Non-melodic intonational morphemes in English and Croatian

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This paper provides a comparison of the inventories of non-melodic intonational morphemes of English and Croatian within the framework of the bitonal generative compositional model. It is shown that the two languages have the same bitonal inventory of non-melodic tones, but English uses H non-melodic tones more frequently than Croatian does. It is suggested that Croatian »makes up« for these H tones by resorting more often to some alternative means of expression.

1. Non-melodic tones in the BGC model

Within the framework of the bitonal generative compositional model of intonation (henceforth BGC), originally introduced by Pierrehumbert (1980) and latterly developed by Pierrehumbert and Hirschberg (1990) and Hobbs (1990), various intonational patterns are analysed as structured sequences of low (L) and high (H) tones generated by a finite-state grammar. These starting tones always perform one of the three possible intonational functions, that is, they can make up three kinds of intonational morphemes: melodic accent, phrase accent and boundary tone. The latter two – the phrase-accent tone and the boundary tone – will henceforth be referred to as non-melodic intonational morphemes (as opposed to the melodic accent). The meaning, as well as the identity of individual intonational morphemes is basically arbitrary, i.e., it is language specific and contributes to the meaning of a given intonational pattern as a whole.

The first type of non-melodic intonational morpheme which I shall be looking at is the **phrase-accent tone** (T⁻). By contrast with the melodic accents, it does not

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show any affinity towards metrically strong syllables. It immediately follows the last melodic accent (which corresponds to the nuclear accent) and significantly determines the post-nuclear movement of F_0. As with the other types of intonational morphemes within this model, for the phrase accent, the speaker has the choice of two tones, L and H, and each of these two phrase accents has a meaning which can be isolated.

The phrase accent of the BGC model is realized right next to the last melodic accent in the intonational phrase (I), close to the end of the word which traditional intonologists would call nuclear. Its precise phonetic location varies and is phonologically irrelevant. In the most recent version of the BGC model, the domain of the phrase-accent assignment rule is the intermediary phrase (i).

The BGC model does not in any way imply the universality of the bitonal inventory of phrase accents. Thus the idea of a phrase accent as an intonational morpheme need not be applicable to all languages. In this paper I will be discussing its applicability to Croatian.

For the understanding of the phrase accent as a theoretical entity of intonology, it is necessary to understand the difference between the BGC model and traditional models with respect to the treatment of the postnuclear part of the intonational pattern. By contrast with the traditional models, the BGC analyses the postnuclear contour (»tail«) into two different types of intonational morpheme, one of them being the phrase accent. However, it is important to note that T⁻ need not necessarily be visible as a phonetically prominent point in the intonational contour. It just plays one of the crucial roles in determining the overall shape of the contour by its presence in the phonological representation. The postulation of the phrase accent turns out to be instrumental in dealing with subtle melodic variations without the need for a third tonal level. It is a floating tone, whose distance from the nuclear tone (i.e. the last melodic accent) varies considerably with the context.

The other type of non-melodic intonational morpheme which we shall be looking at is the **boundary tone** (T%). It is obligatorily attached to the right edge of the I. The model under consideration also allowes for an optional phrase-initial T%. As is the case with the other intonational morphemes, the speaker has the choice between two tones: H and L. As a result of the intonational rule of Upstep, the phonetic value of the phrase-final T% is added to that of the preceding phrase-accent tone. Consequently, intonational patterns with a final H% amount to the category of rising melodies. For both the standard British and American variety of English, L% is postulated as the unmarked (default) phrase-initial tone. Accordingly, the initial boundary tone in the analysis of English is indicated only if it is H (which corresponds to the traditional »high pre-head«. By analogy, there have been suggestions for the final L% to be abandoned in notation, but the idea

has not gained any ground in the generally accepted intonological notation. Ladd (1992: 322) phonetically defines the final H% as an *'abrupt final rise taking place in the course of the last 300 – 500 msec of the intonational phrase or utterance.'*

Every well-formed *I* of English must thus consist of at least one melodic accent (T*), one phrase accent (T⁻) and one final boundary tone (T%). Such well-formed patterns are generated by the finite-state grammar, and each combination of these three intonational morphemes represents a well-formed English tune. If we take into consideration only the simplest type of melody, i.e., the one with one melodic accent and one phrase accent only, the inventory of possible English configurations includes those presented in figure 1:

T%	T*	T⁻	T%
	H*		
	L*		
H%	L*+H⁻	H⁻	H%
L%	L⁻+H*	L⁻	L%
	H*+L⁻		
	L⁻+H*		

Figure 1: *Possible English configurations (Pierrehumbert 1980:29)*

2. Croatian correlates of English non-melodic tones

I will be looking at two of the three types of intonational morphemes, whose interaction determines the overall shape of any given tune.

