, which deals with specifically prosodic errors, will return to this issue of successful communication, and also to the question of the domain over which different types of well-formedness are specified.

7.3 The Repair of Prosody

Certain speech errors consist simply of a distortion of the intended prosody - misapplication of lexical or compound stress, misplacement of phrase or sentence accent, inappropriate intonation contour, etc. [Fromkin, 1977; Cutler, 1980 b]. These errors show an interesting pattern of detection and correction, namely: lexical stress errors are very often corrected, but the likelihood of correction is determined by the effect of the stress shift on the segmental structure of the word; prosodic repair of other than lexical stress errors, however, occurs only very rarely, and then only when the uttered prosody was not in itself incorrect, but merely inconsistent with the speaker's intention.

Lexical stress errors are corrected in approximately 50% of the cases in the author's corpus[5]. Examples (7.7-10) are typical lexical stress errors.

... from my PROsodic - proSODic colleagues . (7.7)

... each of these acoustic property detectors perhaps being subJECT - perhaps being SUBject to... (7.8)

You think it's sarCASm, but it's not . (7.9)

We're only at the early stages of it, we're still enTHUSiastic . (7.10)

Correction means spontaneous correction by the speaker. In the other cases, the speaker's awareness of the correct stress pattern was established either by questioning, or by his production of the correct form at some other time.

When lexical stress mistakenly shifts, it falls on a syllable which is marked for stress in a morphological relative of the target word [Cutler, 1980 b]. Thus in (7.7) the first two syllables of "prosodic" were pronounced as they would be in "prosody"; (7.9) is reminiscent of "sarcastic", and so on. But the correction pattern for lexical stress errors seems to reflect only the speaker's assessment of whether or not the hearer could correctly identify the target word, i.e. whether communicative success was attained, because the likelihood of correction depends on the degree of distortion of the segmental structure of the target word. Specifically, in the present corpus stress shifts which result in a vowel quality change anywhere in the target word - full vowels replaced by reduced vowels or vice versa - are corrected in 62% of occurrences. Where no vowel quality change is involved, however, only 23% of shifts are corrected. The difference is statistically significant.

In fact, recognition of a spoken word is not always impaired by a stress shift when the word's canonical pattern of full and reduced vowels is maintained [Cutler and Clifton, 1983]. Speakers who commit lexical stress errors thus behave consistently with the perceptual facts: they correct such errors most often when word recognition is likely to be impaired. The output monitor, again, seems to consider efficient communication a more important goal than conformity with linguistic form.

The pattern of other prosodic repairs provides more subtle evidence of the same phenomenon. Examples (7.11-13) are cases where the speaker revised the initially chosen prosody.

... and what I'M saying - what I'm SAYing is ... (7.11)

... what recognisable circumstances - what REcognisable circumstances ... (7.12)

... despite the FACT - despite the fact that .... (7.13)

In (7.11), emphasis has been moved from one word to another; in (7.12), emphasis which was not applied in the first utterance has been added in the repetition; in (7.13), the converse has occurred and an initial emphatic utterance has been toned down. It is, however, immediately noticeable that the original prosody was not anomalous in English. The speaker has repaired not an incorrect output, but an output which was not what was wanted. It is impossible to determine whether the prosodic re-assignment resulted from the speaker's awareness of having committed an error relative to the original intention, or whether it resulted from a change of intention. Levelt [1983], in a discussion of all manners in which speakers may repair their speech, distinguishes between "error repairs" and "appropriateness repairs", the latter being changes of plan, in which the chosen wording is altered to an alternative which the speaker finds more appropriate. In Levelt's terms, then, cases like (7.11-13) are ambiguous - they could be either error repairs or appropriateness repairs.

Whatever the nature of such repairs, what appears to precipitate them is the possibility that hearers might construe the utterance in a way other than what the speaker wants. Sentence accent is not fixed in English; it can fall on practically any word in many utterances, and changes in the location of sentence accent correspond to changes in the pragmatic force of the utterance. Thus an acceptable but unintended accent pattern could result in the audience misinterpreting the implications of the speaker's utterance, and to avoid such misinterpretation, the speaker revises the prosody.

Anomalous accent placement seems, however, not to bother speakers at all, as the examples in (7.14-20) demonstrate.

We're also going to be talking about Citizens' BAND Radio. (7.14)

… especially in the universe within WHICH we're looking. (7.15)

She had a lot of cups, but the one SHE gave me leaked. (7.16)

The only trouble WITH it - (pause) - is the hood is too small. (7.17)

The subject of an embedded clause can be connected to the subject of a higher CLAUSE. (7.18)

… the effects of visual presentation withOUT distraction and auditory presentation without disTRACtion. (7.19)

… from three hundred THOUsand, which used to be the norm, it's now one point FOUR million. (7.20)

These utterances incorporate a variety of anomalies. (7.14), for example, involves incorrect phrase accent - compare (7.1), in which incorrect compound stress is assigned within a phrase. In (7.18) the speaker has failed to deaccent a repeated lexical item. In (7.19) contrastive accent has been incorrectly placed - the speaker should presumably have contrasted "visual" and "auditory". In (7.16) accent falls upon a pronoun, as intended - but on the wrong pronoun. The utterances have in common only that the accent pattern is in each case anomalous, and that none of them was corrected.

