

László Varga

*Boundary tones and the lack of  
intermediate phrase in  
Hungarian (Revisiting the  
Hungarian Calling Contour)\**

**1 Introduction**

The Hungarian calling contour (CC), also known as the stylised fall, consists of two terraces, i.e. two level stretches of pitch, each marked by a high tone (H), the second being somewhat lower than the first, see (1). While the first terrace lasts till the end of the penultimate syllable, the second terrace falls on the final syllable of the carrier phrase, and this syllable can be phonetically lengthened. The superscript vertical stroke before a syllable indicates the presence of a pitch accent on that syllable.<sup>1</sup>

(1) ● - -

—————  
<sup>1</sup>Bodoriné!

[<sup>1</sup>bodorine:]

'Mrs. Bodori!'

In his analysis of the Hungarian CC, Varga (2008) comes to the conclusion that the representation of this contour is H\*!H-0% when it stands at the end of an utterance, and H\*!H- when it is inside an utterance. In these representations

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<sup>1</sup> The acute accents on certain vowel letters in Hungarian orthography (see e.g. the *é* in *Bodoriné*) represent phonemic vowel length and have nothing to do with stress. Stress in Hungarian words always falls on the first syllable.


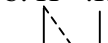


the H\* is a monotonal pitch accent, the !H- is a downstepped phrase tone<sup>2</sup>, and the 0% is a zero boundary tone. A phrase tone marks the end of an intermediate phrase, whereas a (final) boundary tone marks the end of an intonational phrase, cf. Beckman—Pierrehumbert (1986). On this view, an utterance carrying more than one CC corresponds to a single intonational phrase, which is cut into as many intermediate phrases as the number of CCs in it.

The present paper wishes to revise this assumption and to prove that the Hungarian CC always forms an intonational phrase, i.e. not only at the end of an utterance but also inside the utterance. According to this new proposal the representation of the Hungarian CC is always H\*!H-0%, and positing intermediate phrases in Hungarian is no longer necessary.

The pitch tracks of most examples, obtained by Praat, are provided in the Appendix. These examples are recordings of my own speech. I am a native speaker of Hungarian. Other native speakers who have heard the recordings are of the opinion that they are natural renderings of the intended sentences.

## 2 The boundary tone at the end of an intonational phrase

Varga (2008) finds that the second, downstepped H tone in the Hungarian CC cannot be the trailing tone of a bitonal pitch accent, as suggested for the English CC by Gussenhoven (2004: 311), and neither can it be a boundary tone, so it can only be a phrase tone, as was suggested for the English CC by Pierrehumbert (1980), or Grice et al. (2000). Consequently, if we disregard the final boundary tone, the representation of the Hungarian CC should be H\*!H-, as is shown by the examples in (2).

(2)a.	H* !H-	b. H* !H-	c. H* !H-	d. H*!H-
				
	'Ma-ri!	'Mari-ann!	'Bodoriné!	'Zsolt!
	[ <sup>1</sup> məri]	[ <sup>1</sup> məriɒn:]	[ <sup>1</sup> bodorine:]	[ <sup>1</sup> ʒolt]
	'Mary!'	'Marianne!'	'Mrs. Bodori!'	'Zsolt!'(a man's name)

But the representations given in (2) are still not complete, because these CCs are utterances which are co-extensive with intonational phrases (IPs), and so the contours are simultaneously utterance-final and IP-final. In accordance

<sup>2</sup> The term *phrase tone* is also known as *phrase accent*.

with a wide-spread assumption, viz. that IPs end with a boundary tone (cf. Beckman—Pierrehumbert 1986), the IP-final contours, which can also be called **nuclear contours**, call for a final boundary tone.<sup>3</sup> Following this assumption, Hungarian nuclear contours should be seen as also needing a final boundary tone. However, the reason why I think so is different from the reason given in Varga (2008). To explain this, I have to make a digression.

Varga (2008) thinks that there are two equally important cues to the end of an IP: (a) the presence of a **potentially utterance-final contour (i.e. P.U.F. contour)**, and (b) the presence (or possibility) of a **pause** after the P.U.F. contour. A P.U.F. contour is a recurring intonation contour which is able to start on the last accented syllable of an utterance and continue till the end of the utterance. The pause is a noticeable interval of silence, or some kind of silence-substitute, e.g. the lengthening of a syllable, or the insertion of a schwa at a certain point in speech (filled pause, cf. Horváth 2010). Under this view, the P.U.F. contour and the pause (at least a potential pause) are both necessary for identifying the end of an IP, and the final boundary tone is considered to be a melodic transition to a pause (real or potential), similar in function to the terminal junctures of American structuralist intonation analyses, cf. Trager—Smith (1951).

However, recent considerations have cast doubt on the correctness of this line of thinking and have forced me to think that (a) the pause cannot be criterial for identifying the end of an IP and (b) that the final boundary tone is not a melodic transition to a pause but part of the representation of a contour irrespective of there being or not being a pause after it.

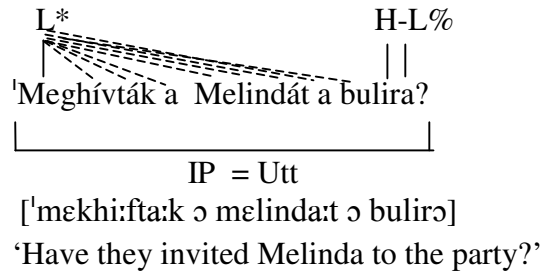
Let us consider, in this respect, the Hungarian rising-falling contour (or simply rise-fall), which we use for yes-no questions. This is represented by Grice et al. (2000: 150) as L\*H-L%, i.e. a sequence of the L\* pitch accent, H-phrase tone and L% boundary tone, where the boundary tone is part of the structural description of the contour. In a normal (non-disbelieving) Hungarian yes-no question the rise-fall contour is carried by that part of the sentence which follows the optional topic. This part is called predicate or comment (É. Kiss 2002). In (3a) we can see a normal Hungarian yes-no question which contains no topic and consists of just a predicate. All the accents are reduced apart from the one at the beginning of the predicate, even though they mark words which carry new information. So the rise-fall is spread out on the entire sentence. The sentence contains the following words: *meghívták* 'invited-3pl',

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<sup>3</sup> Gussenhoven (2004: 302) does not subscribe to this assumption, and claims that some English nuclear contours do not have a final boundary tone. But then he must introduce a special symbol (}) to indicate the end of IPs.

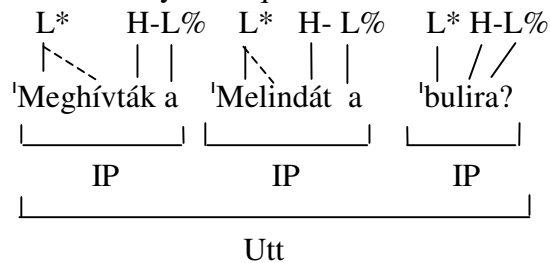
a 'the', *Melindát* 'Melinda-ACC', a 'the', *bulira* 'party-to'. The abbreviation *Utt* stands for *utterance*.

(3)a. Normal yes-no question:



By contrast, in a strongly incredulous, disbelieving yes-no question, which we ask in order to get some clarification of an unbelievable statement or experience, each accent in the comment is retained, and the rise-fall can appear at every accented syllable, thus forming a sequence of repeated rise-falls, as in (3b)

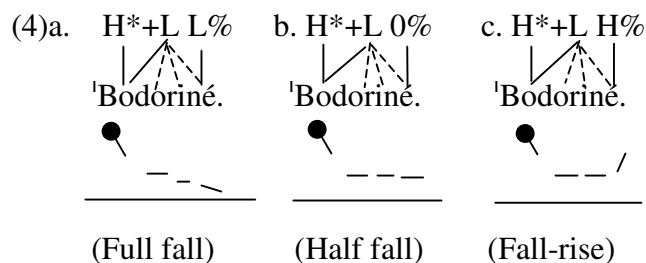
(3)b. Incredulous yes-no question:



The important thing about (3b) is that the non-final rise-falls keep their final boundary tone (since this reflects the falling part of the rising-falling contour) even though they cannot have a pause after them (i.e. between an article and a noun). If we stick to the idea that a final boundary tone marks the end of an IP (cf. Beckman—Pierrehumbert 1986), (3b) reveals that an IP does not have to end with a pause and that the final boundary tone should not be regarded as a melodic transition to a pause but rather as a means of describing a contour.

