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Typology of Tone Loss in Haloze, Slovenia: An Acoustic and Autosegmental Analysis

The paper presents an acoustical analysis of pitch contour on accented syllables in Haloze micro-dialects and a comparative examination of other instrumental studies of pitch in selected South Slavic dialects. Based on these analyses, an attempt is made to place Haloze within a typology of tone loss which functions on autosegmental principles and is motivated by language contact.

Prispevek predstavlja akustično analizo tonskega poteka v naglašanih zlogih ter primerjalno obravnavo drugih instrumentalnih raziskav v nekaterih južnoslovanskih narečjih. Na osnovi teh raziskav avtor skuša uvrstiti haloške govore v tipologijo izgube tonemskosti, ki temelji na avto-segmentnih načelih in je pogojena z jezikovnim stikom.

Introduction

This article is a theoretical reexamination of an instrumental study of the pitch contour on accented syllables in the dialects of Haloze, a small geographical region on the eastern border of Slovenia's historical province of Styria (see Figure 1 below). Based on the data from this instrumental study, the contemporary situation in Haloze will be explained in terms of a typology of tone loss, which is motivated largely by language-contact phenomena.¹

Dialect information from this region is especially important because of the location of Slovenia in general and of Haloze in particular. The Slovene standard language and Slovene dialects are located at an important and central position in Europe. The Slovene speech area lies where Slavic, Romance, Germanic and Finno-Ugric, all of the major language families of Europe, meet. It is an ideal laboratory for observing the way that languages, some of similar and others of divergent genetic backgrounds, behave in contact situations. In addition to the interesting position of Slovenia in general, Haloze is located on the periphery of the Slovene-speaking world, a position where, typologically, one expects to find archaisms. Haloze is thus potentially a very rich area in terms of dialectology and historical linguistics.

It is well known that at some point in its early development Common Slovene had word-level tonal distinctions. In fact, several important dialect groups still retain these oppositions. (For overviews of prosodic configurations from typological and diachronic viewpoints, see Greenberg 1987 for Slovene; Lončarić 1979 for Kajkavian; Ivić 1966 for the Serbo-Croatian territory in the broad sense.) This is not true of the Styrian and Pannonian dialects of Slovene, and most discussions of the development of Slovene vocalic systems are clear on this point. For example, Logar states what

¹The fieldwork that gave rise to this study was supported by fellowships from IREX and Fulbright-Hays. I would also like to thank the anonymous reviewers of this paper for their helpful criticism and insights. The instrumental study referred to above first appeared as Lundberg 2001.

has been said by others before him (Ramovš 1935; Rigler 1963; Lencek 1982): “Tako danes noben štajerski govor ne loči rastočih in padajočih naglasov niti v dolgih niti v kratkih zlogih. Tonski potek je tod en sam, namreč padajoč.” ‘Thus today no Styrian dialect distinguishes between rising and falling accents, neither on long or short syllables. The tonal contour is only one, namely falling’ (1996: 395). This statement also expresses the commonly held view that when tonal distinctions were lost in Styrian dialects the falling tone was generalized to all positions. What exactly is meant by “falling” is not clear in terms of phonetic realization. This term is often used interchangeably with “circumflex” or “high” tone. It is not clear if this refers to pitch contour, height or, more likely, default stress. These ambiguities will be considered in more detail later.

Figure 1. Dialect map of Slovenia



- | | |
|------------------|------------------|
| A Carinthia | E Upper Carniola |
| B Littoral | F Styria |
| C Rovte | G Pannonia |
| D Lower Carniola | |

Logar's comments on prosody in Styrian dialects are of particular interest here because Haloze is generally considered to be a part of this dialect group.² If these statements are extended to all dialects in this group, then we must conclude that there are no phonemic tonal distinctions in Haloze and that the unmarked word accent is “falling.” The problem with extending the general Styrian dialect characteristics to Haloze is that these generalizations would have to be made without the benefit of reliable data from Haloze and in contradiction to several statements in the dialect literature. Ramovš, Rigler, Lencek and probably Logar did not have conclusive information about the prosodic systems in Haloze because they have not yet been thoroughly described. Some new information based on the author's fieldwork in Slovenia will be offered below. (For a more detailed explanation of the vocalic systems of Haloze and the dialect group to which it belongs see Lundberg 1999.)

² There has been some debate regarding the dialect group to which Haloze belongs. See Ramovš 1935 and Rigler 1986.

