Prosody and Information in Naturally-Occurring Discourse

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We wish to construct an account of prosody which is both coherent with principles of grammatical analysis and responsible to naturally-occurring, contextually-situated speech. This setting provides a domain in which it is possible to test, refine, and extend theoretical hypotheses in the light of empirical data.

1. Definitions and preliminary observations

We assume (with Liberman [22]) that for any utterance u, it makes sense to regard its phonetic and phonological properties—jointly, $phon(u)$—as a combination of a lexical support $lex(u)$ and a prosodic structure $pros(u)$. Motivation for this division of linguistic labor can be found in the distinct felt equivalences corresponding to the rows and columns below (using common orthographic conventions):

ED.	vs. ED?	vs. ED?!
ED spoke.	vs. ED? spoke	vs. ED?! spoke
Ed SPOKE.	vs. Ed SPOKE?	vs. Ed SPOKE?!

This point of view, while not the only possible one, raises two basic questions:

- how can we characterize the phonological/phonetic relation among the terms $lex(u)$, $pros(u)$, and $phon(u)$?

- how is the distinction between $lex(u)$ and $pros(u)$ related to other grammatical dimensions?

Both questions have attracted considerable attention. Since we do not characterize prosody in terms of particular phonetic or phonological properties (but rather in terms of the division of labor between prosodic and non-prosodic properties), the importance of the first question arises from the fact that the properties of $lex(u)$ and the properties of $pros(u)$ can (and do) affect the same phonetic parameters (frequency, intensity, duration), an entanglement between *phonetic realization* and *lexical/prosodic contribution* not peculiar to the point of view advocated here. With regard to the second question, it is a straightforward matter to see how $lex(u)$ relates to other grammatical dimensions: any partition of an utterance into a sequence of morphosyntactic parts (such as words and affixes)

must be consistent (in a way determined by the logic of phonological and phonetic realization) with the lexical support of the utterance. The contribution of these morphosyntactic parts to syntactic composition, semantic interpretation, and pragmatic force is a standard and central problem of linguistic analysis. It is equally straightforward to produce evidence that there are interesting relations between $pros(u)$ and the properties of u in a number of other grammatical dimensions—evidence which supports the view that while $pros(u)$ is not determined by the properties of any single non-prosodic dimension, the particular prosodic properties associated with an utterance impose constraints on its properties in other dimensions.

2. Theoretical desiderata

A theoretical framework for prosodic analysis will need certain properties.

2.1. Parallel architecture

To characterize relations between the phonological and phonetic properties of prosodic structures and their correlative properties in non-prosodic dimensions, we assume that the grammatical composition (or analysis) of complex expressions assigned properties in all dimensions simultaneously.

2.2. Structural flexibility

To accommodate the view that intonational phrases constitute units of prosodic analysis but need not correspond to standard syntactic constituents, a theoretical framework for prosodic analysis must make possible multiple analyses (in some sense) of a single utterance-type.

2.3. Dynamic discourse interpretation

To accommodate the fact that there is an interaction between the accentual properties of a constituent and the discourse information it conveys, it is reasonable to assume some form of dynamic interpretation, based on the insight that the interpretation of an utterance both depends on the context in which it is uttered and affects the very context as it is uttered.

2.4. Interactional dynamics

Spoken language provides interesting evidence of a highly structured relation between speaker (more generally, discourse participants), spoken code, social context, and interlocutors. This relation is reflected in the continuum of **style** [18, 19, 20, 34] ranging from self-consciously read materials to casual, unmonitored conversation—a scale characterizable as **speech-oriented** at one end and **task-oriented** at the other—and in the companion notion **register** [1, 2, 3, 5], which distinguishes register (from speech style) as the conventionally accepted way to speak in a specific situation (as due, for instance, to expectations within the culture or to specific audience design factors). It is also reflected in the relations between and purposes of the discourse participants, involving issues of power and solidarity [8], and distinctions such as **informational / social** interaction [35, 4] and **supportive / neutral / face-threatening** conversational acts [7]. Much of the interactional work done is conveyed through prosodic information. Labov and Fanshel [21] suggested that it may be the deniability of prosodic 'input' which predisposes speakers to use prosodic information for such socially sensitive tasks. To accommodate these distinctions, we will employ a terminology based on the proposals of [12, 13, 15, 7, 30].

2.5. An Integrated Framework

A natural formal setting which is consistent with these desiderata is the family of **multi-dimensional categorial grammars** [25, 23, 32], which incorporate **parallel architecture** in an essential way and permit different degrees of **structural flexibility** (depending on the details of the system in question). In this framework, each expression is identified with a 'vector' which characterizes the information associated with it in each relevant 'dimension'. This point of view allows the phenomena of **dynamic interpretation** and **interactional dynamics** to be integrated with other properties of linguistic composition.

