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English and Croatian in the Typology of Rhythmic Systems[1]

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This paper discusses the place of English and Croatian in the typology of rhythmic systems. It is mainly concerned with the differences between stress-based and syllable-based languages. Special attention is paid to the implications that these differences have for the creation of the impression of foreign accent.

1. Typology of Rhythmic Systems

Rhythmical differences among languages represent a very important and interesting issue in the study of foreign accent. As information about the temporal organization of speech often plays a crucial role in perceptive identification, rhythmic distortions in the speech of a non- native speaker can be decisive for the creation of an overall impression of foreign accent. As pointed out by Huggins (1978a), incorrect temporal organization can reduce comprehensibility by up to 70%. This is also borne out by numerous works on foreign accent (e.g., Touati 1987, Bernbach-Djennane 1991, Isaev 1991). Since English and Croatian are usually categorized as belonging to two rhythmically different types of languages – a stress-timed *vs.* a syllable-timed language (cf. Filipović 1961), rhythmic differences between these two languages can be expected to play an important role in the appearance of foreign accent in English spoken by native speakers of Croatian, and vice versa. However, before making any detailed comparisons, it is useful to clear up this recently rather controversial distinction, namely, the one between the so-called stress-timed and syllable-timed languages.

The division of rhythmic systems into stress-timed and syllable-timed ones was introduced by Pike (1946), and its most often quoted advocates include Abercrombie

[1] This paper is a slightly modified version of chapetr I.4.2. from the author's doctoral thesis, quoted in the bibliography as Josipović (1993).

(1967) and Catford (1977). The basic idea was that in languages with the stress-timed rhythm, stressed syllables occur at regular intervals, independently of the number of unstressed syllables between them. This (presumable) characteristic of stress-timed languages is referred to in the phonetic and phonological literature as *"isocrony"* (equal duration of interstress intervals), which was assumed to be achieved by adjusting, i.e. either shortening or lengthening, the segmental material in interstress stretches of speech. The advocates of such a strictly formulated isochrony hypothesis have never agreed among themselves as to what exactly it is that gets shortened or lengthened at the expense of what in stress-timed languages. Some linguists argue that it is the accented syllables that get lengthened at the expense of the unaccented ones. So, for example, Bolinger (1981) considers that in the English language those syllables that include a full (i.e., unreduced) vowel, "borrow" time from reduced vowels belonging to the same foot. Among phoneticians and phonologists subscribing to such ideas about the crucial role of the syllable as the domain of temporal adjustment, there is further disagreement concerning the part of the syllable that presumably gets affected. What is disputable is whether it affects just the nucleus of the syllable, as believed by Lehiste (1970), or whether it includes the entire rhyme, as suggested by the research carried out by Chen (1970), Selkirk (1982) and Walsh & Parker (1982), who all argue that the rhyme is a relevant constituent in contrastive rhythmical studies. On the other hand, Maddieson (1985) points to cases where some quantitative adjustments can affect the onset as well.

However, such a strictly formulated isochrony hypothesis had to be challenged. Klatt (1976: 1218) points out that "... *there is little evidence to indicate that speakers normally try to adjust segment durations in order to satisfy a global rhythmic constraint.*" Moreover, on the basis of a research done on English rhythm, Crystal and House (1990: 111) explicitly claim that "... *neither the duration of segments within a syllable, nor of segments and syllables within a stress group, are adjusted to make the durations of the syllables or the stress groups more constant or more regular.*" This speaks in favour of the view held by Dauer (1983), who argues that the differencs between the so-called stress-timed and syllable-timed rhythm **are not at all based on the temporal organization of speech!** In a research done on several languages, she found that the difference between the two types of rhythm is based on the **perceptual illusion of isochrony.**

According to this hypothesis, the tendency for individual segments to get shortened with the increase of the number of interstress syllables is universal in languages, irrespective of those two rhythmical categories. What actually makes the so-called stress-timed languages different from syllable-timed languages is a greater extent of "conspiracy"[2] between stress and syllable structure. In the so-called stress-timed languages there are some restrictions concerning the number of syllables permitted in interstress intervals, as well as the quality of possible interstress segments. So, for example, English has the Vowel Reduction Rule, which provides that only the so-called "weak" (i.e., qualitatively reduced) vowels, which are inherently shorter than the "strong" ones, occur in unstressed syllables. On the other hand, the English Stress Rule,

[2] The term "conspiracy" used in this sense was introduced by Ladefoged (1975: 103).

being sensitive to syllable weight, makes strong syllables even stronger. Besides, stress-timed languages in principle allow more complex consonant clusters in the coda. Thus the English coda can have up to five consonants, as in the word "sixths".

