The Intonation of Contradictions in American English

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1. Introduction

The ‘contradiction contour’ rejects the truth or assertability value of a proposition. Liberman and Sag (1974) provided the classic example in (1). The intonational coding is taken from Ladd (1996).

(1) A: My fate is sealed. I’ve been diagnosed with elephantiasis.
   B: Elephantiasis isn’t incurable.
       L*+H    L*   L* LH%

Bartels (1999) concurs with this transcription except that she transcribes the high onset to the contradiction as H+!H*. Pierrehumbert and Hirschberg (1990) focus on the nuclear tune part of this contour and note that the label ‘contradiction contour’ for L* LH% is not accurate since not all contradictions are marked by this tune and this tune doesn’t always mark contradictions. We were especially interested in pursuing the first of their claims, that not all contradictions are marked by this tune, and decided to conduct an empirical corpus study of the intonation contours that do appear on contradictions.

2. Method

We investigated contradictions in two corpora of American English. First, the CallHome corpus is a corpus of telephone conversations between people who know each other, available from the Linguistic Data Consortium. Transcriptions of ten minute spans were provided for each of 125 half-hour telephone calls. We examined the entire corpus, finding 23 sentences that we identified as contradictions. We supplemented this corpus with five transcripts of the McLaughlin Group, a half hour political discussion program shown on the Public Broadcasting Service in the U.S., which we videotaped and downloaded transcripts from the show’s web site. We found 17 contradictions in the McLaughlin corpus, for a total of 40 contradictions altogether.

The CallHome corpus was more cooperative than the McLaughlin corpus, which is no doubt why there is a much lower rate of contradictions per minute in the former. The McLaughlin Group is set up to encourage disagreement, so a lot of contradictions are to be expected. The CallHome speech files were already digitized, and we used Goldwave to digitize the McLaughlin Group contradictions. Goldwave was used to select and cut sound samples from the speech files for both corpora. We used Pitchworks version 5.0 to perform the intonational coding. We transcribed the 40 contradictions which we had collected following ToBI (Beckman and Ayers-Elam 1997), and classified the resulting contours into intonational types.
3. Results

We concluded that the 40 examples of contradictions fit into seven intonational patterns, six of which can be identified by the final nuclear tune, although the whole contour is also relevant in at least some cases, and one for which the intonational configuration of the entire utterance needs to be taken into account. Table 1 shows the distribution of collected contradictions against the seven intonation types.

<table>
<thead>
<tr>
<th>Nuclear tune</th>
<th>Tonetic Label</th>
<th>N</th>
<th>Semantic label</th>
</tr>
</thead>
<tbody>
<tr>
<td>L<em>H</em>LH%</td>
<td>Low-low-rise</td>
<td>7</td>
<td>Classic Contradiction Contour</td>
</tr>
<tr>
<td>L*HH%</td>
<td>Low rise</td>
<td>3</td>
<td>Low-Rise Contradiction Contour</td>
</tr>
<tr>
<td>L+H*LH%</td>
<td>Rise-fall-rise</td>
<td>2</td>
<td>Contrastive Contradiction Contour</td>
</tr>
<tr>
<td>Various</td>
<td></td>
<td>6</td>
<td>Focused negation</td>
</tr>
<tr>
<td>H*LL%</td>
<td>Fall</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>L+H*LL%</td>
<td>Rise-fall</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>!H*LL%</td>
<td>Downstep</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Distribution of contradictions according to intonation type

4. Discussion

Table 1 indicates that there is considerable latitude in the intonational structure of contradictions. However, we believe that closer scrutiny of the data shows that there are two primary patterns: nuclear rises and nuclear falls. We believe that nuclear rises are the primary indicators of contradictions since it is rises on statements that are the marked pattern, and the falls that can truly be analyzed as appearing on the contradictory part of the utterance can be substituted by rises in almost all cases. Contradictions thus can be said to be only optionally marked by a rising nuclear tune.