Prosody

The vocalic system of eastern Haloze

The vocalic systems of eastern Haloze make distinctions of word-level prosody in the accented syllable only. This accent is free to fall on any syllable of the word, and its placement is phonemic, *kôstî* ‘bone’ (loc. sg. fem.), *kostî* ‘bone’ (nom. pl. fem.) (Meje). These systems have not experienced acute relengthening, often called *brata*-lengthening, a process which is common to many Slovene dialects. In this sense they are different from the Styrian dialects to the west and north of Haloze. Finally, the vocalic systems of eastern Haloze are strictly monophthongal, and distinctive quantity has been retained, *brât* ‘brother’, *brât* ‘to pick’ (supine) (Gorenjski Vrh).³

Long stressed

i	ü	u
ɛ	ɔ	ɹ
e		
a		

Short stressed

i	ü	u
ɛ	ɔ	ɹ
e		
ə		

The vocalic system of central Haloze

Like eastern Haloze, central Haloze has a vocalic system in which word-level prosodic distinctions are realized only in the accented syllable. This system has distinctive quantity, *brât* ‘brother’, *brât* (sup.) ‘to pick’, although that quantity, still distinctive, carries less functional load in central Haloze because it is almost always accompanied by a quality distinction in the form of a diphthong, *hîttâti* ‘to hurry’, *hîttîin* ‘I hurry’, *dêlatî* ‘to work’, *dâîlaš* ‘you work’ (Belavšek). The place of the ictus is free, so this is also phonemic in central Haloze, *kôustî* ‘bone’ (dat. sg.), *kostîi* (gen. sg.).

Long stressed

îi	üi	u
ɛ		ɹ
äi	ou	
a (ə)		

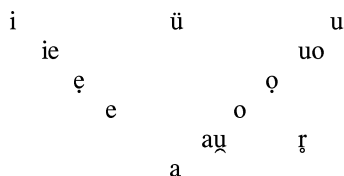
Short stressed

i	ü	u
ɛ	ɔ	ɹ
ä	ə	

³ All examples, unless otherwise stated, are from the author’s notes and recordings while in the field.

The vocalic system of western Haloze

The vocalic systems of western Haloze are in most respects the same as those found in central Haloze. One important difference is that as a result of *brata*-lengthening and other processes all stressed vowels became long, and thus phonemic length distinctions were lost. This has also produced two new diphthongs, *ie* and *uo*, which resulted from the lengthening of short **ě* and **ǣ* (> *ie*) and **o* and **ȫ* (> *uo*) respectively.⁴ Phonetically, it is not clear whether all stressed vowels are still long in these dialects.



Tone in Haloze

To the extent that the dialect area of Haloze has been described, the question of tone has not been dealt with adequately. Those who have conducted field work in Haloze have made comments on the topic of distinctive tonal contrasts, but these limited statements have not conclusively disposed of the issue.

Kolarič, in his 1964 dialect description, states in a footnote that all word accents in Haloze are falling (398), but there appear to be some gaps in his dialect data which bring the validity of this statement into question. Based on my own field work in central and eastern Haloze and judging from the examples of the possible reflexes of Common Slavic phonemes given by Kolarič, it does not appear that he had representative information on the vocalic systems of eastern Haloze. This statement is based largely on the fact that he does not mention a monophthong as a possible reflex of Common Slavic **ě* and **ȫ*, both of which are realized as monophthongs in eastern Haloze. He also fails to mention the merger of the **ě* and the **ǣ*. This is a significant gap in his description because, as is evident from an examination of the vocalic systems of eastern Haloze, eastern Haloze is separated from the rest of Haloze by several important isoglosses, therefore these dialects could also be different as regards tone (Lundberg 1999).

Although Kolarič states that there are no tonal distinctions in Haloze, he includes a quote from J. Pajek printed in *Zora* in 1875 which brings up the problem of intonation and seems to contradict what was said earlier about word-level pitch in Haloze. "Človek urnega jezika je Haložan; poskakuje namreč pri vsakej tretjej ali četrtjej besedi z glasom na visoko in potem zopet nazaj; proti koncu stavka pa besede neprijetno zateza. To nenavadno, nenaravno naglašanje je krivo, da ga težko razumeš, in te lahko smeh posili, dasi drugače dobro slovenščino govori, in le nekoliko sosednje hrvaščine vplete." 'A man from Haloze is of quick tongue; that is, every third or fourth word his voice jumps up high and then down again; at the end of a

⁴ The vocalic information on western Haloze comes from Zorko 1993.

sentence the words are unpleasantly stretched. This unusual, unnatural accenting is responsible for it being hard for you to understand, and it can make you laugh, although otherwise he speaks good Slovene with only a little influence from neighboring Croatian' (Kolarič 1964: 396).

Kolarič does not include this as a comment on word or sentence intonation in Haloze. He uses it only to emphasize how strange the speech of these border-region farmers can be. On the other hand, this statement does indicate that something interesting may be happening in the area of intonation, although it is not clear if Pajek is observing sentence or word-level prosody. Regardless, it is worth investigating further.

In contradiction to Kolarič's comments on Haloze tonemes, Zorko (1991, 1993) states that there are distinctive tonal oppositions in eastern and central Haloze. "Na vzhodu in deloma v osredju je ohranjena še opozicija med visoko (cirkumfleks) in nizko intonacijo (akut). Nizka intonacija je možna le na kratko naglašenem zlogu, v katerem je samoglasnik refleks starega ali novega akuta ali pa akuta na sekundarno naglašenem zlogu." 'In the east and part of the center, the opposition between high (circumflex) and low (acute) intonation is still retained. Low intonation can occur only on short stressed syllables in which the vowel is the reflex of the old or new acute or from secondary retraction' (1993: 205). She does not follow this statement with any explanation of exactly what this opposition might entail. It is not clear what the contours of these tonemes might be or how one would distinguish them. We are left to assume that these tonemes, especially since she follows Toporišič in indicating that they should really be called "high" and "low" rather than "falling" and "rising" (1968: 315), are similar to the shape and contrasts of the tonemes in Dolenjsko, Gorenjsko and Koroško.