Thanks to evidence from an increasing number of languages, as well as the availability of modern methods of computer synthesis of rhythm, the so-called *"strong isochrony hypothesis"* has recently been completely rejected. It turns out that isochrony in the literal sense of the word does not actually exist. So, for example, Carlson (1991) rather convincingly shows an absolute unnaturalness of "pure" stress-timed rhythm, i.e., strictly isochronous rhythm, as well as of "pure" syllable-timed rhythm, in which the duration of syllables in stress groups equals their inherent duration. In other words, it turns out that inter-stress intervals in the so-called stress-timed languages are not objectively isochronous, but, rather, may **sound** isochronous due to the perceptive illusion of isochrony. The extent of this illusion varies across languages, depending on the extent and nature of the "conspiracy" referred to above. Thus a strict division of rhythmic systems into stress-timed and syllable-timed ones does not make sense. Accordingly, when describing the rhythmic system of any given language, rather than categorizing it as either stress-timed or syllable-timed, we should locate that language in the right place on the imaginary rhythmic scale. One extreme of that scale would correspond to a typical language with rhythms based on stress (hence stress-based language), exemplified, according to a general consensus, by English (cf. Fant et al. 1991). At the other extreme, there would be a language with a totally opposite rhythmic nature, i.e., a language with the typical features of syllable-based rhythm, such as Spanish. The position of a given language on that scale would be determined by the extent to which the rhythmic features of one or the other type are present. So, for example, Simoes (1991), comparing the European to the Brazilian variety of Portuguese, establishes that European Portuguese has a more stress-based rhythm than Brazilian Portuguese, i.e., on the imaginary rhythmic scale it is closer to English than is Brazilian Portuguese. Likewise, Recasens (1991) describes the Catalan rhythmic system as a "crossbreed" between stress-based and syllable-based rhythm.

Thus, alongside the "strong" version of the isochrony hypothesis, the strict distinction between stress-timed and syllable-timed rhythm has recently been abandoned. However, the notions of "isochrony", stress-based and syllable-based rhythm have proved useful. Phoneticians and phonologists agree in accepting the so-called *"weak isochrony hypothesis"* (Cf. Fant et al. 1991). This means that, although it is undisputable that true isochrony does not exist and that the perception of certain rhythmic systems as isochronous is based primarily on a perceptive illusion, there are, nevertheless, certain ways of quantitative adjustment of interstress stretches to the one or the other type of rhythm. So, apart from the differences in the degree of "conspiracy" between stress and syllable structure, languages inclined towards stress-based rhythm and those inclined towards syllable-based rhythm differ in the features that may be summed up in the following table:

Table 1 STRESS-BASED VS. SYLLABLE-BASED RHYTHM

Stress-based rhythm	Syllable-based rhythm
1. greater reduction of unstressed syllables with the increase of interstress material;	proportional reduction of all syllables;
2. greater quantitative differences among unstressed syllables;	smaller quantitative differences among unstressed syllables;
3. greater extent of final lengthening;	smaller extent of final lengthening;
4. preference of anticipatory compression of stressed vowels in a stress group;	preference of regressive compression of stressed vowels in a stress group;
5. increase of speech rate achieved at the expense of vowels.	increase of speech rate achieved at the expense of consonants.

In short, there has recently been a consensus among linguists about the need to reject the "strong" version of the isochrony hypothesis and a strict division of rhythmic systems into stress-timed and syllable-timed. This also implies the acceptance of the so-called "weak" version of the hypothesis, the gist of which is provided in the above table.