3. Interpreting pitch-accent placement

The key concept of dynamic discourse interpretation relevant here is that the interpretation of an expression A in a context ϕ may both depend on ϕ and affect ϕ, which we represent as follows, using ϕ' to represent the resulting context:

$$\phi[\![A]\!]\phi'$$

This representation is heuristically useful: it allows a number of different existing theories to be formulated in a common frame and it suggests new lines of theoretical development. Two kinds of hypotheses will be considered here: first, the classification of expressions according to their interaction with contextual parameters; second, the classification of the

discourse structures represented above by the variables ϕ and ϕ'.

A hypothesis which has guided a great deal of valuable work in the Generative Tradition is that pitch-accent placement can be characterized in a way that is indifferent to context. We believe that an adequate account of pitch-accent placement on this basis is unattainable.

3.1. Pitch-accent and information

A widely-held alternative view is that pitch-accents occur on 'new information' and do not occur on 'old information'. Formulating this theory in the simple framework sketched here requires a decision concerning the representation of 'information' and the 'old/new' contrast. A simple way to do this is to suppose that the information contained in a discourse $\mathcal{D}$ at a point x consists in a representation of the content of the discourse portion preceding x, together with a collection of 'discourse referents'. If A is an expression with non-dynamic interpretation a, we may represent the context-change potential of new information as $\phi[\![A]\!]\phi \sqcup a$ and the context-change potential of old information as $\phi \sqcup a[\![A]\!]\phi \sqcup a$ (The symbol $\sqcup$ stands for disjoint union of pieces of information.) To connect this account with $\mathbf{H}^{\boldsymbol{\cdot}}\mathbf{L}$ pitch-accents (say), we identify accented occurrences $\acute{A}$ of A with the structure $\phi[\![\acute{A}]\!]\phi \sqcup a$ and unaccented occurrences with the structure $\phi \sqcup a[\![A]\!]\phi \sqcup a$.

But this account cannot be correct. On the one hand, consider a narrative which begins: *once upon a time, there were two bears—'dum and 'dee. 'DUM was OLDer than 'dee* .... Although the second occurrence of *'dum* represents 'old information', it must be accented. On the other hand, consider a discourse in which one person rushes in to announce: GUESS WHAT! *my BIcycle's missing!* The bicycle's absence is new information in this context, but the expression associated with the introduction of this information into the discourse—namely, *missing*—need not be accented.

Intuitive judgments of this kind suggest that the relation between information structure and pitch-accent placement is more subtle than a simple dichotomy between new information and old information allows. If we assume that pitch-accent placement is interpreted relative to some informational domain, then there are two aspects to the problem: the first involves constraints on what components of an utterance may be taken to be prominent, relative to a fixed analysis, a given accentuation pattern, and a particular discourse context; the second involves how information is assumed to be structured in discourse. These two aspects of the problem suggest more plausible alternatives to the overly simple correlation of pitch-accents and information discussed above.

3.2. Pitch-accents and focus

The fact that pitch-accents are localized to syllables and not directly to some informational domain makes it necessary to characterize a relation between the syllables of any utterance and the linguistic structures whose content is relevant to that domain. In particular, for any expression e in a fixed context, a reasonable goal is to associate with each subset σ of the syllables of e a *focus set* of component parts of e which are the possible foci of e when every syllable in σ is accented. When the content of e itself is focused, we say that an utterance of e has a *wide-focus* interpretation. From this perspective, it makes sense to enrich the possible modes of interaction between expressions and context: expressions corresponding to simple types (such as proper names) may be treated exactly along the lines sketched above; but functor categories may be classified according to how they interact with the context-change potential of their arguments. For example, some one-place predicates may behave in a way that correlates the new/old contrast with the presense/absence of accent, but for other one-place predicates, it is possible that if the argument of a member of this class counts as new in a given context, the syllable within the argument which is (when accented) compatible with a wide-focus interpretation of the argument may also be (when accented) compatible with a wide-focus interpretation of the predicate-argument combination (even though the predicate itself is unaccented but new); but when the argument does not count as new, the preferred syllable for indicating a wide-focus interpretation may shift to the most prominent syllable within the predicate itself. Such an account ([26], for example) makes possible a more sophisticated account of functors like *be missing* than the simple correlation between accent and information discussed earlier. Moreover, the fact that certain functors need not be accented when their co-domain supports a wide-focus interpretation means that in many contexts, the choice of accenting them or not is accessible to pragmatic influences. (We consider one such case—the case of negation—in detail below.)