According to Zorko, this tonal distinction is found only on short syllables and only in eastern and part of central Haloze, but she does not specifically indicate which village dialects exhibit this phenomenon. This is significant because the dialects of eastern and central Haloze have retained the phonemic distinction between long and short syllables. This means that, according to Zorko, tonal oppositions have been lost on long syllables where it is easiest to distinguish tonemes and retained on short syllables where it is much more difficult to differentiate them. This claim by Zorko, although typologically unlikely, is intriguing, and, if true, it describes a situation, which to my knowledge is unique in world languages. The situation is complicated further by the fact that this feature would carry very low functional load on short syllables because all the reflexes of Common Slavic circumflex on etymologically short syllables have lengthened in Haloze, *bôuk* 'god', *mesôu* 'meat'. That means that the short falling tonemes that would provide an opposition to the short rising would have to come from a different source, one that Zorko does not identify.⁵ It seems likely that Zorko has identified a phonetic feature that is not distinctive, i.e., it is not phonemic. These ambiguities require further examination.

⁵ It is true that in some areas of eastern Haloze the Common Slavic circumflex on short syllables has remained short, but this is a phenomenon with which Zorko appears to be unacquainted.

Spectrographic analysis

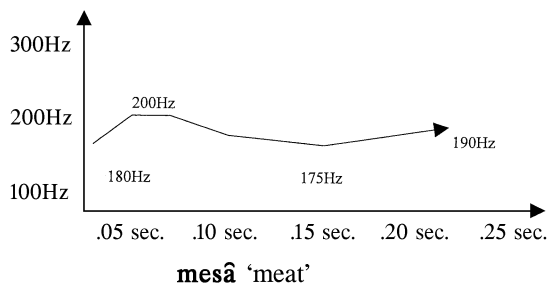
In the following pages, a phonetic analysis of the question of tone in the eastern Haloze village dialect of Meje, which represents the tonemic situation in both eastern and central Haloze, will be discussed. This analysis was performed using software developed by Speech Technology Research, Ltd., *Multi-Speech Signal Analysis Workstation, Model 3700, Version 1.20*, and was made available to me by the Phonetics Laboratory of the Linguistics Department at the University of Kansas. This software captures sound from audiotapes or live speech and converts it from analog to digital format. It then permits a spectrographic analysis on the data.

The analysis described below samples both long and short stressed syllables which are the reflexes of original Common Slavic circumflex, acute and neo-acute as well as syllables which have received stress through later retractions. This section is not meant to be a complete or comprehensive phonetic analysis of the dialect of Meje, but as an examination of the questions raised by Zorko on this topic. (1) Are there distinctive tonal oppositions in Haloze? (2) Is this distinction only made on short syllables? This analysis will also provide data to help locate Haloze in a typology of tone loss.

Tonemic possibilities

For comparative purposes, the speech of a native Slovene from the village of Jarše pri Domžalah, a tonemic region of Upper Carniola,⁶ was tested. A spectrographic analysis was performed on her speech in December of 1998. The contours of the two contrastive tones are represented in graphs 1 and 2. Graph 1 is of the “circumflex” or “high” tone, and Graph 2 is the “acute” or “low” tone.⁷ The representation is not of the entire word but the nucleus of the accented syllable only. The vertical line represents frequency in Hertz, and the horizontal line represents time in seconds.

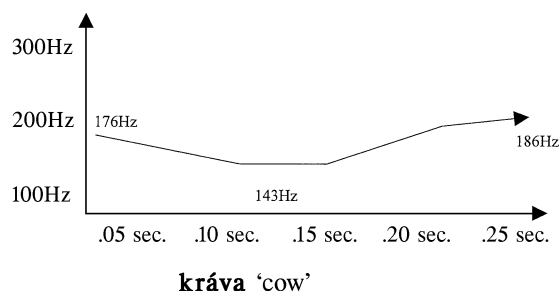
Graph 1



⁶ The informant for this test was Marta Pirnat-Greenberg. She is a university educated Slovene from an Upper Carniola dialect base. I am very grateful to her for her help on this project.

⁷ These samples were recorded in a sentence context. The form in Graph 1 comes from the sentence, *Malo mesa sem pojedla* 'I ate a little meat.' The form in Graph 2 comes from the sentence, *Bela krava se pase* 'The white cow is grazing.' For this short corroborative study, I sampled 30 words with acute tone and 9 with circumflex. The examples given here are representative of the other forms.

Graph 2



As is clear from the graphs, these two tonemes do have different contours, but the most important distinctive feature between the two tones is their relative height. This is illustrated by Toporišič's (1968) examination of the relationship between the arsis and thesis of acute and circumflex and the absolute height of the arsis of the acute compared to the arsis of the circumflex.⁸ His analysis shows that in most positions and sentence constructions the acute has a low arsis and a high thesis.