In the following subsection, we discuss each subclass of rising contradictions, claiming that there are two main variants, which differ from each other semantically. Then we turn to the falls, and show how they can or cannot be substituted by rises of the two primary types.

4.1. Rises.

**Classic Contradiction Contour**

The most salient contradictions were marked with a rising phrase accent plus boundary tone. The majority of these (7/12) exemplified the classic contradiction contour with sometimes a high onset, then one or more L* pitch accents and always finally an L*LH% nuclear tune, as in (2). A pitch track for this utterance is shown in Figure 1.
(2) A: Where? What are you talking about?
B: In Japan.
A: I’m not going to Japan.

![Figure 1. Pitch Track for Classic Contradiction Contour](image)

Another example of the classic contradiction contour, this time from the McLaughlin Corpus is shown in (3):

(3) Mr. Zuckerman: Yeah, I’ll tell you, forget the movie. I mean, as Tony and you were saying before, we are faced with an unbelievably serious problem, which the military has been telling us privately for years. **This isn’t something** that they just **found out** about on **nine/eleven**. They **have been terrified** about this for years.

Six of the seven contradiction contour examples were negative, but one was positive, showing that positive contradictions can be used to contradict a negative proposition. A very clear example which took place during a conversation that two of the authors took part is shown in (4).

(4) A: That’s right. Barry doesn’t drink.
B: I **drink**. Just not when I drive.
**Low-Rise Contradiction Contour**

A close variant of this first pattern were the three examples with a high phrase accent. The resulting L*HH% nuclear tune is the low-rise tune associated with polarity questions. An example is shown in (5).

(5)  
A: I’m pretty much just taking it easy.  
B: That’s cool.  
A: Studying a bit here. Going out and doing stuff.  
B: Watching Iranian films.  
A: **I’m not watching** them. Nassir is.  
L+H* L* L* HH% L+H*LL%

The difference between contradictions with L*LH% and L*HH% appears to be a gradient one, simply depending on the length of time in which the pitch stays low after the L* pitch accent before the rise to the boundary tone. The difference between the low-rise contradiction contour and the low-rise question contour appears to be a gradient one as well, simply depending on the extent of the height of the boundary tone, which isn’t as high in the contradictions. Careful phonetic study of these differences is clearly warranted.

The classic contradiction contour could easily be substituted for the low-rise here with no change in meaning, thus supporting our conclusion that this is just an allotonic variant of the classic contradiction contour.

**Contrastive Contradiction Contour**

A very salient variant on the contradiction contour is the rise-fall-rise nucleus pattern. An example is shown in (6), with the pitch track shown in Figure 2. Sentences with this contour also rise at the end, but the pitch accent is an L+H* and there isn’t necessarily a distinctive high onset and L* intermediate accent as there is in the contradiction contour.

(6)  
Mr. McLaughlin: So he’s a great politician?  
Ms. Clift: No, he benefits from low expectations.  
Mr. O’Donnell: He – “successful” is different from “great”.  
Mr. McLaughlin: Well, he’s been a successful politician, and he’s been a successful statesman, has he not?  
Mr. O’Donnell: He’s done – the only thing – he was in a box with China. He did the only thing you could do. He **hasn’t done anything extraordinary.**  
H* !H* L+H* L+H*LL%
We term this the ‘contrastive contradiction contour’ because the nucleus is always contrastive. L+H* here evokes a scale, as Pierrehumbert and Hirschberg (1990) say of this pitch accent. In (6), the scale of quality of George W. Bush’s statesmanship is evoked by ‘successful’ and the speaker denies that he has been extraordinary.

Discussion of rises.

It is very interesting to compare this contour with the classic contradiction contour. If we substitute L+H* LH% for L* LH% in (2), as in (2’), we get the effect that ‘Japan’ is contrastive, i.e. that the speaker is going somewhere else, e.g. perhaps China.