A complete account of the interpretation of pitch-accent placement depends not only on the relation between pitch-accent placement and the information-structure of particular utterances, but also on how that structured information connects with context. Another direction of research we hope to pursue further in the light of empirical investigation of naturally-occurring discourse is the possibility of endowing the theoretical representation of discourse context with richer structure. For example, an account along the lines of the centering model of Grosz, Joshi, and Weinstein [16] makes it possible to treat only topics as contextually de-accented. This richer articulation of discourse context (which has other advantages, as well) makes it possible to deal with cases like the *two-bears-'dum-and-'dee* example above, where an expression representing old information is obligatorily stressed

when a topic shift is involved.

4. Quantifiable parameters

4.1. Pitch-accent 'prominence' measure

The hypotheses to be formulated are based on an assumed connection between subjective impressions of pitch-accent placement and an informational domain. Many linguists who have quantitatively analyzed linguistic data have found a correlation between 'focal' or 'new' information in a discourse and physical parameters such as duration [9, 10, 11] or pitch prominence [24]. Integration of these two perspectives—one intuitive and abstract, the other quantitative and concrete—requires the establishment of a correspondence between physical parameters and subjective impressions of prominence, on the one hand, and a common view of the informational domain. Although accent is acoustically produced with both pitch prominence and increased vowel duration and peripherality, the defining criterion for accent in our study is pitch prominence only. The primary motivation for this decision is that since our data are to be compared with the results found in earlier acoustic studies of negation (and to be compared with the algorithm proposed by Hirschberg [17] for synthesis) where the only criterion for prominence was determined by the pitch, pitch prominence is the sole criterion to be used here. Because the earlier studies did not clearly define their criterion for the determination of 'prominence', we use a very broad rule, to permit even a limited 'focal prominence' to be included: a token can be considered pitch prominent if the fundamental frequency on the vowel is raised relative to the fundamental frequency of immediately adjacent words.

4.2. Negation and disagreement

This study will concern itself primarily with the analysis of negatives in a discourse, and how they are realized intonationally. The study of the prosodic aspects of negation in discourse has given rise to two traditions with conflicting claims. On the one hand, some researchers who have analyzed negatives have found that negatives are realized with pitch prominence, and have attributed this finding to a correlation between negatives and 'new' or 'focal' information. We refer to this correlation as the linguistic **Focal Prominence Rule**. For example, O'Shaughnessy and Allen [29], in a study of read sentences, found that pitch prominence occurred on negatives, even when they were contracted. Hirschberg [17], who analyzed the speech of NPR announcers to determine a reasonable algorithm for synthesis, initially assumed that 'closed class words' should be unstressed, but concluded that negative bearing elements, even though closed class, should bear pitch prominence.

On the other hand, Schegloff, Jefferson and Sacks [31] presented evidence that in conversational speech, there is a 'preference for agreement', to which speakers adapt their speech.

We will refer to this as the **Agreement Rule**. The Agreement Rule would predispose speakers to use pitch prominence and a durational increment on negatives used for agreement, or used in a neutral-informational setting, but would predispose speakers to use a neutral pitch, and durational reduction (including contraction) on a disagreement or in the course of performing a face-threatening act in the context of a face-enhancing interaction. Both Yaeger-Dror [35] and Tottie [33] have found that pitch prominence is relatively rare on negative elements in actual discourse.

A particular goal of the present study is to determine the interaction of the Focal Prominence Rule (or other accounts of the relation between prominence and information) and the Agreement Rule. Of course, the simplest pattern occurs when the Agreement Rule can be neutralized. In interactionally neutral settings, where the negative is used informationally, the Agreement Rule is most likely to be neutralized, and the Focal Prominence Rule is dominant. Table 1 provides some examples of other possibilities as well:

Table 1. Interaction of interactional intent and pitch prominence, their relationship to the Focal Prominence Rule (FPR) and Agreement Rule (AR).

	+Prominent	-Prominent
Neutral	FPR dominates AR neutral	FPR contradicted AR neutral
Face threat (FTA)	FPR dominates AR contradicted	FPR contradicted AR dominates
Supportive exchange	FPR dominates AR dominates	FPR contradicted AR contradicted

One potential reason for variation in pitch prominence is related to the interactive intent, as shown on Table 1. On the one hand, Yaeger-Dror [35] and Tottie [33] have both shown that if the negative is used to agree rather than disagree, this is what has been called a supportive interchange, and prominence is most likely to occur because both rules favor pitch prominence in this case. In contrast, Yaeger-Dror & Nunamaker [36] showed that even in read dialogue, pitch prominence is least likely to occur when a statement is theoretically face threatening. Table 1 shows that in this case, the Agreement Rule is seen to 'overrule' the FPR.

4.3. Specific hypotheses to be tested

The hypotheses we wish to test, then, are the following:

Focal Prominence Rule:

- Pitch prominence is to be expected on a negative which supplies new information.