The circumflex has a high arsis, higher than the arsis of an acute in the same sentence structure, and a high thesis. The circumflex starts higher than the acute and has a peak that is higher than the acute peak. The following syllable is lower than the peak of the accented syllable. The acute starts lower relative to the circumflex but rises more dramatically to a peak slightly lower than the peak of the circumflex. With the acute the peak of the post tonic syllable is as high or higher than the accented syllable (315).

The important point is that the contour of the tone is not the most salient feature. In fact, it is the least important. The highest phonemic load is given to the height of the tone. This is because the contour of the arsis and the relative difference between the arsis and thesis of the acute as opposed to the circumflex can change in different types of sentences or in different positions within a sentence. On the other hand, the relative height of the arsis of the acute compared to the height of the arsis of the circumflex is the most consistent difference between the two tonemes. Theoretically, this height difference could be enough to distinguish these tonemes even in word-final position, *králj* 'king', *mesô* 'meat'.

It may also be informative to review the study done by Lehiste and Ivić in their book *Word and Sentence Prosody in Serbo-Croatian*. I will focus on their explanation of the pitch contour distinctions in Neo-Štokavian Serbo-Croatian. According to Lehiste and Ivić, knowledge of the tone on the accented syllable and on the post-tonic syllable is essential for distinguishing between the rising and the falling tone.

The long falling tone is contained in one syllable. It generally starts low and rises to a high peak early in the syllable nucleus; the peak is in the first half of the duration of the syllable. Then it drops off sharply to a low at the end of the accented syllable, and the post tonic syllable is lower still (44).

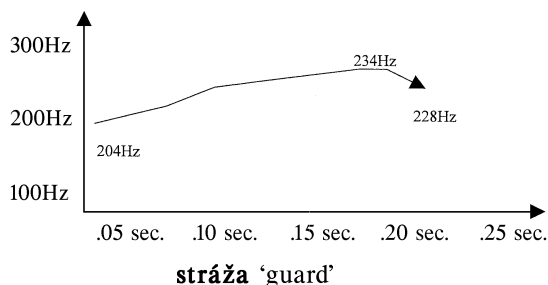
⁸ The arsis is the syllable under stress, and the thesis is the first post-tonic syllable.

The long rising tone has a rising contour which usually reaches its peak near the end of the syllable nucleus, and the post-tonic syllable peak is as high or higher than the peak of the accented syllable. The change in the F_0 is much less extensive than for the long falling tone. In fact, the contour is often almost a straight line (45).

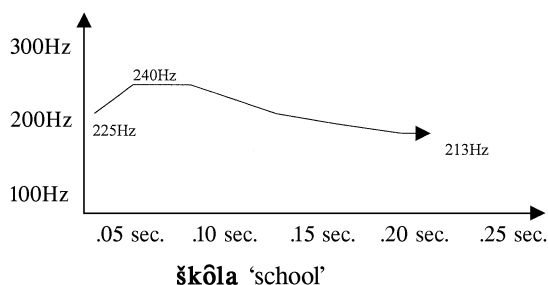
The most important distinctive feature is the height of the post-tonic syllable because in some environments the contours of the two tones are not distinctive. This is especially true for the short falling and short rising tones where post-tonic F_0 height is the only reliable way to distinguish the tones (44). In the variety of Serbo-Croatian described by Lehiste and Ivić, tone is not distinctive in final syllables.

Lehiste and Ivić also include a brief description of the pitch contour of a tonemic dialect in Croatian Kajkavian. The dialect described is Donja Pušća, which is reputed to be a very conservative Kajkavian dialect. This general area borders Haloz, so it is perhaps the most relevant area for comparison. In this area tone is distinctive in final syllables as well as internally, and the tone contours are contained in one syllable. Graphs 3 and 4 are representations of the syllable nucleus under the Kajkavian rising and falling tones respectively. Graph 3 is of *stráža* 'sentry', and Graph 4 is of *škôla* 'school'.

Graph 3



Graph 4



Note that the contour of the tone and the placement of the peak are much more important in this system than in the others that we have discussed thus far. Lehiste and Ivić mention that the pitch peak for Graph 3 is very near the end of the syllable nucleus. The duration of the syllable is 144 units and the peak comes at 129.

In contrast to this, the peak in Graph 4 is very early. The duration of the syllable is 117 units and the peak is at 41. This is well before the center of the syllable (81–82).

Analysis of Meje in Haloze

Informants and methodology

All of the material for this spectrographic analysis comes from selections made from a corpus of approximately 20 hours of recordings made on electronic tapes of dialect speakers while the author was performing fieldwork in Haloze.⁹ From recordings made of conversations with informants on various topics from daily life just over 100 words were selected. These forms represent the reflexes of Common Slavic circumflex on etymologically long and short syllables, Common Slavic acute and neo-acute on long and short syllables and words that have experienced an accent retraction in more recent times such as *zvězda* 'star' or *žēna* 'wife'.