(2’) I’m not going to Japan.
L*+H  L*  L+H* LH%

However, the contradiction effect is retained. This is why we label the rise-fall-rise contour the ‘contrastive contradiction contour’.

Substitution of the classic contradiction contour for the contrastive contradiction contour is also revealing, this time for the meaning of the classic contradiction contour. If we perform this substitution for (6), we end up with (6’), and it becomes clear that the result is appropriate in a different context.

(6’) He hasn’t done anything extraordinary.
L*+H  L*  L*  L* LH% 

It would only be appropriate if someone had claimed explicitly that he HAD done something extraordinary. The classic contradiction contour thus is echoic in nature. In (4) for example the proposition that the speaker had been watching Iranian films is explicitly evoked and then denied. In the elephantiasis example in (1), the denied proposition is not actually explicitly evoked but is strongly implicated in the discourse context, and entails the proposition ‘I’m going to die’, which can be inferred by the speaker to be the proposition that the hearer has in mind.
The echoic nature of the contradiction contour can also be seen when the substitution is made for another contrastive contradiction contour example that we have discussed in Hedberg and Sosa (2001) and Hedberg (2002), shown in (7):

(7) Ms. Clift: Well, I think definitions of beauty or handsomeness change over the years, and I, frankly, think this guy is pretty attractive. **I don’t find him unattractive.**

In this example, the speaker is contradicting the opinions of the other participants that the image of Jesus under discussion is ugly. If a classic contradiction contour is substituted here, as in (7’), we get a quite a different result:

(7’) **I don’t find** him unattractive.

Here what is being contradicted is the entire proposition that the SPEAKER finds him unattractive. That is, someone would have said or implied ‘You find him unattractive’, and the speaker would have been denying this. The negation in the classic contradiction contour thus takes maximally wide scope, which is consistent with it being metalinguistic in the sense of Horn (1989) or metarepresentational in the sense of Noh (2000), and hence echoic in nature.

4.2. Falls

Focused Negation

The first subtype of contradiction with a nuclear fall is the one where the whole utterance must be taken into account, not simply the nuclear tune. We label this type ‘focused negation’ because the point of greatest pitch prominence in the sentence is the negative particle itself, or the auxiliary containing contracted negation. An example is shown in (8).

(8) Ms. Clift: And I don’t know if we are ever going to know what on that night. And I think Senator Kerrey has been the most truthful here, in saying he’s not going to case aspersions on another person’s version of events. But what we do know is that when they discovered that these were women and children and civilians who were murdered, and went on to accept --

Mr. O’Donnell: They **weren’t murdered.** They were **killed.** They were **not murdered.**

Here, a prominent L+H* accent is placed on the negative auxiliary “weren’t” and the nuclear tune has a low fall, which has low prominence. After the rectification, which corrects the hearer (Horn 1989), the contradiction is repeated, this time with the negative particle detached from the auxiliary for even greater prominence and once again marked with L+H*.
Fall

There were a few cases that didn’t have any distinctive characteristics, but that just ended in a high fall. We labeled these ‘falls’, and an example is shown in (9).

(9) Mr. Barone: Well, I don’t think it’s as appropriate, because, A, it does have some of the same problems as alcohol. It can impair driving ability and things like that. So, therefore, it’s undesirable in that regard. There’s also evidence that you get brain damage over heavy use over a lifetime, and people really --

Mr. McLaughlin: I haven’t seen that.
L+H* H* H*LL%

Rise-Fall

More distinctive are the examples that we labeled ‘rise fall’ because they ended in an L+H*LL% nuclear tune. An example is shown in (9). The characterization of Pierrehumbert and Hirschberg (1990) of this pitch accent as marking position on an evoked scale—that is, contrast—fits the data quite well. In (10), a contrast is drawn between “James Bond” and “a real man”.