However, there is still a considerable amount of disagreement concerning the basic unit of rhythmic analysis, i.e., the basic prosodic domain of rhythmic systems. So, for example, although it is undisputable that languages differ with respect to the extent of reduction of unstressed syllables, it is rather controversial what constitutes the domain of such reduction. While some linguists believe that this reduction (just like the other processes referred to in Table 1) takes place within the stress group, that is, **phonological phrase**, others claim that it is the **phonological word** that serves as the domain for all important rhythmic features. This issue is particularly hotly debated among phoneticians, who often take one of the two opposed sides: the advocates of the phonological phrase (including Lehiste 1977, Dauer 1983, Den Os 1988, Fant & Kruckenberg 1989) as opposed to those in favour of the phonological word (e.g., Eefting 1990, Nooteboom 1991, Bell-Berti 1991). Since both views are based on solid arguments and the results of empirical research of individual languages, it turns out that, as claimed by Beckman & Edwards (1987) in connection with the phenomenon of lengthening and shortening in languages, the processes at issue can have both the phonological phrase and the phonological word as their domain. Consequently, the rhythmic systems of individual languages can differ precisely in whether a given process takes place on the level of the word or the phrase. So, for example, it is well known that the English language has two types of final lengthening, one of them taking place at the level of the phonological word, the other at the level of the phonological phrase (cf. Nespor & Vogel 1986, Beckman & Edwards 1987). Thus it seems reasonable to assume that in the description of characteristic rhythmical features of individual languages, as well as in their comparison, for each process or rule we should specify its domain, and the

theoretical discussion as to which domain is generally the most important one in the world's languages can be left over to general linguists.

In order for the survey of the typology of rhythmic systems to be complete, two other specific types of rhythm should be singled out: **foot-based** rhythm and **mora-based** rhythm.

Systems based on the foot are actually a subtype of stress-based systems. As a rule, they exhibit all those features that characterize the stress-based rhythm. What makes these systems specific is the fact that the domain for all those processes is the foot, rather than the phonological phrase or word. As pointed out by Wiik (1991), rhythm based on the foot is a common feature of the Baltic languages. Since there is nothing to suggest that either Croatian or English rhythm could be fitted into this category, the foot will not play any major role in the rhythmic comparison of the two languages.

Moraic rhythm is usually illustrated with the example of Japanese (cf. Kubozono 1991, Sato 1993). Although the mora turns out to be the tone-bearing unit in Croatian (cf. Inkelas & Zec 1988; Babić & Josipović 1991), Croatian rhythm, notably, does not fit the established definitions of moraic rhythm. The fact that Croatian syllables can be divided into inherently long (bimoraic) and inherently short (monomoraic) ones does not necessarily imply that processes of temporal adjustment – lengthening and shortening – take place on the moraic level, as is the case with mora-based languages. Besides, as pointed out by Smith (1991), in moraic rhythmic systems, consonants and vowels "count" equally in processes of lengthening and shortening, and the ratio of long and short syllables is rather constant.

As shown unambiguously by the experimental research done by Bakran (1984), in Croatian, processes of temporal adjustment take place at the level of the syllable, rather than that of the mora. In these processes, vowels play a more important role than consonants. The ratio of long and short syllables (irrespective of the stress) does not tend to be constant. Thus, the Croatian rhythmic system cannot be called moraic in the sense in which this term is usualy employed in the literature. So, the existence of the mora as a basic unit of phonological analysis in a given language does not necessarily imply that the language belongs to the category of moraic rhythmic systems. This can, after all, be illustrated using the examples of other languages, such as Italian (Smith 1991).

Taking into consideration the criteria discussed above, it can be observed that the Croatian prosodic system neatly fits the category established by Kenstovicz (1971) for the description of Lithuanian. This is the category of the so-called **syllable-counting mora languages**, i.e., languages in which the mora serves as the tone-bearing unit, but the entire syllable counts as a measure of temporal distance.

2. English and Croatian rhythm

A crucial difference between English and Croatian rhythm is that the English rhythmic system is more stress-based than the Croatian one. This claim can be made on the basis of the empirical data provided by the contrastive research carried out by Bakran (1984). This, after all, comes as no surprise, since English is usually referred to

as one extreme point on the imaginary scale of rhythmic systems. Considering this difference, one may expect these objectively measurable phonetic differences to play a considerable role in creating the impression of foreign accent in the speech of Croatian (non-native) speakers of English. This can also generally apply to the speech of non-native speakers of any language, whenever we are dealing with a "clash" of two typologically different rhythmic systems.

It is often observed in the literture that apart from the tendency towards weak temporal regularization of inter-stress stretches, English is characterized by the tendency towards regularization with respect to the type of rhythmic feet. Cases in point would be examples such as *cosmetic surgery* pronounced as *'cosmetic' surgery, or Mississippi legislature* pronounced as *'Mississippi' legislature* (cf. Bolinger 1981:40). Such a tendency has not been observed in Croatian. However, as we are dealing with an optional and stylistically marked rule of English (productive in the so-called *allegro* style), failure to apply it would not represent any characteristic feature of foreign accent. Therefore, in the prosodic comparison of the two languages, this specifically English rhythmic rule may be dismissed as marginal.