Agreement Rule:

- Prominence is to be expected on a negative which supplies an agreement with an earlier speaker.

- Pitch prominence is to be avoided when a possible interpretation could be a disagreement with a previous speaker within an interaction—except in specifically 'licenced' situations, where face threats are to be expected (e.g., debates, arguments between intimates).

We may test these hypotheses against the properties of naturally-occurring data in two ways. First, when the prosodic structures occur in the data chosen, do the data conform to the properties of these hypotheses? Second, do the hypotheses give a broad enough account of the prosodic structures that occur in the data. At the same time, it is necessary to consider what sort of data forms the most appropriate testing ground for hypotheses of the kind considered above.

4.4. Negation and focus structure

One other possible reason for a lack of pitch prominence is related to the specific syntactic focus intended, as shown on Table 2. In line with an understanding that closer attention to syntactic focus might differentiate between possible strengths of contradiction between the two rules, Table 2 shows that in fact, if there were narrow focus on some other word in the sentence, the FPR would be neutralized. The least likely locus for pitch prominence on negatives would thus occur in statements where there is narrow focus on another word; the most likely, would be in sentences with narrow or contrastive focus on the negative itself. Sentences with wide-focus interpretations might fall in between.

Table 2. Interaction of wide vs. narrow focus and pitch prominence, and their relationship to the Focal Prominence Rule (FPR) and Agreement Rule (AR), in the case of a face threatening act.

	+Prominent	-Prominent
Face threat Narrow focus on negative	FPR dominates AR contradicted	FPR contradicted AR dominates
Narrow focus on other word	FPR neutral AR neutral	FPR neutral AR neutral
Wide focus	FPR dominates AR neutralized (partly)	FPR contradicted AR dominates

The present study will attempt to determine the degree to which the overtly face threatening material will be pitch prominent, and the degree to which that prominence can be neutralized either by scope considerations or by interactional rules.

5. Choice of corpus

Data were collected from the following registers:

- informational data (from 'news' and from a tutorial)

- interactional data (from the political debate, most of which is face-threatening)

- Neutral & Supportive data will be cited using data from earlier studies.

Since self-conscious style does not always influence speech in a clearly defined way [34, 20], we considered it important to choose a corpus from speech which would be less self-conscious than read sentences and would be 'task-oriented' rather than 'speech-oriented'. To maintain consistency of register with many other recent analyses of naturally-occurring speech [17], we have chosen corpora broadcast over PBS, and will refer to this as *NPR-speak*. The primary corpus under discussion is a tape of a political discussion originally broadcast over the MacNeil-Lehrer report, generously provided by Karen Adams of ASU. It is reasonable to classify this material as *careful* in style, *NPR-speak* in register, and *confrontational* in interactive intent.

One of the rationales for using an NPR-speak corpus is to neutralize the vectors of power and solidarity, by assuring that the difference in power between speakers is minimal, and that the speakers are not too intimate ('solidary').

The interactional intent of most examples in such a corpus can be fairly easily distinguished. For example, there are very few 'neutral' factual uses of the negative in the segment transcribed here. Although there are few supportive uses of the negative in a debate, one occurs on line 24 (of the appended transcript). Most of the other negatives here (which occur in lines of slanted type in the transcript) are clearly face threatening to the other politician in the interaction; as noted above, face-threatening acts appear to be 'licensed' in this type of social situation. This we conclude from the data themselves.

6. Linguistic variables

The primary linguistic focus will be the prosodic and linguistic realization of negatives found in discourse.

6.1. Pitch variation

The primary goal of this paper is to determine the relative frequency of focal prominence occurring on a negative; in the process, it will be possible to compare the importance of the Focal Prominence Rule and the Agreement Rule. In cases where the Focal Prominence Rule is not dominant (i.e., where there is not pitch prominence on the negative) we will then determine, for a restricted segment of the corpus, whether scope considerations offer an account of the apparent anomaly.

As stated earlier, a token can be considered pitch prominent if the fundamental frequency on the vowel is raised relative to the fundamental frequency of immediately adjacent words. Often a pitch prominent token will also be produced with a pitch contour; for present purposes, if the pitch is raised on the vowel of *not*— as on lines 32, 57— or, in a contracted case, on the vowel of the auxiliary onto which the negative is contracted—as on lines 5, 11, 12, 19, 21, 23, 24, 54, and 55 (twice)—this will be considered evidence of pitch prominence, even if there is no contour. If there is a contour in the vowel, even if pitch is not higher than on the immediately preceding vowel, this is also categorized as 'pitch prominent' (line 21). If there is no pitch prominence—as in line 9 and the first example in line 12—this will be referred to as a 'neutral' pitch. It is also theoretically possible that cases would occur in which there would be negative prominence (that is, pitch lowering) on a token, as proposed by Bolinger [6]; however, we did not find any cases of this type of prominence. Specific techniques for analysis of pitch prominence will be explained in greater detail below.