This non-correction pattern could arise in two ways: either errors like (7.14-20) are simply not detected by the output monitor, or they are detected but they fail to satisfy the monitor's criteria for correction. There is some evidence that each of these explanations holds for certain errors.

The question of detection of such errors raises once again the notion of the domain of well-formedness of linguistic phenomena. It is noticeable that many uncorrected accent placement errors are ill-formed only with respect to quite large units of discourse - more than the phrase in which they occur, often more than the clause or sentence. Thus each of the phrases in (7.19) would be appropriately accented in a different context; only in conjunction is the anomaly apparent. The same is true of (7.18) and (7.20) (and of dozens of

similar uncorrected deaccenting and contrast errors in the author's collection). Furthermore, uncorrected focus errors, unlike corrected ones such as (7.11-13), are errors only with respect to the extra-sentential context:

So THIS sort of thing happens in other fields. (7.21)

This was the latest in a series of one-day strikes; another will be held on NEXT Tuesday. (7.22)

It is only clear that the accent placement in (7.21) is anomalous when one knows that the speaker, having earlier described a fault typical of psychologists, used these words to conclude a digression which had exemphfied the same fault in the field of chemistry; accent should have been applied to "other". Similarly, (7.22) is only odd if one knows that the strike being described had been held the same day that this sentence was uttered, and that that day happened to be a Friday. Neither (7.21) nor (7.22) was corrected.

Thus it indeed appears possible that the explanation for the non-correction of many accent placement errors is simply that they are not detected because the stretch of discourse with respect to which they are anomalous is larger than the domain available to the monitor. This explanation can be tested by checking the correction pattern of other types of errors in which ill-formedness depends on a non-local context. In fact, a large class of such errors exists; Brown [1980] has termed them "grammatical incoherence". (7.23-28) are examples of such errors from my own collection.

Work on identifying features of the autonomous plane are not that far advanced (7.23)

People like Posner with whom one associates sophisticated theories of attention is doing some work (7.24)

Remember that wide-angle lens that I was going to borrow it? (7.25)

That was something on which the theory, up to how we'd formulated it so far, was silent about (7.26)

… because I have a filter that throws out everything around a thousand Hertz out (7.27)

… nor did we say that it was the standard to which instructors should teach to. (7.28)

Many such errors cited by Brown, as well as many in my own collection, involve accommodation of verb inflections to the wrong antecedent - e.g. (7.23) and (7.24) - or double occurrence of verb particles, as in (7.26-28)[6]; it

[6] See Fay [1980] for a discussion of the sources of such errors.

is worth pointing out that neither verb inflection errors nor verb particle errors are generally left uncorrected, as (7.29-32) show:

… what things are this kid - is this kid going to say incorrectly (7.29)

Where do these upside-down F's comes from - come from? (7.30)

Well, let me write it back, er, down, so that… (7.31)

I can't work out where I ran over - ran across that other name. (7.32)

In fact, (7.29) is essentially the same error as (7.23), except that the item governing the inflection occurs adjacent to the verb in (7.29), but eight words before it in (7.23). This point is neatly reinforced by (7.33), in which the speaker makes two inflectional errors in quick succession; the first, adjacent to its governor, is corrected, but the second, governed by a word much earlier in the sentence, is not:

The place where their rules does - do seem to come in handy are when you have…. (7.33)

Thus the failure to correct (7.23-28) seems to be associated primarily with the size of the linguistic unit within which the error is defined[7], and provides independent confirmation that the failure to correct accent placement errors such as (7.14-20) results from the same cause. Precise specification of the domain over which ill-formedness can be detected is probably best achieved by explicit experimental investigation of this question. However, some indirect evidence is available from the previous studies of error correction cited above. Nooteboom [1980] reports that in his corpus the chance of an error being detected seems to have dropped to zero by about five words after the error has occurred. Levelt [1983] describes a slightly more complicated picture - correction of an error which occurs at a syntactic boundary is more likely than correction of an error which occurred in mid-phrase. Together these observations suggest that the monitor which is responsible for the detection of speech output in need of repair operates, roughly, phrase by phrase. Since the monitor is essentially a comprehension device - and Levelt [1983] argues specifically that monitoring is carried out by the same parsing device which we use to understand the speech of others - it is tempting to compare its limited domain with the limits postulated for models of comprehension. Frazier and Fodor [1978], for example, argue for a "window" length of six words for their parser. The error correction evidence itself, however, indicates only that the monitor has a very limited, and most probably syntactically defined, domain of operation; and that its domain is prob-

[7] My collection of such errors is much smaller and has been much less systematically assembled than my collection of prosodic errors, so that a statistical test of this suggestion is inappropriate on the present corpus.

ably smaller than the domain available to the listener's comprehension device (anomalous accent placement is, after all, often obvious to the hearer).