So it seems necessary to give up the pause requirement made in Varga (2008), and go back to the earlier view expressed in Varga (2002), according to which the end of a P.U.F. contour is sufficient in itself (i.e. without the assistance of a real or potential pause) for identifying the end of an IP. Varga (2002) recognised one exception to this, and this exception has to be

maintained even now, viz. that the pause is criterial in the case of the so-called half falling contour (or simply half fall). The half fall should be regarded as nuclear (i.e. IP-final) only if it ends in a pause, otherwise it should be regarded as prenuclear. The half falling contour is a fall with a characteristic big drop in pitch after the accent, as in a full fall, but while the full fall ends at the bottom of the speaker's voice, the half fall ends higher than that. The half fall is a P.U.F. contour because it is able to stand at the end of an utterance, i.e. at the end of an IP. In this position it is in contrast with the full fall and the fall-rise, see (4). The **full fall** ends in a L% boundary tone, see (4a), the **fall-rise** ends in a H% boundary tone, see (4c). Therefore I suggest that the final boundary tone of an utterance-final **half fall** should be a third kind of boundary tone: the zero boundary tone, 0%, as shown (4b). The examples in (4) illustrate a three-way contrast: (4a) is a finished statement, (4b) is a statement implying that some continuation is possible, and (4c) is a statement with reservations ('there is a *but* about it').

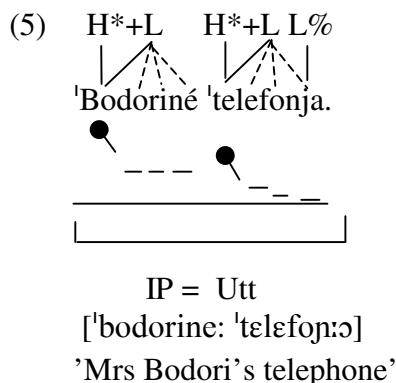


The zero boundary tone has a tonal specification which does not differ from that of the immediately preceding tone. By introducing a third boundary tone we do not introduce a third pitch level: the zero boundary tone is simply the prolongation of the preceding H or L till the end of the last syllable. (A similar suggestion was made in connection with German intonation by Grabe (1998), and – in another context – by Dilley (2005).)

At this point it could be asked whether we really need the zero final boundary tone in (4b). After all it may seem that the half fall could equally well be represented without any boundary tone at all, as H\*+L, and would still be in contrast with the full fall and the fall-rise.<sup>4</sup> However, if we have no independent symbol to indicate the end of IPs, the zero boundary tone is still necessary at the end of a nuclear (i.e. IP-final) half fall, to distinguish it from a prenuclear (i.e. IP-internal) half-fall. The prenuclear half fall does not end in a pause and can be followed by a downstepped fall, which suggests that the half

<sup>4</sup> This is Gussenhoven's view (p.c.). Don't forget, however, that Gussenhoven has a special symbol to indicate the end of an IP, the brace: }.

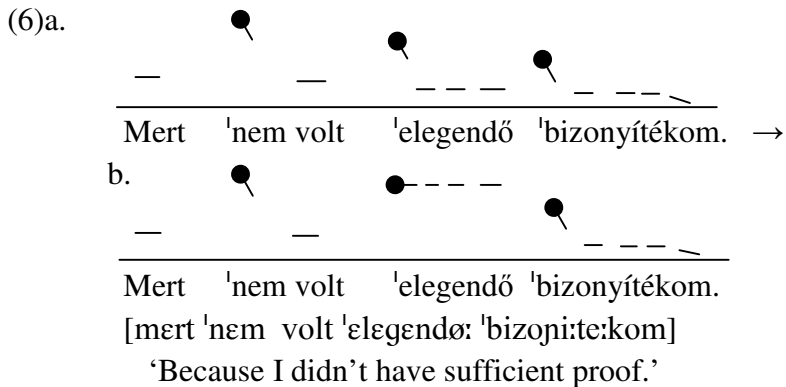
fall and the subsequent fall both belong to the same IP. In this position the half fall cannot end in a boundary tone, see the melody of *Bodoriné* in (5). The example contains the words *Bodoriné* 'Mrs Bodori' and *telefonja* 'telephone-her'.



Although the prenuclear half fall cannot have a final boundary tone, the nuclear half fall must have one. Since this can be neither L% nor H%, it must be 0%.<sup>5</sup>

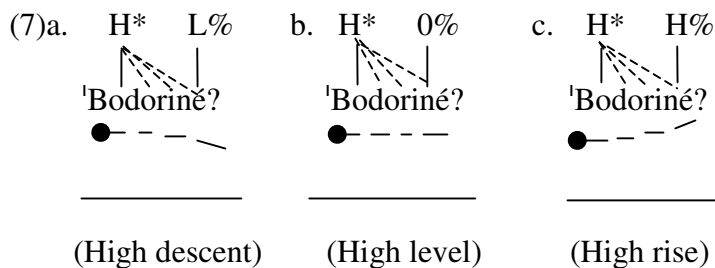
It seems, however, that the exception described in Varga (2002) is not the only one, and that another exception must also be recognised. In addition to the half fall, the high level also needs a final pause in order to be regarded as a nuclear contour, and without a final pause it should be considered prenuclear. This becomes obvious if we consider cases where a prenuclear half fall is replaced by a high level contour for stylistic reasons. For instance, a prenuclear half fall which happens to be between a prenuclear half fall and a nuclear full fall, is replaced by a high level contour, in order to express a friendly lecturing “schoolmasterly” attitude, see (6b), where the originally half falling contour on the word *elegendő* in (6a) is exchanged for a high level one, cf. Varga (2002: 118). The sentence contains the following words: *mert* 'because', *nem* 'not', *volt* 'was-3sg', *elegendő* 'enough' and *bizonyítékom* 'proof-my'.

<sup>5</sup> It should be pointed out here that all the falling contours of (4) and (5) are analysed here as containing a bitonal pitch accent in which the H\* starred tone is followed by a L trailing tone. In this I agree with Mycock (2010) but differ from Grice et al. (2000: 165). The latter suggests that the falling contours contain a monotonal H\* pitch accent and a L- phrase tone. If we accepted this analysis, we would have to believe that each prenuclear half fall formed a so-called intermediate phrase (Beckman—Pierrehumbert 1986). In reality, however, they cannot be intermediate phrases because there is downstep between them, which should not occur between intermediate phrases (ibid. 198-299).



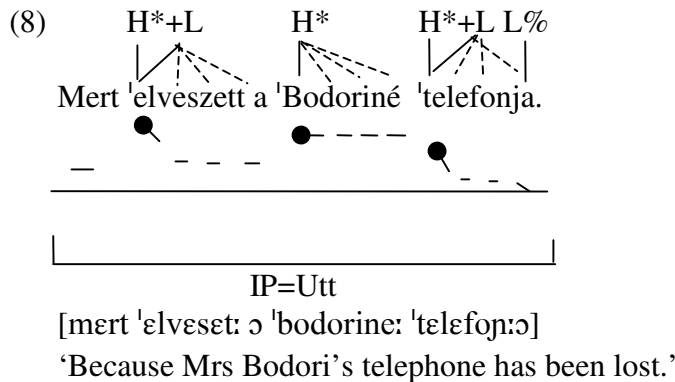
Since here the high level contour on *elegendő* cannot end with a pause and our intuition protests against assuming an IP boundary between the adjective *elegendő* and the noun *bizonyítékom*, I suggest that the high level contour in (6b) should be regarded as prenuclear. However, when the high level contour does end with a pause, it should be considered nuclear.