What still remains to be explained is the role of the presumed illusion of isochrony in foreign accent. As pointed out earlier, it is assumed that this phenomenon takes place on account of phonological rules of "conspiracy" between accent and syllable structure, resulting in the perception of stress-based rhythm as stress-timed. In view of the well-known phonological differences between Croatian and English, one may expect this kind of illusion in the perception of English. Another interesting issue that arises is whether such misperception, if it exists, applies only to native speakers/listeners of a language rhythmically different from English, or is this phenomenon universal in the perception of speech, i.e., independent of the listener's mother tongue. The answer to this question would have important implications, not only for the understanding of the construct of isochrony, but also for the theory and practice of foreign language learning. It would make it possible to establish whether problems related to rhythmical distortions in foreign accent arise from perception or production. In order to throw some light on the role that the perceptive illusion of isochrony might play in foreign accent, I will present a research carried out to provide the answers to the questions raised above.[3]

Before the description of the research, it is useful to clear up the phonological differences between the two languages, suggesting that in the perception of English (as opposed to Croatian) one should expect the perceptive illusion of isochrony. It is well-known that in English the Vowel Reduction Rule says that in unstressed syllables there are only so-called "weak" vowels, which are inherently shorter than "strong" ones. Besides, the Stress Rule of English is sensitive to the weight of the syllable, making already strong syllables even stronger (cf. Chomsky and Halle 1968).

In Croatian there are no phonological rules comparable to these English rules. Besides, the place of the accent is determined by the location of the lexical high tone, rather than syllable structure (cf. Inkelas & Zec, Babić & Josipović 1991). The notions of "conspiracy" between stress and syllable structure and the perceptive illusion of isochrony thus do not appear to be applicable to Croatian.

[3] The research was carried out together with R. Huntley, and a brief version of the results was published in Josipović & Huntley (1991).

The research questions that follow from the issues discussed above are the following:

1. *Are objectively isochronous stretches of speech in the two languages perceived as sequences of different duration?*
2. *If the answer to question 1 is affirmative, is this misperception dependent upon the rhythmic nature of the mother tongue, or is it a universal perceptive illusion, independent of the nature of the listener's native language.*

3. Experimental research on isochrony

3.1. Research procedure

The material taken for the research was the test passage used by Wells (1982), in particular, the first six sentences of the original English version, as well as their Croatian translation. The material was recored by a native speaker for each of the two languages (American English and Croatian). The recording was carried out in a sound-proof studio with professional laboratory equipment.

Ten sample Croatian phrases of varying duration (1-3 seconds) were matched with ten English phrasses of corresponding duration.[4] These pairs were extracted from the passages, preserving syntactic units. As a result of the different prosodic nature of the two languages, these pairs of objectively isochronous sequences contained different numbers of unstressed syllables, as well as different syllable structures. In addition, 20 pairs of unequal and varying durations were included. Ten of these sentences differed considerably in duration (0.592-1.8 sec.), whereas the remaining 10 were of slightly different duration (JND – 0.187 sec). The resulting total of 30 pairs were duplicated and quasi-randomized for reliability testing. Finally, the order of the English and Croatian members of pairs was also randomized, so as to prevent any possible bias with respect to the order of presentation. By way of illustration, here are a few examples of pairs used in the experiment.[5]

1.	(E = C)	*It must have been two o' clock*	*(1.263)*	
		Mora da su bila dva sata	*(1.277)*	(**d** = 0.006)
2.	(s.d.)	*upon the earth* (0.717)		
		gore-dolje	*(0.7527)*	(**d** = 0.357)
3.	*(c.d.)*	*odbacujući me naprijed i nazad*		(**d** = 0.8871)
		this way and that	*(0.934)*	(**d** = 0.8871)

[4] What is meant by "equal" duration are sequences differing by less than 20 msec, which according to Huggins (1978) represents the threshold for just noticeable difference. Although Lehiste (1975) puts this threshold at 40 msec, to be on the safe side, only pairs differing by less than 20 msec were used.