The non-correction of many accent placement errors, then, may most likely be attributable to the fact that they are simply not detected because the domain of their ill-formedness is larger than the domain of operation of the output monitor. It has already been noted, however, that accent placement often is repaired - as, for example, in (7.11-13). It is noteworthy that these repairs are issued comparatively rapidly - in my collection the maximum number of words intervening between the word which is to be accentually repaired and the beginning of the repair is (in one case) three, and the mode occurs at one word. This pattern suggests that focal accent may be defined over a comparatively short domain, short enough for the monitor to be able to determine that focus was not placed where intended, or could have been more appropriately placed. Of course, it is possible to speculate that it is precisely the cases in which focus is applied within a short constituent which are detected and repaired, and that there may be many more such cases in which speakers' original intentions for focal accent placement are not realised in their utterances, but the misplacements are detected neither by the speakers' own monitors nor - since sentence accent is not fixed - by the audience. Perhaps this question may in due course also prove susceptible to experimental study.

Finally, however, there are still some cases in which accent misplacement is apparently detected, but no repair is issued. The speaker's pause in (7.17), for instance, seems to indicate consciousness of a problem, just as the post-error faltering in (7.1) indicated that that speaker had noticed his faulty compound stress placement. Since the domain of compound stress assignment is the nominal compound itself, i.e. two words, there is every reason to expect (7.1) to have been detected. Similarly, (7.17), in which accent should have been applied one word earlier, should have been as easy to repair as (7.11-13). The speakers' failure to repair in these cases seems, in terms of our earlier discussion of the monitor's priorities, to imply that communicative success did not seem to be threatened. In other words, prosodic repairs are issued only when - as in (7.11-13) - the speaker wishes to correct the message being provided to the hearer. Anomalous compound stress placement, as in (7.1), and assignment of accent to a function word, as in (7.17), do not suggest a particular interpretation of the utterance which is different from the interpretations obtaining had accent fallen upon "noun" and "trouble" respectively. Therefore, one may hypothesise, the speaker did not feel it necessary to correct the error.

Of course, it is often the case that anomalous contrast placement and failure to deaccent will likewise have no effect on the pragmatic implications of the utterance; although the evidence cited above indicates that most such errors cannot be detected, it is still possible that some are detected but that the speaker chooses not to issue a correction, relying instead on the hearer's ability to construct an appropriate prosody from the context.

7.4 Conclusion

The interactions between prosody and speech repair illustrate speakers' conceptions of the functions of prosody. Firstly, speakers use prosodic means to ensure that errors which are likely to disrupt communication are decisively repaired. An error correction which is "marked", i.e. is distinguished prosodically from the original utterance of the error, is only applied to an error at the lexical level or above. Marking ensures that the hearer attends to the correction; the function of prosody in this case is to direct the hearer's attention.

Secondly, prosodic repairs are issued when the speaker fears the hearer might be misled into an inappropriate interpretation of the utterance. Anomalous accent placement itself, as long as it does not carry unwanted pragmatic implications, is not corrected. The function of prosody is thus seen to be, in the speaker's view, primarily concerned with the semantics or pragmatics of the utterance. Similarly, anomalous lexical stress placement is rarely corrected unless it is accompanied by alteration of the segmental structure of the underlying word. Lexical stress thus seems to be perceived by speakers as inessential for communication; maintenance of the word's canonical pattern of full and reduced vowels is what is important for word recognition.

In this speakers are behaving in accord with the perceptual facts, since, as pointed out above, perceptual studies show that incorrect stress placement, while often obvious to the hearer, does not always disrupt word identification unless full vowels are replaced by reduced vowels or vice versa. And indeed, there is evidence that speakers' conceptions of the function of accent are equally realistic. Studies of the perception of accent show that listeners actively search for the accented words in an utterance [Cutler, 1976], and that this reflects their search for the semantically most central portions of the speaker's message [Cutler and Fodor, 1979]. Speakers' conceptions of the functions of prosody, therefore, seem to be in considerable accord with psycholinguistic reality.

Acknowledgement. This research was supported by a grant from the Science and Engineering Research Council to the University of Sussex. I am grateful to Dwight Bolinger, Jack Hawkins, Steve Isard, Bob Ladd, Ewald Lang and Pim Levelt for helpful comments.