So the Hungarian **high level** contour should be analysed as having a 0% boundary tone when it stands at the end of an utterance (and so at the end of an IP), as in (7b). In this position it is in contrast with the **high descent**, which ends in a L% boundary tone, cf. (7a), and with the **high rise**, which ends in a H% boundary tone, cf. (7c). Again we can see a three-way contrast. The examples are being used as complementary questions (cf. Bolinger 1957), containing the topic part of *Bodoriné hol van?* ('Where is Mrs Bodori?', literally: 'Mrs Bodori where is?') and have the common meaning of 'forward-pointing'. But (7a) adds 'routine', (7c) adds 'tension', and (7b) adds neither routine nor tension to that common meaning. The three solutions express three different attitudes.



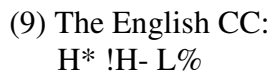
The 0% boundary in (7b) is necessary to distinguish the nuclear high level contour from the the prenuclear one. A prenuclear high level appears on the word *Bodoriné* in (8). This contour is prenuclear because it cannot be followed by a pause and the falling contour after it is downstepped, which indicates that

they both belong to the same IP. This is why the half fall on *Bodoriné* in (8) does not have a final boundary tone. The words in (8) are: *mert* 'because', *elveszett* 'disappeared-3sg', *a* 'the' *Bodoriné* 'Mrs Bodori' and *telefonja* 'telephone-her'. This rendering of the sentence conveys the "schoolmasterly" attitude discussed in connection with example (6b) above.



This digression has shown that IP-final (i.e. nuclear) intonation contours in Hungarian must contain a final boundary tone as part of their structural description. Consequently, the representations of the CCs in (2) are incomplete. They should end with a boundary tone. But what should this be?

The most widely accepted representation of the English CC, which has developed gradually in the works of Pierrehumbert (1980), Ladd (1978, 1996, 2008), Grice et al. (2000) and found its way into the ToBi transcription system (Beckman—Elam 1997), is (9).



In this representation the last  $L\%$  boundary tone does not signal a fall in relation to the downstepped  $!H-$  phrase tone that precedes it, because it is automatically upstepped to maintain the pitch level of the preceding  $!H-$  phrase tone. Although it may seem tempting to adapt this representation for the Hungarian CC, we cannot do so because the sequence  $\dots H-L\%$  is already present in the representation of the Hungarian rising-falling contour, where it signals a falling stretch rather than a level stretch, cf. (3a) and (3b). So a  $L\%$  boundary tone at the end of the Hungarian CC is untenable. But a  $H\%$  boundary tone is just as untenable, because the  $H\%$  boundary tone after a  $H-$  phrase tone signals a rising stretch, whereas there is no rising in the Hungarian CC. Since the boundary tone of a Hungarian CC at the end of an utterance



(and so at the end of an IP) can be neither L% nor H%, it can only be 0%. Therefore the representations given in (2) should be reanalysed as those in (10):

- (10)a. H\*!H-0%    b. H\* !H-0%    c. H\* !H-0%    d. H\*!H-0%
- 
- 'Ma-ri!    'Mari-ann!    'Bodoriné!    'Zsolt!

### 3 Repeated calling contours within an utterance

Hungarian is a language in which the CC can be repeated within the utterance as each accented syllable within the utterance can start the CC again (Varga 2008). However, the analysis of these repeated CCs given in Varga (2008) needs revision.

Varga (2008) claimed that utterance-internal, i.e. non-final, CCs did not constitute separate IPs and did not end in a boundary tone. Such CCs were represented as ending in a downstepped !H- phrase tone. This is illustrated by the non-final CC, *készen van a*, in (11). The sentence contains the words *készen* ‘ready’, *van* ‘is’, *a* ‘the’ and *vacsora* ‘dinner’. The abbreviation *i.p.* stands for *intermediate phrase*.

- (11) H\*    !H-    H\* !H-0%
- 
- 'Készen van a    'vacsora!
- i.p.    i.p.
- IP = Utt

['ke:sɛn vɔn ɔ 'vɔtʃorɔ]

‘Dinner’s ready!’

This analysis mirrored Varga’s (2008) view of how to identify the end of an IP. As we saw above, under this view the P.U.F. contour and the pause after it were both necessary for indentifying the end of an IP. Since no silence or silence-substitute (e.g. lengthening) is possible at the end of a non-final CC, the first CC in (11) was analysed as lacking a pause and ending in a downstepped !H- phrase tone, i.e. it was analysed as constituting an intermediate phrase. The notion of **intermediate phrase** was introduced by

Beckman—Pierrehumbert (1986) and was defined as a series of pitch accents closed by a phrase tone. They distinguished it from the **intonational phrase** (IP), which they defined as a series of pitch accents closed by a phrase tone *and* a boundary tone. Since the utterance, the IP and the intermediate phrase form a hierarchy of prosodic units, the end of an utterance is the end of an IP, and the end of an IP is the end of an intermediate phrase. That is why we have two intermediate phrases in (11). Beckman—Pierrehumbert (*ibid.*) also claimed that there was no downstep between consecutive intermediate phrases. And indeed, the two CCs in (11) start at the same pitch height. This seemed to support the analysis shown in (11).

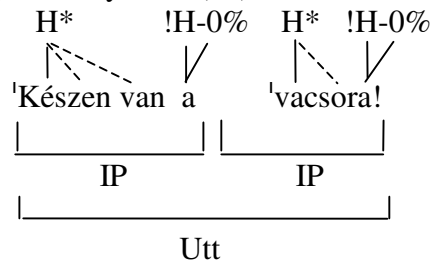
But this cannot be considered to be right any longer. First because IPs do not necessarily end in pauses (except for those that end with a half fall or a high level contour, see Section 2 above). The example in (3b) above shows convincingly that non-final rise-falls may occur without a pause after them, although they do end in a boundary tone and are IPs. Analogously, we have the right to analyse the CCs in utterances like (11) as IPs, too, even though there is no pause between them. The lengthening of the final syllable(s) at the end of the CC is not a feature of the IPs containing the CCs but a feature of the utterance containing the CCs!

Secondly, Varga (2008) imports the notion of intermediate phrase into Hungarian intonation. But the only contour where the intermediate phrase allegedly occurs in Hungarian is the CC. Therefore it is rather *ad hoc* to recognise this new prosodic unit, just for the sake of the CC, in Hungarian. Rather, the CC should be identified with a prosodic unit which also guarantees the lack of downstep between the CCs and which exists in Hungarian anyway. Such a unit is the IP.

Thirdly, Varga's (2008) analysis cannot be reconciled with Grice et al.'s (2000) suggestion, *viz.* that the downstepped !H- phrase tone is primarily associated with the right edge of the carrier phrase and is then copied onto, and secondarily associated with, the last syllable within that phrase. In (11) Grice et al.'s (*ibid.*) mechanism can copy the phrase tone to the last syllable of the phrase *-ra*, but not to the syllable *a*, although that syllable, too, is a downstepped terrace. This copying-associating mechanism can be made compatible with the assumption that the CCs in (11) form IPs. (A possible scenario can be sketched along the following lines: the sequence !H-0%, which is associated with the right edge of the utterance should be copied onto, and secondarily associated with, the syllable immediately before each syllable that is associated with a H\* pitch accent.)

Therefore I now suggest that CCs in Hungarian should always be represented with their final 0% boundary tone, *i.e.* as IPs, no matter whether they stand utterance-internally or utterance-finally, as is shown in (12).

(12) Reanalysis of (11):



#### 4 Conclusions

To sum up, here are the main points of this article again:

(i) In Hungarian there are two contours that must end in a (real or potential) pause in order to count as nuclear (i.e. IP-final) contours: the half falling and the high level contours. If these are followed by a pause, then they are nuclear (i.e. IP-final). If they do not end in a pause, they are prenuclear (i.e. IP-internal). In the latter case they can be followed by downstepping.

(ii) All other contours are always nuclear.

(iii) Nuclear contours end in a final boundary tone.