The empirical research presented in Josipović (1993) found the inventory of these morphemes in Croatian to be identical to that of English. This was established through the comparison of analogous corpuses from the two languages. Using the BGC criteria set out in Pierrehumbert (1980), both H and L tones of both types on non-melodic intonational morphemes were identified in the digitalized version of the Croatian translational equivalent of the English corpus.[1] However, it was found

[1]The corpus under consideration was obtained by translating the English corpus into Croatian. It was then read, or rather, acted out by Croatian speakers and digitalised for the purpose of acoustic analysis.

that in English the use of H non-melodic tones was significantly wider compared to Croatian.

I will not go into details of that research at this point, but rather, compare their pragmatic functions in the two languages. In the present paper, referring to the different intonational varieties of one Croatian *I* , I will show how the BGC definitions of the meanings of English non-melodic tones are equally applicable to Croatian.

The **phrase-accent tone** of the BGC model expresses the dependence (H⁻) in the sense of being part of a wider interpretive unit, or respectively, independence (L⁻) of a given phrase in the discourse. **Boundary tones** express the discourse openness in the widest sense (H⁻) or the lack of such openness (L⁻) of the *I*.

If this system of analysis of non-melodic tones functions for Croatian as well, it should be possible to show that these definitions are applicable to all four theoretically possible combinations of tones. These four combinations will conveniently be referred to by the numbers indicated in the table in fiigure 2:

	L%	H%
L⁻	1	2
H⁻	3	4

Figure 2: *combinations of phrase and boundary tones*

These four intonational variants will be observed on the example of the Croatian intonational phrase »*Kako se zovete?*« (»*What' s your name?*«), which we shall imagine being uttered in four different situations:

VARIANT 1:

Let us imagine that the *I* at hand is uttered by a university professor, who needs to identify the student taking an oral exam:

(1) *Kako se zovete?*

L L%

The question at hand opens the discourse. It does not make up any larger discourse unit with what precedes or what follows in the discourse. In accordance with the BGC interpretation, it carries a L⁻ phrasal tone. As the professor is asking for this information only to identify the student and has no intention of encouraging any further discourse on the topic, the boundary tone of this *I* is L%.

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VARIANT 2:

Let us now imagine that the discourse begins with the same question, but this question is uttered in a different situation: during a linguistic class at university, the professor is explaining the templatic approach to hypocoristic formation in Croatian. He decides to illustrate the principle with reference to the name of one of the students. He turns to the nearest student and asks:

(2) *Kako se zovete?*

L⁻ H%

The interpretive independence of this question, like in the preceding case, is expressed by the L phrase tone. That is, the phrase at hand does not make part of any larger unit; it does not add up to anything that has been said before. Here, however, as opposed to (1), the H boundary tone indicates that the discourse on the topic of 'the name of student XY' just begins. In other words, from the point of view of discourse, this intonational phrase is open.

VARIANT 3:

The configuration H⁻ L% , which provides the phonological context for Upstep, is manifested as a final plateau. By its phonetic description it corresponds to what Škarić identifies as a *»fall-rise«* nucleus, whose distribution is restricted to *»the end of a non-final intonational unit.«* (Škarić 1991:311, transl. VJ). This configuration can be placed in the following context:

The professor has already asked the question at hand, but the student has told him his surname only. The professor repeats the question, now having in mind the narrower meaning of the verb »zvati se«, that is, the one referring to the first name:

(3) *Kako se zovete?*

H⁻ ↑L%

The phrase-accent tone reflects the fact that this intonational phrase also makes part of a wider interpretive unit, that is, the part of discourse referring to the student's personal data.

The corresponding *»rise-fall«* nucleus is somewhat impressionistically defined by Škarić (1991:311) as a contour which *»gives the discourse a narrational tone of learned simplicity«* (transl. VJ). Such a system of intonational analysis, however, does not allow for the decomposition (and accordingly logical explanation) of the meaning under consideration).