If the pitch is nonprominent, and the negative is contracted, this corresponds to the assumptions of the Agreement Rule (for polite interactions), and minimizes any 'face threat' which might result.

6.2. Technique for the acoustic analysis

Segments from each of the tapes were run through either MacSpeechLabII[1] or Signalyze 1.1, using a Macintosh IIci with a MacRecorder interface. Note that this 8 bit A-D interface for the analysis of fundamental frequency was sufficiently clear for the high quality recordings. If the trackable pitch is no higher than the immediately preceding pitch,[2] and does not have any contour (as on line 9), then it is not categorized as pitch prominent. As described above, if a local pitch prominence occurs (even if that prominence is not the pitch peak for the entire sentence) the negative is classified as prominent. While this decision criterion clearly ignores other forms of prominence (amplitude and duration), it accurately compares the data with the template which would be provided

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[1] Kerry Green and Tom Bourgeois of the University of Arizona Speech Research Lab were kind enough to give us access to their facilities.

[2] Note, not just 'not higher than the nearest local maximum', but 'not higher than the immediately preceding vowel'.

by the synthesis algorithm.

Figure 1.
Pitch Prominence in FTA-Disagreements
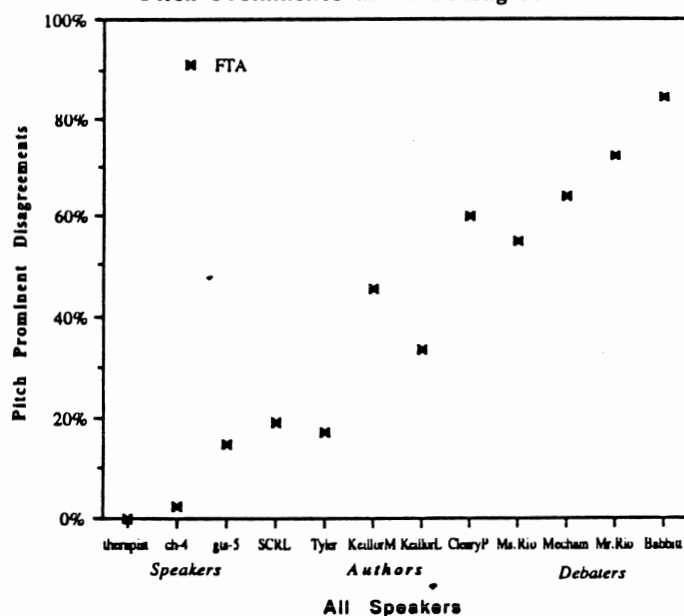
6.3. Quantifying the prominence × FTA results

Figure 1 presents the results of such an analysis, comparing casual conversational speech (reported in [35]), with readings of books and Keillor monologues (reported in [36]), and with the pitch tracks for the present corpus of political debates. If these results are representative, it is clear that therapeutic style and casual conversational style require the lowest percentage of pitch prominence in face threatening disagreements (between 0% for a therapist, and 18% for teenaged therapy patients with casual conversations in between). Data gathered from a DARPA tutorial shows that even there, face threatening disagreements are pitch prominent only 20% of the time. In read (adult) dialogue, the percentage is only somewhat higher, although in read dialogue-of-children, up to 60% can be pitch prominent. This is consistent with our understanding that in conversation, or even simulated conversation, the AR is stronger than the FPR for socialized adults. However, even the kiddie-FTA's have lower percentages than the political debates used for the present corpus, which range from 60-85% pitch prominent. We draw the conclusion that pitch prominence is licenced in this debate register, but that even in this register, the FPR does not account for 100% of the data: while the political debates have a much higher percentage of pitch prominent negations than the other corpora, 20-40% of the negations are still unaccountably non- prominent. In the next section, we will consider whether incorporating the scope into the analysis as a parameter provides an explanation for the 20-40 % gap between the FPR 'target' and the debate's negative realizations.