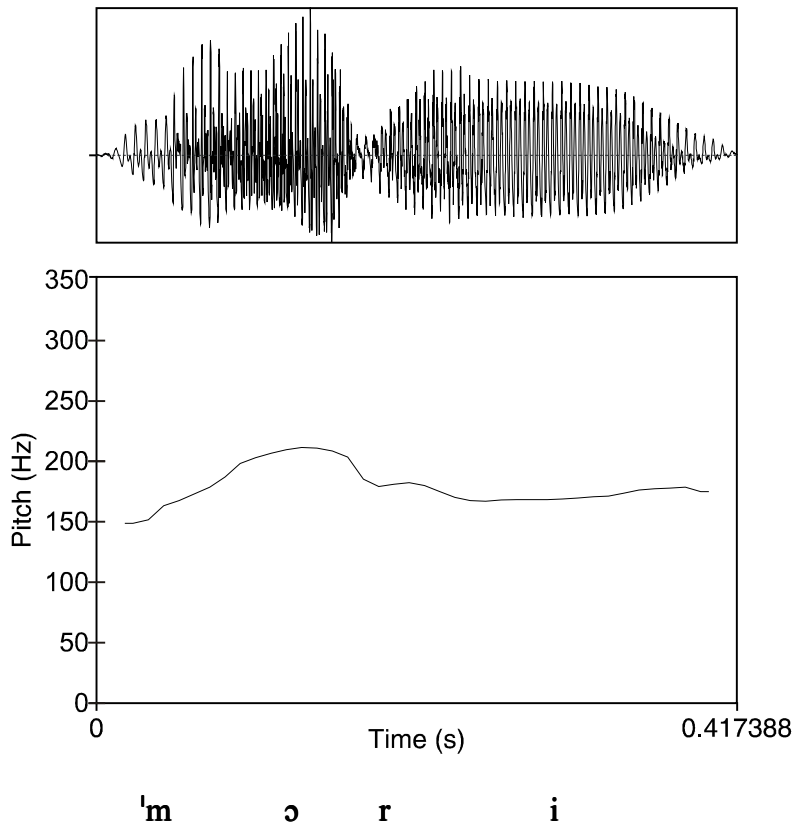
(iv) In the case of the half fall, the high level contour and the CC, the final boundary tone is: 0%.

(v) Since no contour in Hungarian ends in a phrase tone, there is no need to postulate intermediate phrases in Hungarian.

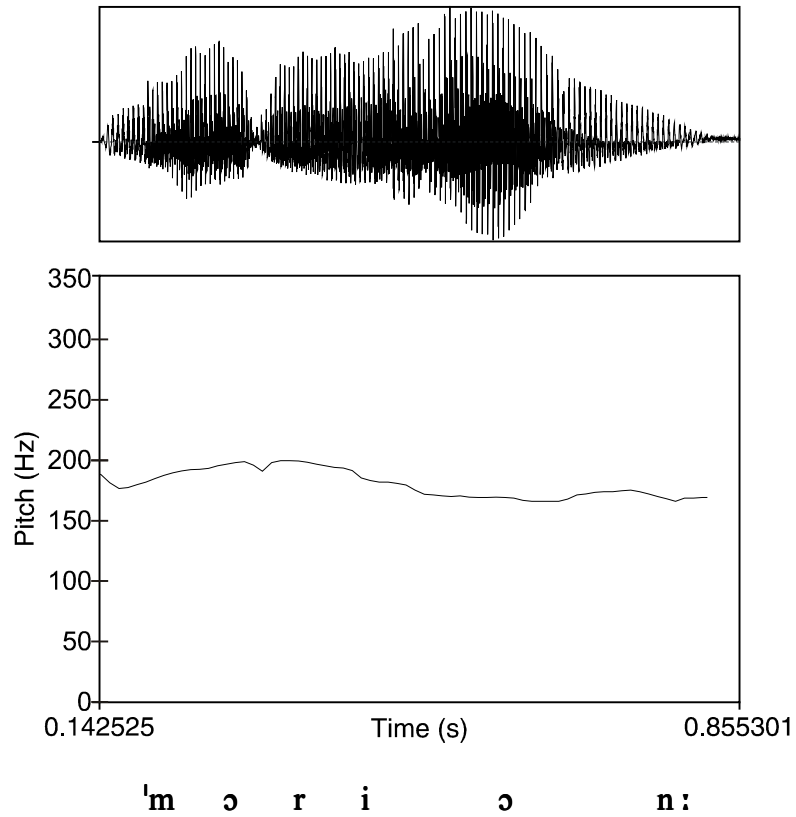
It has to be admitted that, if we introduced a special symbol (the right-hand brace:  $\}$ ) to show the end of IPs, then we could dispense with the 0% boundary tone. Then the nuclear half fall could be represented as  $H^*+L\}$ , the prenuclear half fall as  $H^*+L$ , the nuclear high level could be represented as  $H^*\}$ , the prenuclear high level as  $H^*$ , and the CC could be represented as  $H^*!H-\}$ . But this would have a price: the  $\}$  would be redundant in most cases because it would have to appear also after contours that are obviously nuclear and end in a boundary tone, as for instance after the full fall:  $H^*+LL\}$ .