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VARIANT 4:

Configuration (4) can be placed in the following context: during an oral linguistic exam a student is talking about hypocoristic formation and by way of illustrating some point, he mentions his own name, which to the professor sounds extremely exotic, even incredible. So, the professor interrupts the student and asks him in surprise:

(4) *Kako se zovete?*

$$H^- \quad H\%$$

This intonational phrase is thus uttered in response to something that has just been said, and its dependence (i.e., its being part of a larger discourse unit) is expressed by the H^-. One naturally expects further development of the discourse on the topic of the student's name, in which the professionally deformed professor is likely to make enquiries or comments on the provenance and etymology of the name and the like. Accordingly, the openness of the *I* under consideration is expressed by the H boundary tone, which in this configuration, in view of the interpolation rule that applies here, results in a final high rise.

The four examples referred to above show how the BGC system of analysis of intonational meaning applies to Croatian non-melodic tones as well. What remains to be explained is the difference between English and Croatian with respect to the frequency of occurrence of individual tones. As shown by the empirical research referred to earlier (Josipović 1993), Croatian uses low non-melodic tones more extensively than English does. This would suggest that with this group of intonational morphemes (just as it turned out to be the case with melodic accents, cf. Josipović 1993) Croatian uses alternative means of expressing the meanings of H- and H% more widely than English does, combining the unmarked L- and L% tones with some other pragmatic means. Indeed, if one looks back at examples (2), (3) and (4), which all involve one or two H non-melodic tones, one can easily find alternative means of reaching the same pragmatic goals through the most unmarked non-melodic tonal configuration, $L^- L\%$.

(2) *Kako se Vi zovete?*

(3) *A kako se zovete?*

(4) *Kako se to zovete?*

It should be noted that in (2) the right pragmatic function is performed by the use of the personal pronoun, which in Croatian is not normally made explicit in unmarked pragmatic contexts, since the grammatical notion of person is already expressed by the conjugation of the verb. In (3), the additional word is the conjunction »a« (»and«), whereas in

(4) we are dealing with the deictic use of the otherwise demonstrative word »to« (»this«), accompanied by characteristic facial expression. Readers who do not know Croatian should note that the words written in boldface in examples 2–4 are unstressed.

It is important to stress that by pointing to this difference between the two languages, it is by no means implied that English has not got any such alternative means of conveying intonational meaning. On the contrary, at this point I would like to quote Britain (1992), who finds that in New Zealand English, expressions »eh« and »you know« function as pragmatic alternatives to the high rising contour (i.e., H⁻ H%). However, the empirical research referred to earlier (Josipović 1993) shows that in the two corpuses which were compared, Croatian resorted to such alternatives much more often than English did.

At this point it should also be stressed that however significant they may be, differences between the two languages with respect to non-melodic tones are only a minor aspect of their overall intonational differences. As shown in Josipović (1993), the nature of the vast majority of intonational differences between English and Croatian is accounted for primarily in terms of the differences in the inventories of melodic accents. Considering the typological prosodic difference between the two languages, in particualr the fact that being a pitch-accent language, Croatian has an inventory of melodic accents significantly influenced by its lexical prosody, this comes as no surprise. However, such intonational differences, as well as those resulting from the different intonational rules, and more notably, differences in the rhythmical nature determining the location of important prominent points in melodic contours, go beyond the scope of this paper.

3. Conclusion

Croatian and English have the same bitonal inventory of non-melodic accents, which lend themselves to the same kind of analysis within the BGC system. However, as English turns out to use high non-melodic tones more extensively than Croatian does, in the present paper it was pointed to some examples suggesting that Croatian 'makes up' for these H tones by resorting more often to alternative, redundant pragmatic means of conveying the meaning of H⁻ and H%. Insights about the use of such alternative means can significantly improve our understanding of intonational differences between the two languages, as well as the understanding of the nature of intonation in general. Therefore such means deserve and require some detailed empirical research.

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NEMELODIJSKI INTONACIJSKI MORFEMI U ENGLESKOM I HRVATSKOM

U ovom radu uspoređuju se inventari nemelodijskih intonacijskih morfema engleskoga i hrvatskog u okviru dvotonskoga generativnog kompozicijskog modela. Pokazuje se kako engleski i hrvatski imaju isti dvotonski inventar nemelodijskih tonova, ali engleski koristi visoke nemelodijske tonove češće nego hrvatski. Sugerira se da hrvatski »nadoknađuje« te visoke tonove posežući češće od engleskoga za nekim alternativnim izražajnim sredstvima.