6.4. Quantifying the prominence × scope results for a subcorpus

In what follows, we examine each occurrence of negation in the segment of the transcript found in Appendix I and score it for various parameters: pitch [prominent or non-prominent], negation [old or new], focus [wide or narrow], accent [optional or obligatory], interaction [neutral, speaker-enhancing, addressee-enhancing, addressee-threatening]. In each case, we assess whether this profile is consistent or inconsistent with the Focus Prominence Rule and the Agreement Rule of §4.3. The lines discussed may be found in the appended transcription. Pitch-tracks of these lines may be found in Appendix II.

line 5: *No, it isn't a matter of whether I have regrets ...*

pitch	prominent
negation old/new	new
focus	narrow
accent	obligatory
interaction	self-enhancing

This is consistent with both the FPR and the AR.

line 9: *the governor does not have the power to create a state holiday.*

pitch	nonprominent
negation old/new	new
focus	wide
accent	optional
interaction	self-enhancing

This is inconsistent with the FPR (since negation is new but not accented), but consistent with the AR.

line 11: *You can't say there's any regrets.*

pitch	prominent
negation old/new	new
focus	narrow
accent	obligatory
interaction	self-enhancing

Consistent with both the FPR and AR.

line 12: *It isn't anything that—*

pitch	non-prominent
negation old/new	old?
focus	wide?
accent	optional
interaction	self-enhancing

Consistent with both FPR and AR. Note, however, that

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the non-prominence of negation here is immediately self-corrected: see the next example.

line 12f.: *it isn't anything of my doing*

pitch	prominent
negation old/new	old
focus	wide
accent	optional
interaction	self-enhancing

Inconsistent with FPR (since negation is old but nevertheless prominent), but consistent with the AR. [Note that this is a self-correction of the immediately preceding fragment.]

line 19: *roughly 25% don't want a state holiday*

pitch	prominent
negation old/new	new
focus	narrow
accent	obligatory
interaction	pseudo-neutral

Consistent with both FPR and AR.

line 21: *some don't care*

pitch	prominent
negation old/new	new
focus	wide
accent	optional
interaction	enhances spkr's positive face

The optionality of prominence here is inconsistent with FPR and supports AR.

line 23: *isn't quite correct*

pitch	prominent
negation old/new	new
focus	wide
accent	optional
interaction	enhances spkr's positive face

The optionality of prominence here is inconsistent with FPR and supports AR.

line 24: *I don't think we meant to suggest that*

pitch	prominent
negation old/new	new
focus	narrow
accent	obligatory
interaction	face-enhancing to addressee i.e., supportive interchange

Consistent with both FPR and AR.

line 32: *I've not got into being concerned about that.*

pitch	prominent
negation old/new	new
focus	[complex]
accent	obligatory
interaction	on-record fta

Consistent with both FPR and AR.

line 54: *But he can't run away from the issue.*

pitch	prominent
negation old/new	new?
focus	narrow
accent	obligatory
interaction	on-record fta

Whether this is consistent with the FPR depends on whether we count negation as new (consistent) or old (inconsistent); consistent with AR. The rhetorical effect here goes beyond the distinctions that our parameters make.

line 55a: *he doesn't support*

pitch	prominent
negation old/new	new
focus	wide
accent	optional
interaction	on-record fta

The optionality of prominence here is inconsistent with FPR and supports AR. The rhetorical effect here goes beyond the distinctions that our parameters make.

line 55b: *and doesn't want*

pitch	prominent
negation old/new	old?
focus	wide
accent	optional
interaction	on-record fta

Inconsistent with FPR (since negation is old and pitch is prominent); consistent with AR. The rhetorical effect here goes beyond the distinctions that our parameters make.

line 57: *It's not political.*

pitch	prominent
negation old/new	new
focus	narrow
accent	obligatory
interaction	on-record fta

Consistent with FPR and AR.

Table 3. Focus and prominence.

	+Prominent		-Prominent	
	New	Old	New	Old
Narrow focus	6	0	0	0
Wide focus	4	1	1	1

7. Conclusion

The subcorpus was chosen, first, to neutralize the AR, second, to minimize cases of nonprominent pitch, and third, to determine whether a more complex account of the scope of focus can help to explain the cases where nonprominent pitch still occurs. The evidence supports the conclusion that the sentences which do permit non-prominent negations in the debate were those with the wide focus. We look forward to the opportunity of testing this conclusion on a larger corpus.

Appendix I
MacNeil/Lehrer interview
with Evan Mecham and Bruce Babbit

Robin MacNeil:
1 In view of the fact that some Arizonans, at least, are
2 unhappy about this decision are you—do you have any
3 regrets about having rescinded the holiday, and are you
4 reconsidering.
Evan Mecham:
5 *No, it isn't a matter of whether I have regrets. It's a*
6 matter that as I see my responsibility it's to be respective
7 of the law. Bruce and I, perhaps, have a difference of
8 opinion here, but my attorney general tells me that this—
9 *the governor does not have the power to creat a state*
10 holiday. And consequently, I acted in the only rational
11 *and responsible way that I can do so. You can't say that*
12 *there's any regrets. It isn't anything that—it isn't*
13 *anything of my doing. I just came into a situation that it*
14 was my responsibility to correct. I noted, of course, that
15 in the presentation as I watched here earlier says that all
16 of these people feel differently about that, and yet the
17 results of a poll here that was just published over the
18 weekend points out that 25% of the people, or roughly a
19 *quarter want a state holiday, and roughly 25% don't want a*
20 state holiday. And then the others in the middle, some
21 *don't care, and some says well it'd be nice to have some-*
22 thing. So I think the representation that everybody is
23 *opposed to what I've done isn't quite correct.*
Robin MacNeil:
24 *I don't think we meant to suggest that. We just meant that*
25 some are opposed to what you've done. Is your—Was your
26 objection strictly a legal one, governor, though. I mean
27 there have been a wide variety of things you've been quoted
28 as saying. For example, that Martin Luther King was not of
29 the stature of Washington or Lincoln and therefore didn't