#### 5 Appendix

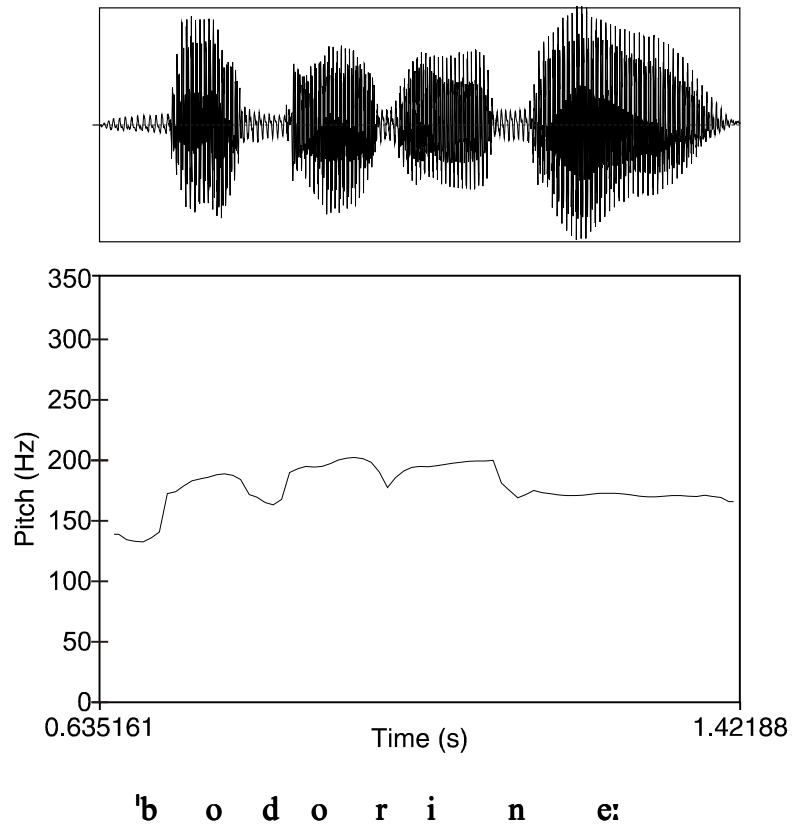
Example 2a =10a



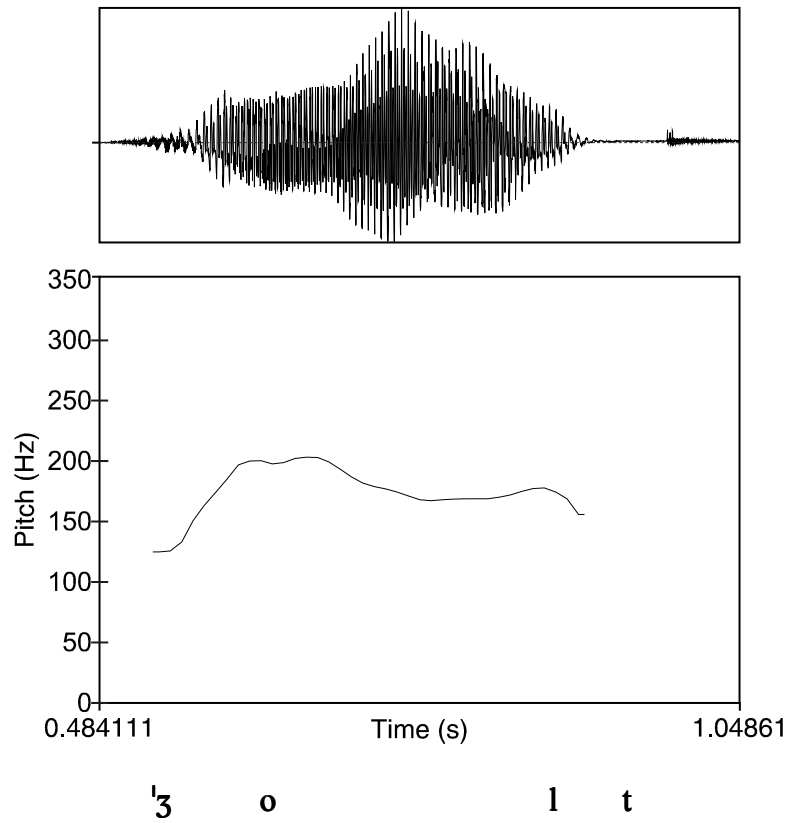
Example 2b = 10b



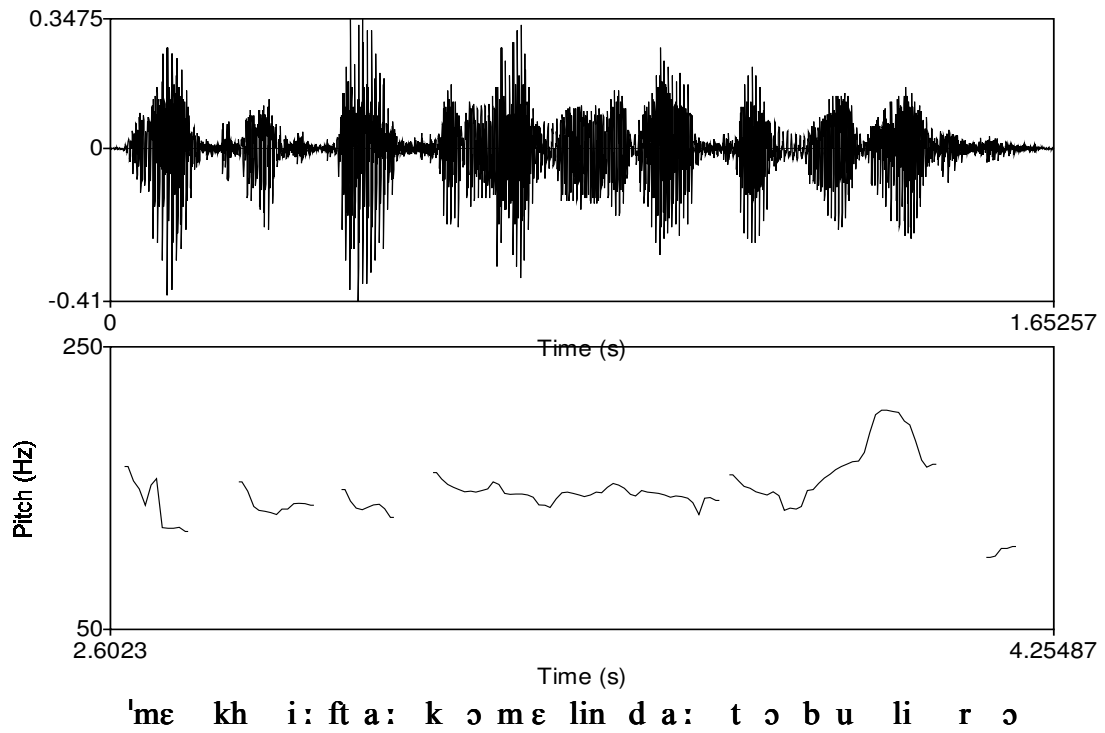
Example 2c = 10c



Example 2d = 10d

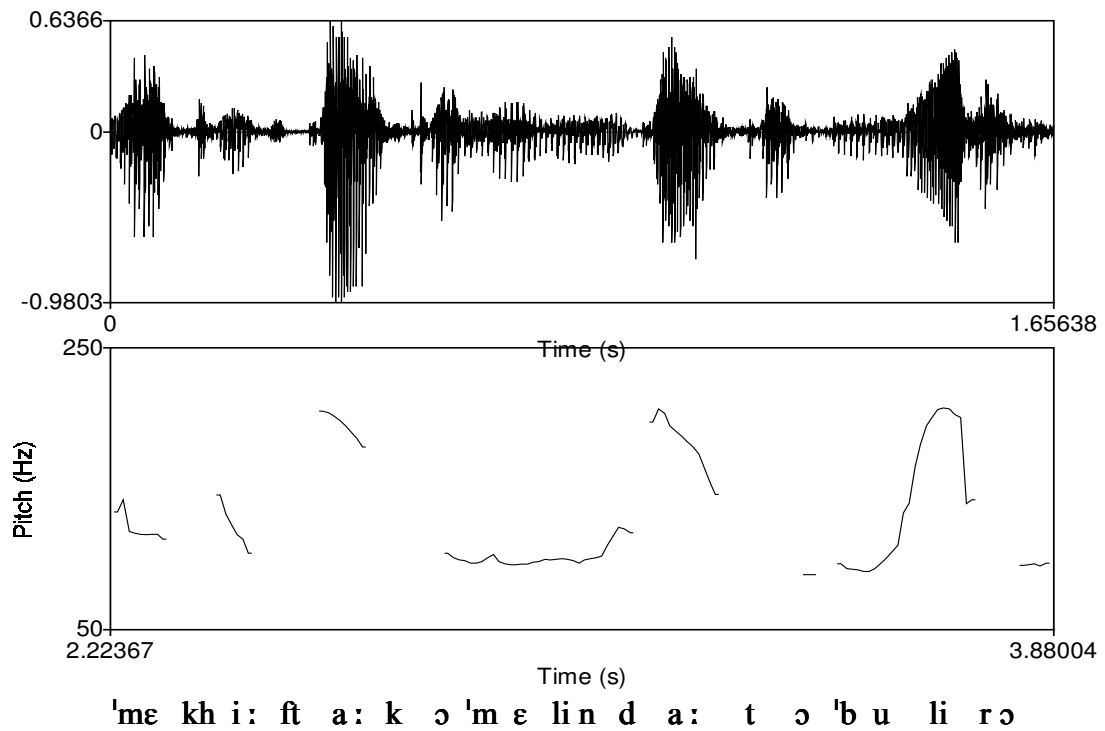


Example 3a

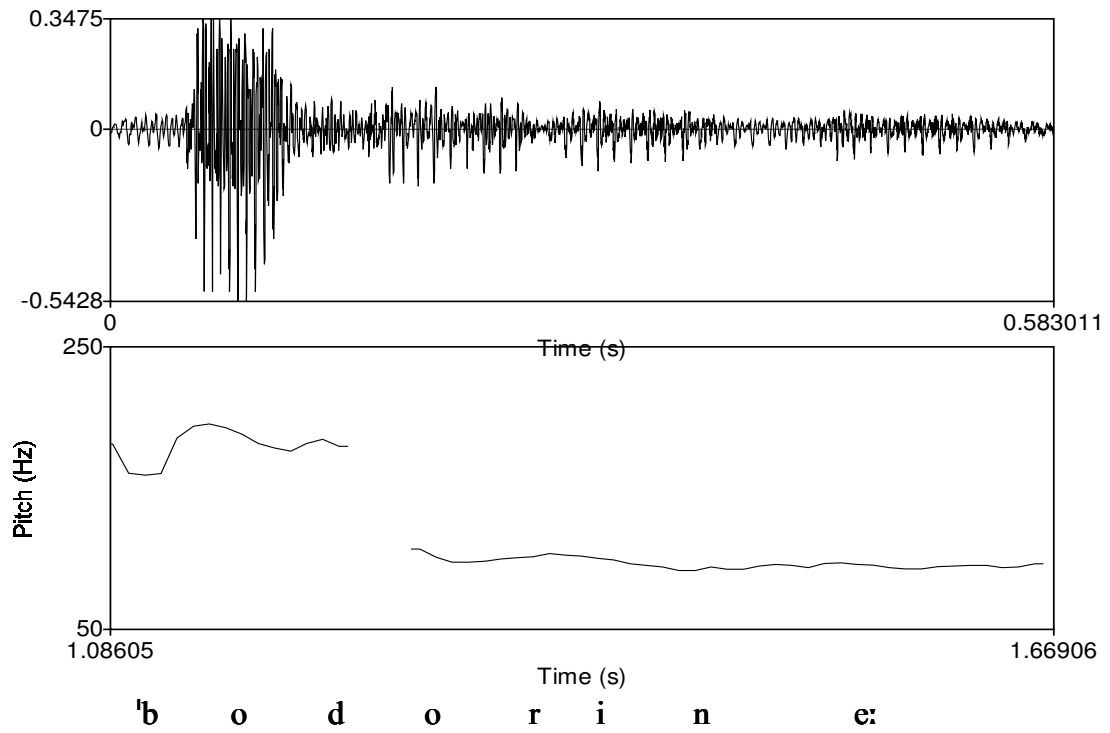




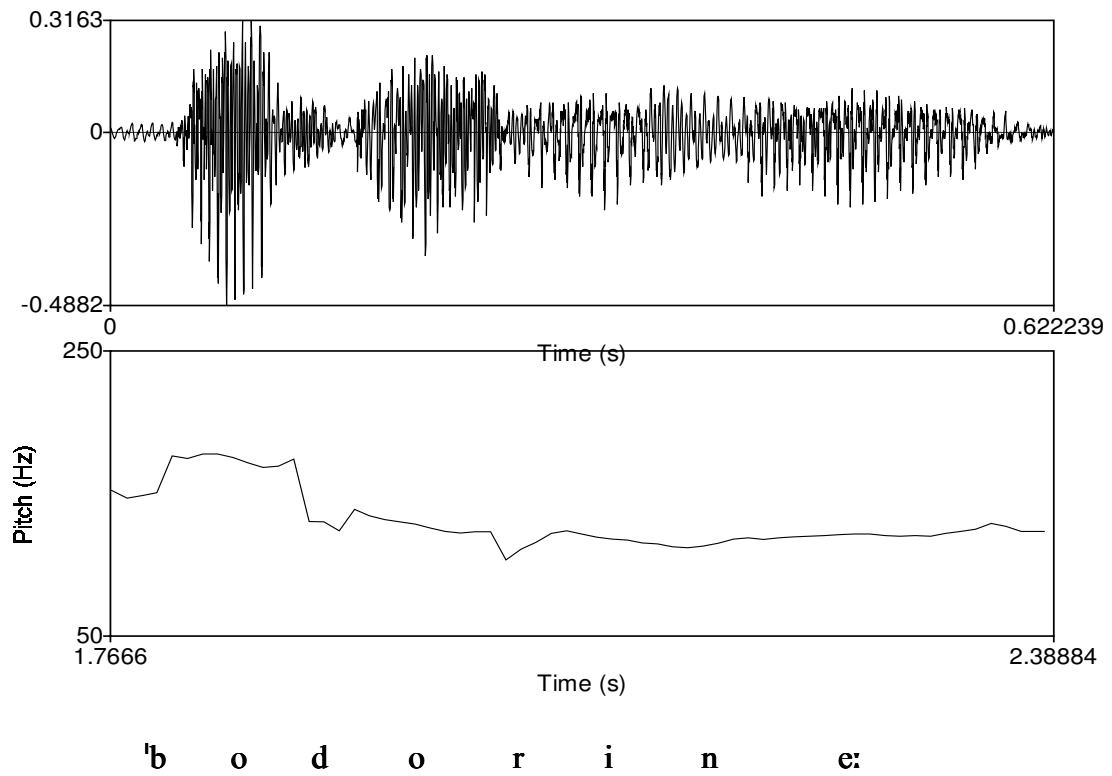
Example 3b



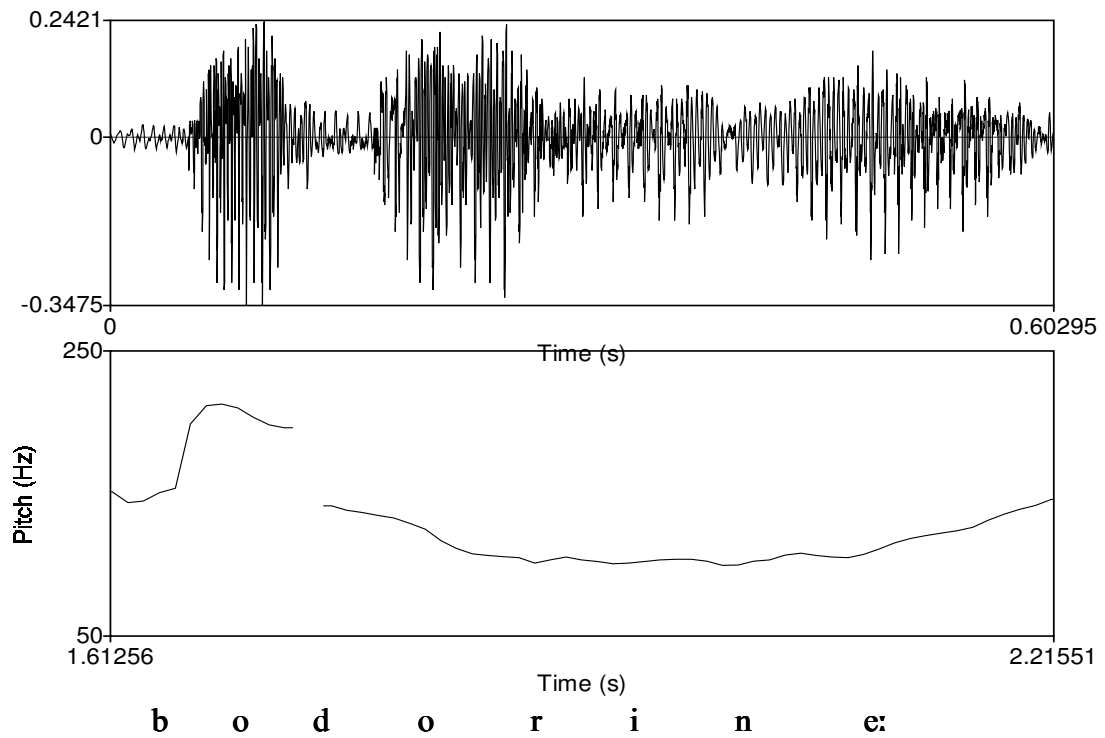
Example 4a



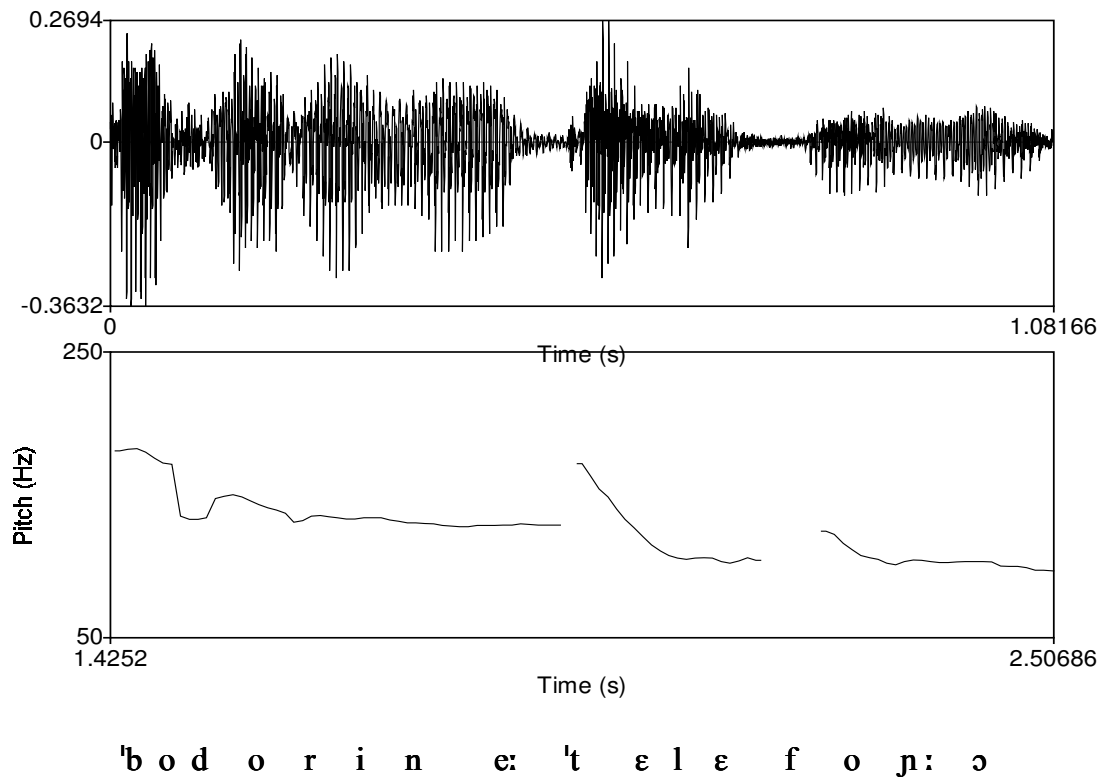
Example 4b



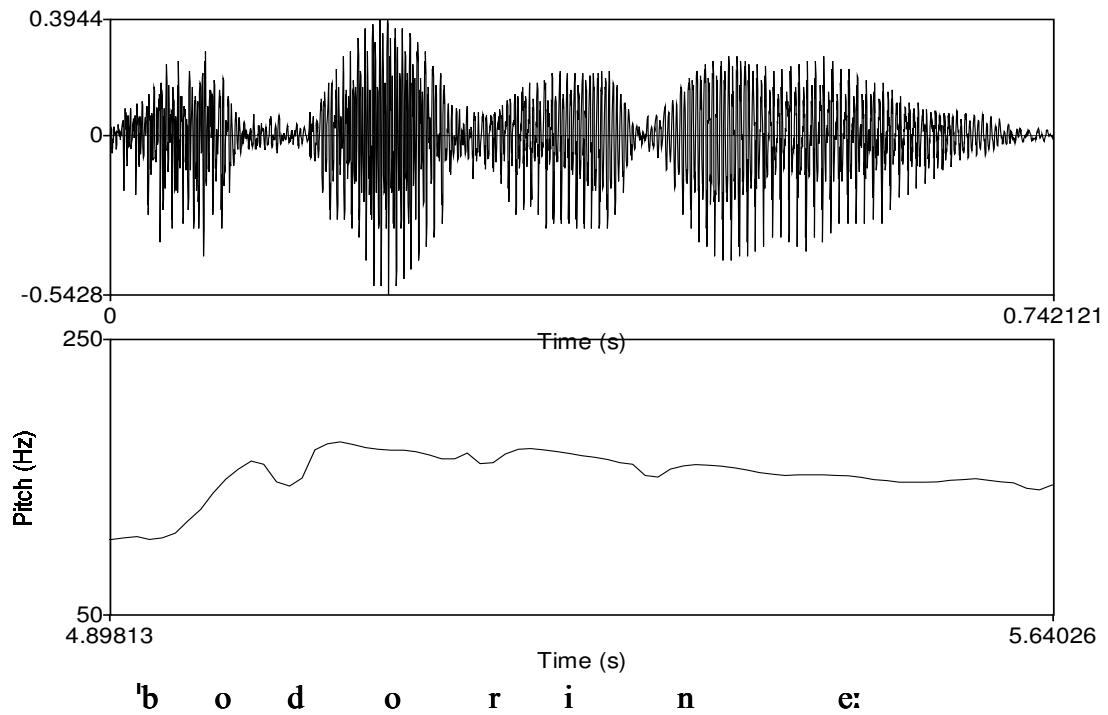
Example 4c



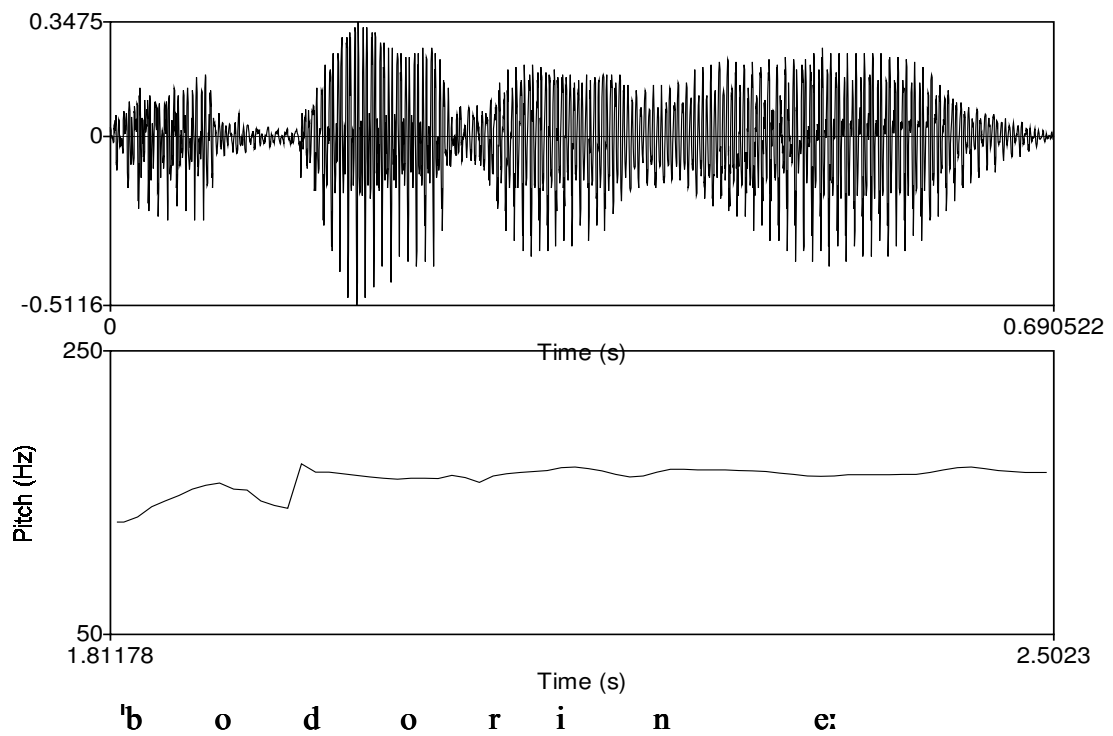
Example 5



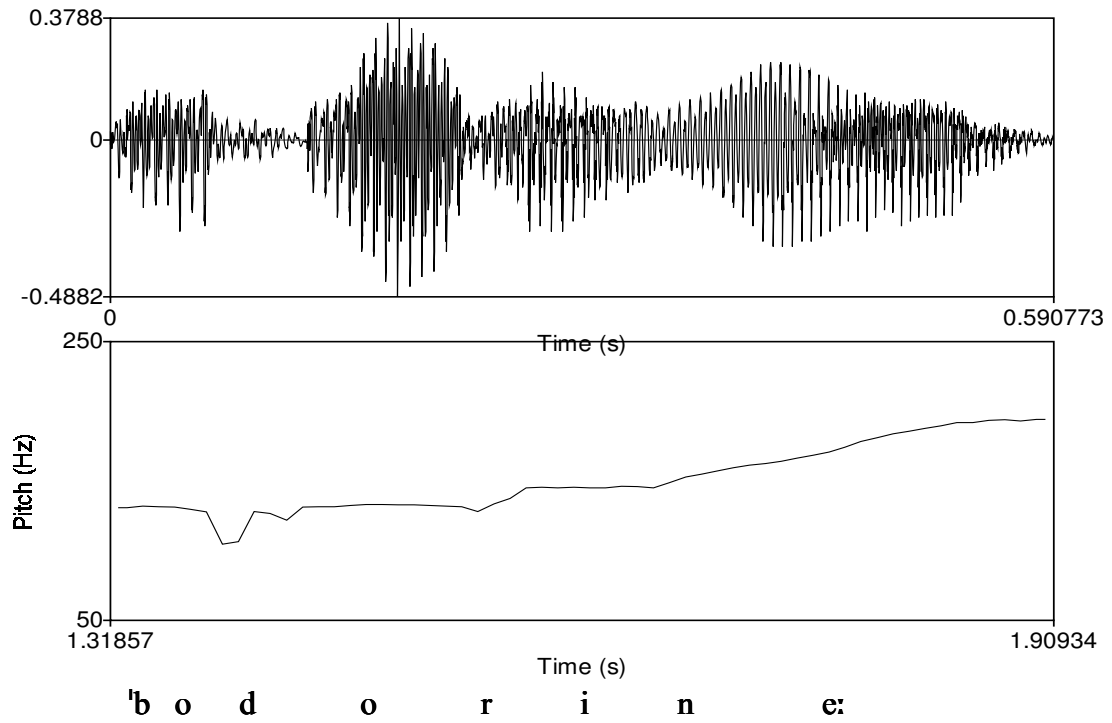
Example 7a



Example 7b

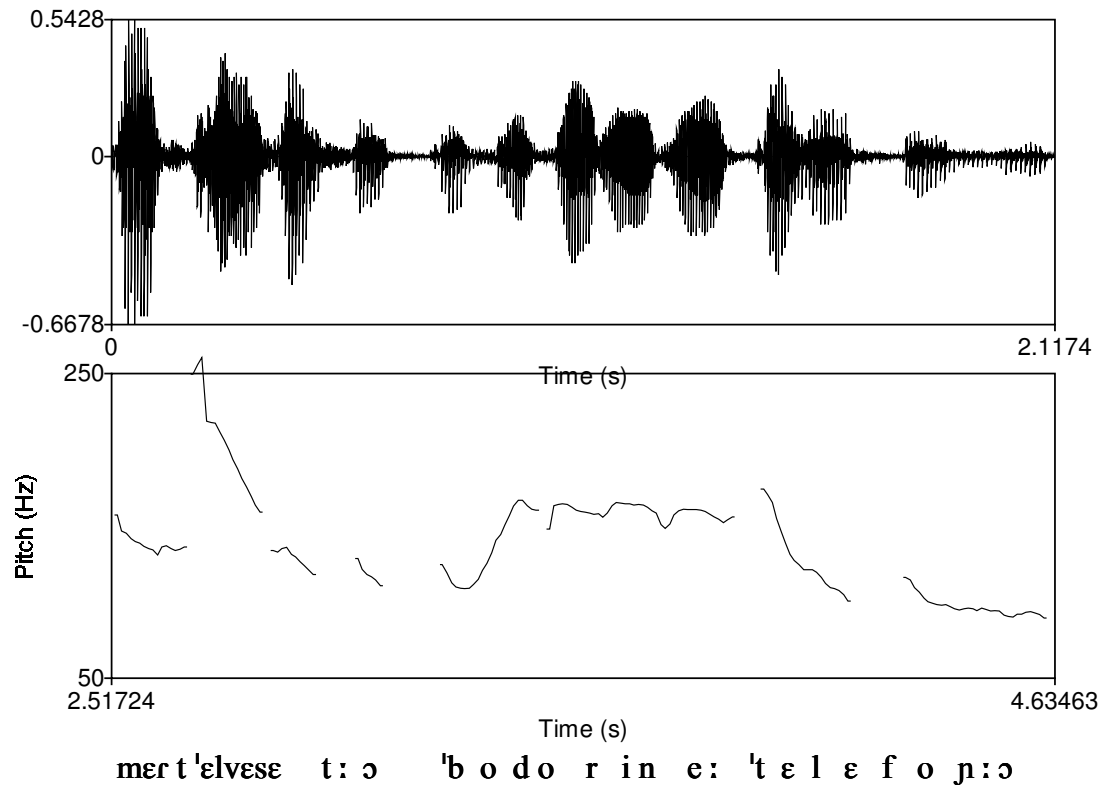


Example 7c

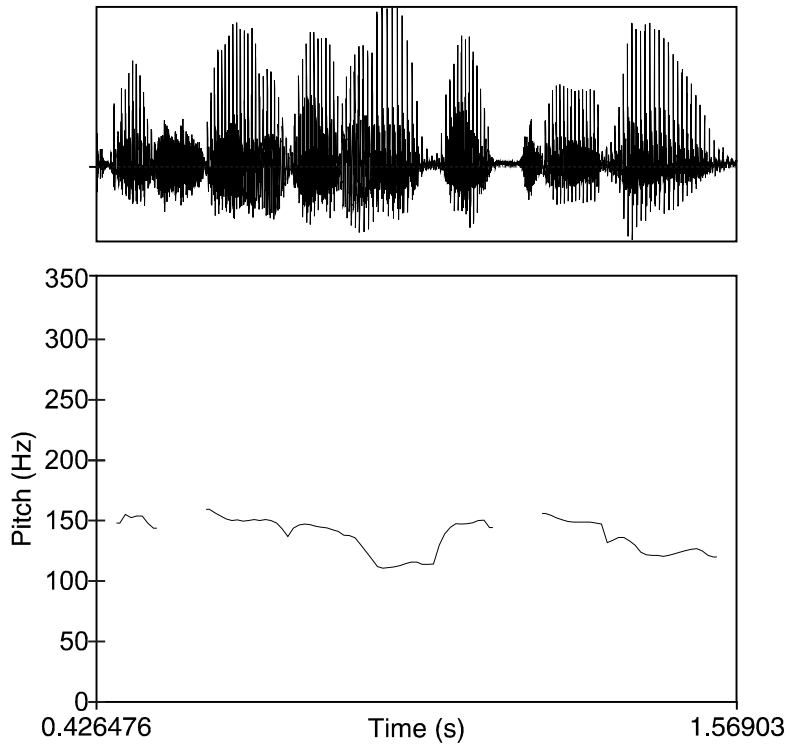




Example 8