(10) Mr. O’Donnell: No, there’s way too much James Bond-style rumor around this sort of thing.
Mr. Blankley: But wait a second –
Mr. McLaughlin: Mmm-hmm. Well, you ought to know about all that stuff, huh?
Mr. Blankley: The Ukrainian arms merchant, Simeon Mulovich (ph), I think his name is, who is the rumored go-between between the Chechens and bin Ladan, so it’s not simply James Bond. This is a real man.
L+H* !H* H* L+H*LL% H* H* L+H*LL%

In (10), both the contradiction and the rectification receive the rise-fall nuclear tune. However, in some cases, only the rectification receives the rise-fall tune. An example is shown in (11), and a pitch track is shown in Figure 3.

(11) A: Doctor Martins would cost about thirty dollars.
B: Oh jeez. Here it’s a hundred.
A. A hundred.
B. Well so that’s eh that’s like thirty-five dollar- that’s accurate.
B: No not a hundred sheckels a hundred dollars. It’s three hundred sheckels.
H*LL% L+H* !H* !H* !H* L+H*LL%
In some cases, this nuclear tune just marks very emphatic speech, so it doesn’t necessarily mark a contrast or position on a scale.

**Downstep**

The intonational pattern with the greatest frequency in the data was the downstep pattern, where the utterance is marked with a series of downstepped pitch accents and ends in !H*LL%. An extreme example is shown in (12), with the pitch track shown in Figure 4. Here again the rectification is included in the long intonation unit and the nuclear tune appears at the end of the rectification.

(12)  
Mr. Lowry: No, I think at this point, if it comes to that, we should let someone else do it. We should send him to another country that will do the job.

Mr. McLaughlin: Do you really think that’s the way to do it?

Mr. Lowry: Absolutely, unless there’s some evidence --

Mr. McLaughlin: Isn’t that kind of --

Mr. Lowry: -- that he really knows about some imminent attack. And I don’t think there’s any evidence of that at this point.

Mr. McLaughlin: Isn’t that kind of underhanded?

Mr. Lowry: Sure. Look, this is going to be a messy war and you have to do some underhanded things.

Ms. Clift: Right. Name me the country that you would trust to do the torture in this particular case.

Mr. Lowry: The Turks.

Mr. McLaughlin: The Filipinos.

Mr. Lowry: (laughs.)

Mr. McLaughlin: The Filipinos have already done it.

Ms. Clift: It’s a silly idea.
Mr. Blankley: If...If we were to make the decision that it needed to be done then we  oughtn’t to slough it off on anybody else and we ought to do it ourselves.

The high peak at the end here comes from another person’s interruption.

Discussion of falls

While rises on statements are unusual and highly marked and thus serve to unambiguously mark the statements they occur on as contradictions, the same cannot be said of falls. Focused negation clearly indicates that the speaker is disagreeing with something that another person had said, but the other three falling patterns occur frequently on non-contradictions. Thus these statements are not marked unambiguously as contradictions. Why would a speaker choose not to mark the contradiction as a contradiction? Can we even be sure that these examples ARE contradictions?

One possibility is that the ordinary intonational contour is chosen for purposes of politeness; that is, that these contradictions are hedged. This explanation seems to account for some of the falling contradictions in our data, for example (13):

(13) A: Well, I don’t think vitamins will get you in trouble.

Here the statement is lexically hedged as well with the speaker softening the contradiction with “I don’t think.”
However, not all examples can be explained in this way. It is likely the case that explicit intonational marking of contradictions is simply optional, just as syntactic marking of topics by preposing is (Gundel 1985) or marking topics with L+H* (Hedberg 2002). In order to test whether the statements that we labeled as contradictions but that turned out to have falling intonation contours actually are contradictions, we tried substituting the two primary contradiction contours on them.