In the process of choosing these words, the basic methodology of Lehiste and Ivić was followed (36). Words were chosen that were in neutral position in the sentence. This is a position in which the sentence intonation would have minimal influence on the word intonation. These forms were taken from the central part of the sentence because in sentence initial position the word tone is higher than normal, and in sentence final position word intonation is regularly neutralized. The words chosen also bore primary but not emphatic stress in the sentence. Finally, although the software used for this phonetic analysis employs an algorithm that calculates the *F₀* at a number of predetermined intervals over the duration of the syllable, in order to simplify this explanation, the pitch height was recorded at the beginning, at the peak of the fundamental frequency and at the end of the syllable nucleus. The quantity of the syllables involved was also measured.

Results

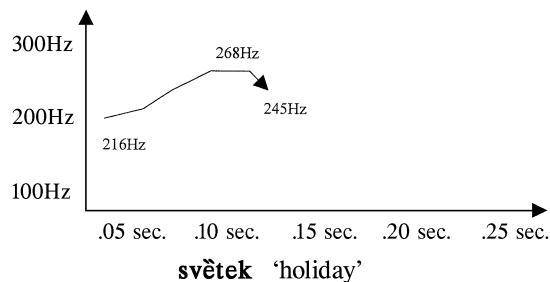
This study was performed as a means of confirming or refuting Zorko's claims about an unusually archaic prosodic system in Haloze. On the one hand, the phonetic analysis did show that quantity is distinctive in eastern Haloze. Long syllables last between .2 and .24 of a second. Short syllables are between .12 and .15 of a second, and unstressed syllables have a duration of between .05 and .08. It is reasonable to speak of two moras for a long syllable and one mora for a short syllable. On the other hand, although the situation is not completely as one might expect for a Styrian dialect, there is no distinctive tone in Haloze. There is only one pattern of pitch contour on short syllables. It is rising. On short stressed syllables the pitch level starts low at the beginning of the syllable and peaks 75% to 80% through the duration of the syllable nucleus, then it falls off slightly but finish higher than it started. This is true of all short syllables under stress in sentence neutral position, *grūnt* 'land' 234 Hz–282 Hz–245 Hz (the duration was .14 sec.), *člověka* 'person' 167 Hz–306 Hz–290 Hz (the duration was .11 sec.), *rěku* 'he said' 245 Hz–324 Hz–306 Hz (duration was .12 sec.). Graph 5 below is a representation of the pitch contour of a short accented syllable.

Even more interesting is that when I expanded the study to include long syl-

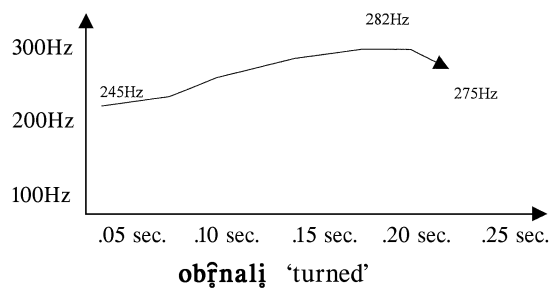
⁹ The primary informant for the village dialect of Meje is a 73-year-old woman named Marija Arbajter. She was born in the same village in June of 1926.

lables as well as short syllables of all possible historical proveniences, I discovered that the exact same pattern of pitch contour occurred on long as the one found on short. This was the case for the reflexes of Common Slavic circumflex as well as neo-acute and secondary retractions onto etymologically long syllables, *dělat* ‘to work’ 239Hz–290Hz–256Hz (duration was .21 sec.), *prepelâli* ‘they transported’ 200Hz–245Hz–212Hz (duration was .24 sec.), *na brêgi* ‘on the hill’ 190Hz–256Hz–225Hz (duration was .2 sec.). Note that for all of the long syllables the pitch peak comes near the end of the duration of the vowel. Graph 6 below is a representation of this pattern.

Graph 5



Graph 6

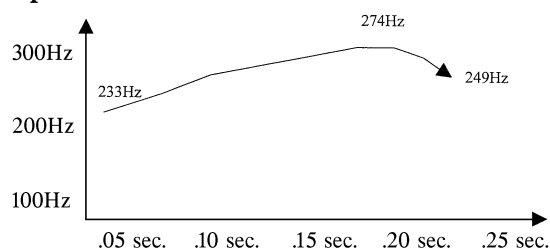


Because the contour is the same in all cases where the sentence intonation does not negate word prosody (this is largely a problem in sentence-final position because sentence intonation distorts word intonation here), it is possible to come up with an average contour for both long and short stressed syllables. According to the attested forms in this study the long syllable starts at 233Hz, peaks at 274Hz and then falls off to 249Hz. Out of an average of 15 samples taken of the pitch contour of a long syllable the peak comes at the 11th and 12th samples. This puts the peak at about 80% of the way through the duration. The average short syllable starts at 239Hz, peaks at 274Hz and falls off to 257Hz. With an average of 12 pitch samples taken in the syllable, the peak is on the 8th or 9th. Again this puts the peak at about 75% of the way through the duration. Graphs 7 and 8 show the typical pitch contour for long and short syllables respectively.