[5] The numbers in brackets refer to duration, expressed in seconds, and the value of **d** refers to the difference in the duration of the members of pairs, where "s.d." means "small difference", and "c.d." stands for "considerable difference".

Thirty-six listeners, equally divided into native groups – English and Croatian – participated in the experiment. The subjects were of college age (18-30 years) and demonstrated adequate hearing for the task. Auditors were seated in a quiet room, equidistant from the source. They were asked to indicate their perception of the temporal relationship between the members of each stimulus pair by placing a mathematical sign ($<$, $>$, $=$) in the space provided on the answer sheet. The stimulus phrases themselves were not written out on the answer sheet, so as not to mislead the listeners by the length of the graphic representation of individual phrases. Instead, they were indicated by the letter "E" for English and "C" for Croatian.

3.2. Results

The responses were statistically analysed by means of one-way analysis of variance (ANOVA). The results showed that the two groups of subjects responded in a similar fashion ($F = 0.151$, $df = 1,34$, $p = 0.79$). The differences between individual categories of correct responses were analysed by means of MANOVA testing, which indicated that the subjects gave similar responses irrespective of the mother tongue (Hotellings $T^2 = 0.120$, $F = 1.282$, $df = 3,32$, $p = 0.297$). The mean values in the cells suggest that the listeners were better at identifying the temporal relationship in cases where the correct answer was "equals to" or "shorter than". The following table indicates the percentages of correct respones, irrespective of the native language:

Table 2 **RESPONSES IN % REGARDLESS OF THE NATIVE LANGUAGE**

	Subjects' responses		
	=	>	<
=	**52.36**	34.58	11.39
>	31.44	**61.50**	7.06
<	39.75	5.22	**53.03**

The incorrect responses were also subjected to MANOVA testing. These results also indicated that the native language was in no significant correlation with the type of error (Hotellings $T^2 = 0.286$, $F = 1.380$, $df = 6,29$, $p = 0.256$).

When analysed without regard for the native language, the MANOVA revealed significant differences between duration types (Hotellings $T^2 = 54.840$, $F = 274.198$, $df = 6,30$, p). The discrimination coefficients point to two factors that could potentially explain the listeners' reactions: difficulties in the perception of the "equals to" relation on the one hand (manifested in responses "$>$" and "$<$" for "$=$") and errors involving "equals to" responses instead of the correct "longer than" or "shorter than". These tendences are indicated in the following table:

Table 3 *MANOVA* TESTING OF ERROR TYPES

Variable	Standard error	F – proportion	P	Discrim. coeffic.
>/=	0.01467	310.403	0.000	.61577
</=	0.695	67.854	0.000	.62397
=/>	0.1748	214.693	0.000	.79367
=/<	0.02018	304.049	0.000	.76967
>/<	0.0345	28.635	0.000	–08441
</>	0.0423	42.641	0.000	49087

The remaining errors were not indicative in any respect. An informal observation of the mean values in the cells shows a tendency towards responding to the target "equals to" relation by the response "longer than" rather than "shorter than". Likewise, the subjects were inclined to respond to "longer than" and "shorter than" stimuli by "equals to". Generally, they were able to perceive differences in timing at levels better than chance. However, in cases when they did make errors, they showed a tendency towards perceiving the members of pairs as equal. When they were actually objectively equal, the most common type of response was "longer than".

3.3. Discussion

The results presented in 3.2. suggest that the subjects were able to perceive timing differences between the two languages at levels better than chance. However, both groups of listeners made a significant number of errors. This means that the answer to research question 1 is affirmative: the temporal relations between English and Croatian turn out to be misperceived. However, the answer to the second question – the one concerning the nature of the observed perceptive illusion – is somewhat indefinite: the subjects responded in a similar fashion, irrespective of the rhythmic nature of their mother tongue, although the universal nature of the tendency towards perceptive illusion was only weakly confirmed. In other words, the overall success in the identification of temporal relations did not turn out to be language-specific. This suggests that **rhythmic systems sound equally stress-based or syllable-based to the speakers of typologically different languages**. This has the following implication for the understanding of the notion of isochrony: the reason why non-native speech sounds rhythmically distorted appears to lie primarily **at the level of production, rather than perception**. So, for example, the reason why the rhythm of the Croatian accent in English sounds syllable-timed is not because the non-native speakers of English misperceive temporal relations differently than the native speakers of English. Rather, it turns out that both groups of speakers perceive them similarly: they are all inclined to show the perceptive illusion of isochrony when listening to English. What really causes the

rhythmic distortions is the fact that Croatian speakers do not do all those things that speakers of a stress-based language would do to achieve the "conspiracy" of stress and syllable structure which makes their language **sound** isochronous.