Both contours are possible on all the examples we discussed above and on most of the other falls in the data. However, we found that in a few cases, neither substitution was possible because the contradiction is all contained in the negation particle “no” and the body of the statement actually contains only the rectification. For example, (14).

\begin{enumerate}
\item[(14)] A: Okay so it’s nine-thirty.
\item B: No it’s \textbf{twenty} to \textbf{nine}. Eight thirty it’s \textbf{eight} thirty.
\end{enumerate}

\[
\begin{array}{cccccccc}
H^* & L^- & H^* & !H^*HL\% & H^* & !H^* & !H^*LL\% \\
\end{array}
\]

Here, neither substitution works in the context, as shown in (14’) and (14’’).

\begin{enumerate}
\item[(14’)] #No, it’s \textbf{twenty} to \textbf{nine}.
\item[(14’’)] #No, it’s \textbf{twenty} to \textbf{nine}.
\end{enumerate}

\[
\begin{array}{cccccccc}
L^*+H & L^* & L^*LH\% \\
\end{array}
\]

5. Conclusion

To conclude, we investigated 40 contradictions from two corpora of unscripted speech, a corpus of telephone conversations and a corpus of televised political discussions. We found that seven different intonation patterns occur on the contradictions. These can be divided into two broad groups, classified by final nuclear tune: the rises and the falls.

The three categories of rises can be collapsed into two: the classic contradiction contour with L^*LH\%, and the contrastive contradiction contour with L+H^*LH\%. The classic contradiction contour is echoic in nature, and the contrastive contradiction contour evokes a contrast. Both contours unambiguously mark the statement as a contradiction.

The L^* pitch accent in the classic contradiction contour fits Steedman’s (2002) characterization of this pitch accent as meaning that the item marked with this pitch accent is contentious. However, it also fits the characterization of Pierrehumbert and Hirschberg (1990) that it marks items that are not asserted, for example because they are given in the context. The L+H^* on the contrastive contradiction contour fits Pierrehumbert and Hirschberg’s characterization of this pitch accent as marking asserted position on some evoked scale; that is, contrast. Steedman identifies the meaning of this pitch accent as marking an agreed upon theme. Consideration of information structure is beyond the scope of this paper, so we are unable to draw any conclusions at this time about that hypothesis.
Steedman also states that the rising phrase accent plus nuclear tune, LH%, marks the proposition as one which the hearer as opposed to the speaker is committed to. This works for the two contradiction contours if it is understood that it is the contradicted proposition that the hearer is committed to rather than the stated proposition. Pierrehumbert and Hirschberg claim that the meaning of the H% boundary tone is that it connects to following discourse. In this case, the contradiction connects to the rectification.

The falls can be divided into four categories. The L+H* nuclear pitch accent on the rise-falls tends to mark contrast in conformity with Pierrehumbert and Hirschberg, but sometimes marks only emphasis. We concluded that falls can occur on contradictions for a variety of reasons. First, marking a contradiction intonationally is in general optional, so sometimes it simply doesn’t occur. Furthermore, the contradictory nature of a contradiction can be de-emphasized in some cases for reasons of politeness.

We verified that most of the falling examples are truly contradictions by successfully substituting either contradiction contour onto them and checking the suitability of the resulting utterance in the context. Most of the remainder of the statements we identified as falling contradictions turned out to be the rectifications of contradictions effected by utterance of the negative particle “no” and hence could take neither contradiction contour.

In sum, we believe that the contour identified by Liberman and Sag (1974) and labeled the ‘contradiction contour’ is indeed accurately so named, contrary to Pierrehumbert and Hirschberg’s (1990) conclusion. We believe that the variant of this rising classic contradiction contour, which we have labeled the ‘contrastive contradiction contour’, is also a true contradiction contour. Thus, contradictions which are marked by falling intonation can be substituted for by both contradiction contours.

Finally, we’d like to point out that examination of the meaning of intonation contours in actual unscripted speech is a very important methodological technique in attempting to understand the semantics and pragmatics of prosody. However, we have also relied on constructed examples in evaluating the results of our substitutions. Both methods of research are clearly required if a complete picture is to be obtained of the meanings associated with prosody.

6. References