30 deserve a birthday holiday like them. Did you say that, and
31 do you believe that?
Evan Mecham:
32 *I've not got into being concerned about that. I—This*
33 issue really has, you know, been blown up by others. My
34 primary concern has been the fact that as for my respon-
35 sibility it is to correct a thing that could be a sticky
36 issue. We've got a—Some people feel that we have a
37 holiday, or we did have in this state. And it's been my
38 responsibility to correct that. Some have said, well, why
39 don't you let it go to the court. Well, that's not a re-
40 sponsible action, either. I feel that Bruce—I might say
41 my friend Bruce, because we're friends, although we're
42 political—we have political differences. I think he
43 acted in a totally political manner of which to do this.
44 And I think that he as an attorney, I think he as an former
45 attorney general, he knows the law. He knows how to read
46 it. I think he could read the same thing into it. I'm
47 sorry that he's started this great controversy. But it was
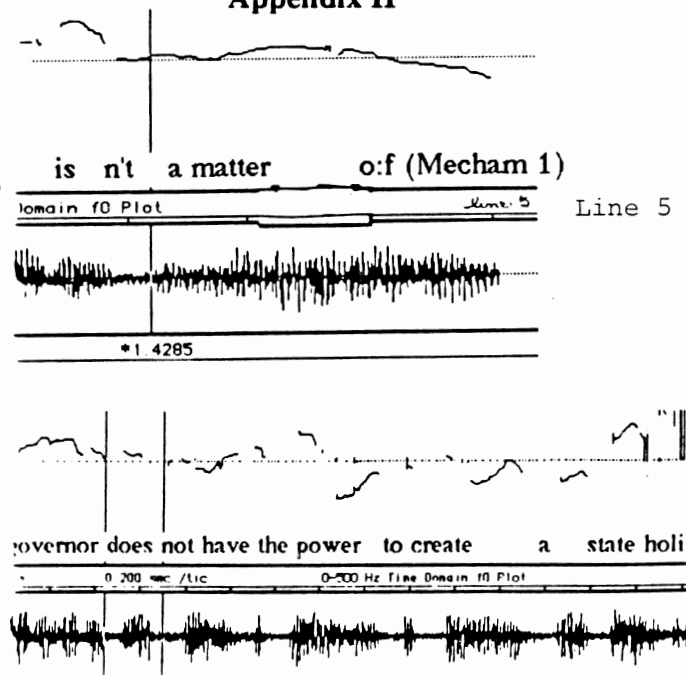48 up to me to take the only responsible action that was left
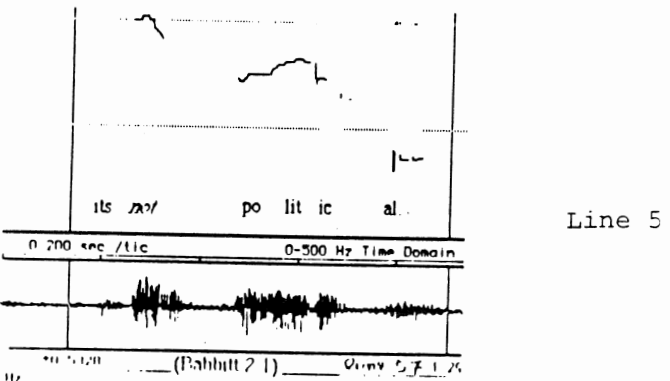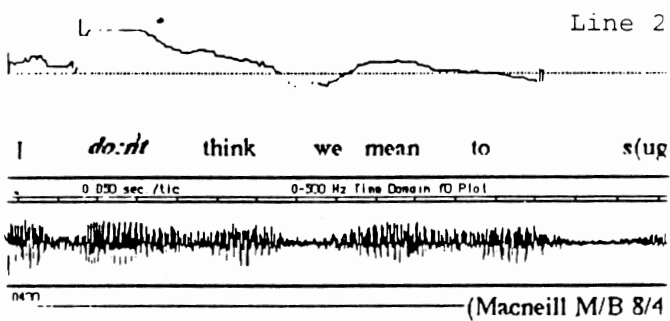49 to me to do.
Robin MacNeil:
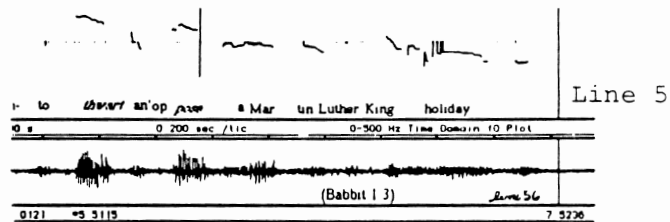50 Governor Babbitt, or former Governor Babbitt, the present
51 governor says what you did was just illegal.
Bruce Babbitt:
52 Well he can hide behind the lawyers. And there are a lot of
53 lawyers on both sides of this issue. He can hide behind
54 *them. But he can't run away from the issue. And that is,*
55 *he doesn't support and doesn't want and is using his power*
56 to thwart and oppose a Martin Luther King holiday. I sup-
57 *port it. It's not political. My involvement in this issue*
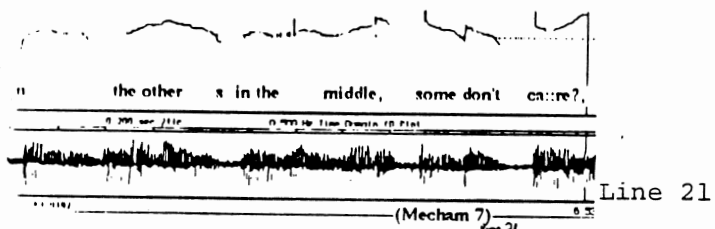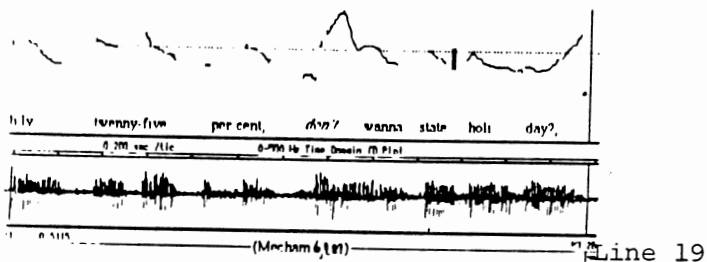58 began in Selma, Alabama, in 1965. It's continued to this
59 day. Martin Luther King is a symbol of what America is all
60 about. Of the ability to triumph over discrimination, over
61 deprivation. It's the American story. It's a great symbol.
62 I believe it ought to be a holiday. And the plain fact is
63 that he's using his office to prevent it.