Example 11 = 12



**'ke: s ε nv ə n ə 'v ə tʃ o r ə**

## References

- Beckman, Mary E. and Janet B. Pierrehumbert. 1986. Intonational structure in English and Japanese. *Phonology Yearbook* 3: 255-310.
- Beckman, Mary E. and Gayle Ayers Elam. 1997. ToBI annotation conventions. [http://ling.ohio-state.edu/~tobi/ame\\_tobi/annotation\\_conventions.htm](http://ling.ohio-state.edu/~tobi/ame_tobi/annotation_conventions.htm). (Downloaded: May 2006.)
- Bolinger, Dwight, L. 1957. Interrogative structures of American English (the direct question). *Publication of the American Dialect Society* 28. University of Alabama Press.
- Dilley, Laura C. 2005. The phonetics and phonology of tonal systems. PhD dissertation. MIT.
- É. Kiss, Katalin. 2002. *The Syntax of Hungarian*. Cambridge: Cambridge University Press.
- Grabe, Esther. 1998. Comparative intonational phonology: English and German. PhD dissertation. University of Nijmegen. Published in Max Planck Institute Series in Psycholinguistics.
- Grice, Martine, D. Robert Ladd and Amalia Arvaniti. 2000. On the place of phrase accents in intonational phonology. *Phonology* 17: 143-185.
- Gussenhoven, Carlos. 2004. *The phonology of tone and intonation*. Cambridge: Cambridge University Press.
- Horváth, Viktória. 2010. Filled pauses in Hungarian: their phonetic form and function. *Acta Linguistica Hungarica* 57: 288-306.
- Ladd, D. Robert. 1978. Stylized intonation. *Language* 54: 517-539.
- Ladd, D. Robert. 1996. *Intonational phonology*. Cambridge: Cambridge University Press.
- Ladd, D. Robert. 2008. *Intonational phonology*. Second edition. Cambridge: Cambridge University Press.
- Mycock, Louise. 2010. Multiple-clause constituent questions: intonation and variation in Hungarian. *Acta Linguistica Hungarica* 57: 268-287.
- Pierrehumbert, Janet B. 1980. The phonology and phonetics of English intonation. PhD dissertation. MIT. Published by the Indiana University Linguistics Club, Bloomington in 1987.
- Trager, George, L. and Henry Lee Smith, Jr. 1951. *An outline of English structure*. Norman: Battenburg Press.
- Varga, László. 2002. *Stress and intonation: evidence from Hungarian*. Basingstoke: Palgrave Macmillan.
- Varga, László. 2008. The calling contour in Hungarian and English. *Phonology* 25: 469-497.

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