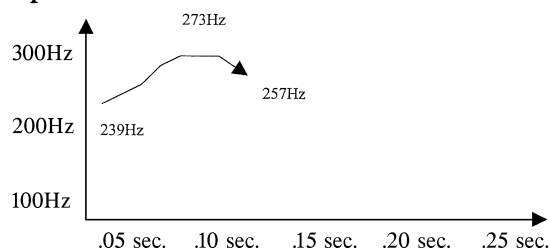
The most interesting point to be made about these averages is that the basic measurements of the long and short syllables are almost exactly the same. The aver-

age long syllable rises 41Hz to a peak at 274Hz and then falls 25Hz to the end of the syllable. The average short syllable rises 34Hz to a peak of 273Hz and then falls 16Hz to the end of the syllable. The striking difference is that the short syllable makes this contour fit within half the duration of the long syllable. The contour is therefore much sharper. This is significant and will be touched on more later.¹⁰

Graph 7



Graph 8



Explanations

Based on my own expectations and the descriptions by Kolarič and Zorko, the results of this study were not exactly as expected. It is clear that phonemic tonal distinctions have been lost in eastern and central Haloze. It is not strange that when the phonemic status of a feature is lost one of the two oppositions would be generalized. This is what has happened in all of the Styrian dialects. As Logar's statement cited earlier in this paper indicates, Styrian dialects generalized the falling tone. This is also the case in Prekmurje where pitch has been lost. In these dialects there is a clear falling contour to the accented syllable of the word.¹¹

The interesting thing about Haloze is that when pitch distinctions were lost, the rising rather than the falling contour was generalized. This is not the rising contour of other Slovene dialects like the one represented in Graph 2 or the "high" tone

¹⁰ For the purposes of comparison, a limited examination was made of the pitch contour of the accented syllable in the western Haloze village dialect of Žetale. It is interesting that the accented syllable is marked with high tone, but there is no distinct contour other than that the peak of the *F₀* is in the center of the syllable. The pattern is the same on the reflexes of original circumflex and acute, *domâ* 'at home' 120Hz–128Hz–117Hz, *iz hiše* 'from the house' 123Hz–130Hz–126Hz. This is an example of dialect in which all prosodic features other than stress have been lost. There are no phonemic tone or length distinctions, and a rise in pitch within the word serves only to mark the accented syllable.

¹¹ Marc L. Greenberg, personal communication.

found on the circumflex of Slovene and Serbo-Croatian. It is clearly the rising contour represented in Graph 3, which is the Kajkavian pattern. This is not strange considering the strong historical and geographic connections of eastern Haloze to its Kajkavian neighbor. A similar situation exists in the variant of Standard Danish spoken on the island of Bornholm off the southern coast of Sweden. Bornholm is clearly a development of older East Danish, but, prosodically, it has much more in common with Stockholm Swedish than with Copenhagen Danish (Grønnum 1992: 70).¹² The pitch contour of accented syllables in eastern Haloze is closer to that of its Kajkavian neighbor than to that of central Slovene.

One other question remains. Why did Zorko maintain in two studies over the course of several years that eastern Haloze has a phonemic pitch distinction, which the spectrographic analysis clearly indicates it does not have? One possible explanation comes from general studies on the typology of tone and tonal languages. Grandour, as well as others before him, has pointed out that the human auditory system attaches different significance to changes in the contour of rising as opposed to falling tone. If the general direction of a tone is from high to low, the auditory system does not easily distinguish changes in the steepness of the contour. If, on the other hand, the general direction of the tone is from low to high, the auditory system is much more aware of differences in the contour of the rise (58).

In Haloze the short syllable has the same basic change in pitch frequency from the beginning of the syllable to the peak of the Fo as that found in the long syllable. The difference is that this rise of 30 to 40 Hertz happens in half the time. That means that the pitch contour is much sharper and therefore more salient to the auditory system. This phenomenon makes the long syllable seem unmarked and the short marked for a tonal distinction. This rapid rise in pitch frequency is a salient feature to the auditory system, but it does not play the same role as tonal distinctions in other Slovene or Serbo-Croatian systems with tonemes. It may however play a role in helping speakers of the eastern Haloze dialects distinguish short and long syllables, a distinction which does carry phonemic significance.

This analysis has succeeded in answering the questions asked above. (1) There is no distinction in eastern and central Haloze, at least in the dialects studied here, between circumflex and acute tonemes, and, (2) therefore, this distinction is not maintained on short syllables exclusively. Haloze does seem to be different from other Styrian and Pannonian dialects in that at the loss of tone it generalized a rising contour rather than a falling contour. This distinction for now remains tentative because there are no pitch contour analyses of other Styrian or Pannonian dialects to confirm that the pattern is indeed falling in dialects outside of Haloze. It is significant that the pitch contour in Haloze is the same as the rising contour in Kajkavian dialects. The similarities could come from a genetic connection. There is good reason to at least consider this possibility based on the fact that eastern Haloze has a clear genetic connection to Kajkavian dialects in the vocalic system that it does not share with other Slovene dialects (Lundberg 1999: 94). On the other hand, intonation patterns are one of the easiest elements to borrow. They can often be borrowed with little other structural influence entering the language. It may be that as Haloze lost phonemic pitch, it generalized the pattern of the Kajkavian speakers

¹² I would like to thank Henning Andersen for pointing out this literature to me.

with whom it had close contact. This question will be considered in the final section of this article.