Appendix II

is n't a matter o:f (Mecham 1)

Line 5

*1.4285

:overnor does not have the power to create a state holi...

ca:n't say that there's any re gr e:ts/

0.200 sec./tic   0-500 Hz Time Domain f0 Plot

Line 11

t' any th ing--)º it *isn'*any thing of my *doing!*

(Mecham 3 2)

Line 12

h lv twenny-five per cent, *dın'?* wanna state holi day?,

0.200 sec /tic   0-500 Hz Time Domain f0 Plot

(Mecham 6 1)

Line 19

n the other s in the middle, some don't ca:re?,

0.200 sec /tic   0-500 Hz Time Domain f0 Plot

(Mecham 7)

Line 21

thi:nk, eh::, the re pre sent *ta:* tion

0.200 sec /tic   0-500 Hz Time Domain f0 Plot

Line 22-

eh: evryhody is o pp *o:zed* t'what I've *do:ne,*

0.200 sec /tic   0-500 Hz Time Domain f0 Plot

I is n't quite correct

0.200 sec /tic   0-500 Hz Time Domain f0

(Mecham 8/12 3)

but'e *can't* run away frm the i ssue (Babbitt 1 1)

0.050 sec/tic   0-500 Hz Time Domain f0 Plot

Line 5

He: does n't su *po:rt,*

0.050 sec /tic   0-500 Hz Time Domain f0 Plot

Line 55

an' *doesn't* wan t an'is is ing his pover, eh

0.200 sec /tic   0-200 Hz Time Domain f0 Plot

r to *thwart* an'op *pose* a Mar un Luther King holiday

0.200 sec /tic   0-500 Hz Time Domain f0 Plot

(Babbitt 1 3)

Line 56

I *do:n't* think we mean to s(ug

0.050 sec /tic   0-500 Hz Time Domain f0 Plot

(Macneill M/B 8/4

Line 2

its *no?* po lit ic al

0.200 sec /tic   0-500 Hz Time Domain

(Babbitt 2 1)

Line 5

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