It was not within the scope of this research to establish the role of individual phonological factors in the "conspiracy" under consideration. Still, it should be noted that informal examination of the data suggests that the number of unstressed syllables per stress group played no role in the incorrect responses to timing differences between the two languages. Hence, the explanation for the misperception should be looked for in other differences between English and Croatian. In view of the already known phonological differences between the two languages, one would expect the Vowel Reducion Rule of English to be a major factor. Some researchers (e.g. Chen 1970, Selkirk 1982, Walsh & Parker 1982) argue for the rhyme constituent of the syllable as a relevant unit in the study of crosslinguistic differences in the perception of timing differences. This is, however, contradictory to the results obtained by Maddieson (1985), who found that the rhyme was no more important in this respect then the onset. In any case, the role of the individual syllable constituents in the conspiracy with stress, i.e., the role of crosslinguistic differences in the structure of stressed and unstressed syllables, remains controversial and requires further investigation.

An interesting issue that arose in the course of error analysis concerns the observed inclination towards responding with "longer than" when the correct answer was "equals to" and with "equals to" when the correct answer was "shorter than". This tendency was found irrespective of which language occured first in the pair. It suggests that there was some other factor at play other than the rhythmic nature of the two languages.

A possible explanation that will be offered in the present paper has to do with a universal tendency of research subjects observed by Petz (1988). It turns out that in situations of hesitation, subjects tend to prefer a more positive or a greater value among the choices that are offered.

4. Rhythmical Distortions and Intonation

Rhythmical distortions of non-native speech resulting from typological differences between languages will be directly reflected in intonation. As shown by Silverman and Pierrhumbert (1990), any "metrical lengthening" (as opposed to "emphatic" lengthening) causes a shift in the melodic peak towards the beginning of the syllable.

It is hardly imaginable that Croatian, as a moraic language, could tolerate emphatic lengthening to the extent to which English can. One would thus expect Croatian to resort to some other, probably tonal means (such as higher values of H tones) for achieving the same purpose. This can be illustrated by the following example, observed in the speech of a phychotherapist on a stress-busting tape of commercial nature:

Make yourself really comfortable.
[ri:::əli]

Such drastic lengthening of the intonational nucleus in the Croatian translation equivalent would definitely sound unnatural:

Pobrinite se da vam bude zaista udobno.
* [za:::ista]

Even if we assume that Croatian can in such cases express emphasis without any tonal modification, using paralinguistic or any other means, it is clear that this rhytmic difference between English and Croatian must result in some kind of intonational difference. For it has been proved that emphatic lengthening (as opposed to metric lengthening) delays the melodic peak, i.e., shifts it forward towards the end of the syllable (cf. Silverman & Pierrehumbert 1990). This, after all, accounts for the fact that the melody in the lenghened syllable /ri:::o/ from the above example sounds rising to the Croatian ear.

5. Conclusion

The English rhythmic system is typlogically different from the Croatian one: English has so-called stress-based rhythm, while Croatian rhythm is syllable-based. This difference is manifested in two types of rhythmical differences:

1. In English there are more striking processes of temporal adjustment in the direction of achieving a weak temporal regularization (though not literal isochrony) of interstress stretches.
2. English exhibits phonological "conspiracy" between stress and syllable structure, which results in the perceptive illusion of isochrony.

It turns out that misperception of timing in speech does not depend upon the rhythmic nature of the native language, which implies that rhythmic distortions in foreign accent primarily present a problem of production, rather than perception.

Rhythmic distortions resulting from typlogical differences between the two rhythmic systems, as well as those resulting from the moraic nature of Croatian (which as such is less tolerant than English to emphatic lengthening) will entail tonal distortions. These will consist in the wrong location of melodic peaks within the syllable.

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ENGLESKI I HRVATSKI U TIPOLOGIJI RITMIČKIH SUSTAVA

U ovom se radu određuje mjesto engleskog i hrvatskog jezika u tipologiji ritmičkih sustava. Glavno je težište na razlici između naglasnog i slogovnog ritma. Posebna se pozornost obraća na implikacije koje ove razlike imaju za stvaranje utiska stranog akcenta.