Typology of tone loss

One possible explanation for the unusual tonemic situation in Haloze may be found in a typological approach to the data. Haloze may represent a stage of tone loss that is different from other Styrian or Pannonian dialects. Salmons, in his book *Accentual Change and Language Contact*, sets up a typology of tone loss as a continuum from a pure tonal language on one extreme to a system with only dynamic or fixed stress on the other, placing pitch accent languages like Slovene, Serbo-Croatian and Swedish in the middle (1992a: 185), which may be schematized in the following manner: **Tone > Pitch Accent > Stress Accent > Fixed Stress**.

Salmons defines this typological continuum in terms of high tone. A tonal language is one that specifies tone levels on virtually every syllable. This means that there can be more than one high tone per word. Pitch accent languages are those that allow only one high tone per word, and the placement of this high tone in relation to other prosodic features, such as quantity, determines the contour of that tone (70). Languages with simple stress do not specify tone at the word level at all. They indicate intonation on the phrasal level only. This typology, then, moves from tonal languages, where pitch distinctions are bunched together in each word, to pitch accent languages, where tonal distinctions are spread out, so they only occur between lexical items, and finally to simple stress systems which specify tone only on the phrasal level (71).

Salmons further defines this typology in a separate article on the typology of change from a tonal to simple stress system (1992b). He indicates that there are several distinct stages in this development. He suggests that the first stage in this process is for a language or dialect to generalize one high tone. Then it would lose distinctions outside of the accented syllable and finally move to simple dynamic stress (274). As a mechanism for describing how this process might work, Salmons follows the non-linear formalism of Halle and Vergnaud, which allows for a tonal tier and a stress tier that function together (1987: 190–91). According to their model, I have represented the long tones of Serbo-Croatian as described by Ivić in Figure 2, where the top line is the tonal tier (high versus low) and the bottom is a stress line (* = stressed, o = unstressed). The first form, *Radom* ‘with Rada’ (instr. sg.), has rising tone, and the second form, *radom* ‘with work’ (instr. sg.), has falling tone. The double vowels in the accented syllable indicate length.¹³

Figure 2. Autosegmental representation of Standard Serbo-Croatian word prosody (after Ivić 1987).

LH	H			HL	L		
s	Ra	oo	m	s	ra	oo	m
	*	o		*	o		

The Kajkavian forms given earlier in this paper must be represented differently

¹³ A similar representation of pitch accent in Serbo-Croatian was proposed in Inkelas and Zec 1988.

because tonal oppositions are contained within one accented syllable in those dialects, rather than spreading over two adjacent syllables as in Serbo-Croatian.

Figure 3. Autosegmental representation of Kajkavian word prosody

LH L	HL L
straaža	škoola
* o	* o

Finally, forms from eastern and central Haloze could be represented as in Figure 4.

Figure 4. Autosegmental representation of eastern and central Haloze word prosody

LH L	LH L
deelat	breegi
* o	* o

This formalism used for Western South Slavic pitch accent systems brings up several interesting points. First, according to the typology formulated by Salmons, Neoštokavian Serbo-Croatian and probably most tonemic Slovene dialects fall someplace in-between a pure tonal language and a pitch accent language because they are not systems in which only one high tone per word is tolerated. The tonemic distinctions spread beyond the accented syllable because the pitch peak of the posttonic syllable plays a role in distinguishing the tones. For Serbo-Croatian this is also true of other prosodic phenomena, such as length, which is distinctive outside of the accented syllable as well. Kajkavian is perhaps a more clear example of a pitch accent system, because all prosodic distinctions are made within the accented syllable.¹⁴

The second point illustrated by this formalism is that representing the differences between systems like those found in Serbo-Croatian, Kajkavian and finally Haloze is simply a matter of reducing the distinctions made in the tonal tier and finally eliminating them altogether. This leaves a system like that of central Haloze. In addition to this, western Haloze has lost quantity distinctions and eliminated the already non-phonemic contour found on accented syllables in eastern and central Haloze.

Phonetic information about the contour of pitch on the accented syllable in Haloze contributes important data to what is known about the stages of tone loss. Haloze appears to represent the stage of tone loss just after an important distinction on the tonal tier has been lost. This rising pitch contour may represent the remnants of original phonological distinctions of pitch. This is very similar to the situation for Texas Swedish described by Ureland (cited by Salmons 1992a). Swedish Accent 1

¹⁴ For an alternative view see Inkelas and Zec (1988), in which they argue that the underlying representation of the phonological word in Serbo-Croatian contains only one high tone, which spreads from right to left according to a Spreading Rule. This allows the language to observe the Obligatory Contour Principle. The problem with this is that the Spreading Rule does not function in Slovene because falling tone can be found on final as well as on initial syllables.

(acute accent) has taken over completely for some of Ureland's informants, and Accent 2 has disappeared (1971: 72, 106).

This kind of tonal restructuring is not uncommon in language contact situations. Salmons believes that accentual phenomena are extremely vulnerable (1992a: 1) and that tone loss can very often be explained sociohistorically in terms of language contact (35). There are many examples of the vulnerability of tone. One of these is Hausa, an Afro-Asiatic language that adopted tone from its neighbors in the Niger-Kordofanian family (26). Another example can be found in bilingual Finnish and Swedish villages in Finland where speakers have generalized one prosodic system for both languages (Gårding 1977: 98).

There are Slavic examples of this kind of development as well. Thomason and Kaufman, based on the work of Veenker (1967), indicate that close contact between northern Russian dialects and the Uralic group, specifically Finnic, is the reason that some northern Russian dialects have fixed initial stress (1988: 241). They also describe a similar situation in the north of the Serbo-Croatian speech territory near the Hungarian border where a particular dialect has fixed stress on the penultimate mora of the word (62).¹⁵ Finally, Thomason and Kaufman propose that strong Hungarian influence may be the reason that Czech and Slovak have fixed initial stress (41).

These contact explanations for prosodic changes are supportive of such an explanation in Slovenia and in Haloze in particular. As mentioned before, the dialects of the Slovene speech territory have experienced strong contact with all the major language families of Europe as well as divergence and convergence relationships with neighboring Slavic dialects. Greenberg indicates that, although tone loss in Slovene dialects is not well understood, at the very least, contact, especially with Italian and Hungarian, has accelerated the processes involved in the loss of tone (2000: 160–61).

Haloze is in an area with strong German and Hungarian sociolinguistic influence. It is known that in the very early feudal period the lands to Haloze were under the control of Ptuj. This situation, especially for western and central Haloze continued largely unchanged until the mid nineteenth century. But, the situation is different for eastern Haloze, where the church and state boundaries were less stable. This is due partly to the fact that the Hungarians took eastern Haloze in 907 and did not lose control of it until Frederick of Ptuj reclaimed the Ormož region on Easter 1200. At the same time the castle Tranbek, located near the present day village of Dravinjski Vrh, took back the lands of eastern Haloze and probably the castle Borl (Bračič 1967: 57). From the mid thirteenth century on most of eastern and part of central Haloze was controlled from Borl, and the Slovene state and ethnic borders developed much as they are today (62).

German contact has been an important factor in all Slovene dialects, in fact it continued as a contact language in Slovenia well into the first half of the 20th century (Greenberg 2000: 55). Although German linguistic influence is strong, Hun-

¹⁵ They are likely referring to the Kajkavian dialect of Virje, which was described in 1907 by Fancev and later treated in March 1981. This connection is interesting, but not obvious because Hungarian has fixed initial stress, and it is not clear how that might influence the development of a system with fixed stress on the penultimate mora of the word.

garian and Italian contact seem to be more important for tone loss (56).

Haloze is on one of the borders of tone loss in Western South Slavic. To the west and north of Haloze are Styrian and Pannonian dialects which have lost tone as well as all quantity distinctions. They have systems of simple stress accent. To the south and east of Haloze are Kajkavian dialects which have phonemic tone in a pitch accent system. Haloze is on the periphery of tone loss, a development, which has its center in Pannonian dialects with strong Hungarian contact.

Conclusion

The spectrographic analysis of the Fo contour of accented syllables in eastern and central Haloze indicates, in contradiction to several claims in the dialect literature, that Haloze does not have phonemic pitch distinctions. However, unlike other Pannonian and Styrian dialects which have lost pitch distinctions, Haloze has generalized a rising contour to all accented syllables.

According to the typology of tone loss as formulated by Salmons, Haloze appears to be near the end of this typological continuum. This continuum begins with Indo-European, which Kortlandt believes may have gone through a tonal stage (1986: 156).¹⁶ Several of the Indo-European daughter languages, Balto-Slavic being one of them, developed pitch accent systems. The tonemic dialects of the Serbo-Croatian and Slovene speech territories represent variations of this stage. Eastern and central Haloze represent the middle ground between pitch accent and stress accent. Western Haloze and the Styrian dialects that surround it are systems with no prosodic distinctions other than stress. This typology of tone loss is a useful tool for understanding the otherwise strange tonemic situation in Haloze. Additional spectrographic analyses of Western South Slavic dialects on the border between tonemic and nontonemic systems would contribute significantly to what we know about tone loss.

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¹⁶ The idea that Indo-European may have gone through a tonal stage is speculative. Many scholars believe that the pitch distinctions found in Balto-Slavic are not necessarily the direct continuation of a posited PIE system but may be explained as separate developments in a dialectal stage of Indo-European.

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Tipologija izgube tonemskosti v Halozah: akustična in avtosegmentna razčlemba

Prispevek predstavlja teoretični pregled instrumentalne analize tonskega poteka v naglašanih zlogih v haloških govorih. Na osnovi podatkov instrumentalne analize se obravnavajo sodobne razmere v haloških govorih v okviru tipologije izgube tonemskosti, pogojene z jezikovnim stikom.

V nasprotju z nekaterimi izjavami v literaturi spektrografska analiza, predstavljena v razpravi, dokazuje za haloške govore odsotnost razločevalne tonemskosti tako v dolgih kot v kratkih naglašanih zlogih. V naglašanih zlogih obstaja le ena vrsta tonskega poteka, in sicer rastoča. V naglašanih zlogih se ton začne nizko in doseže vrhunec po 75 do 80 % trajanja zlogovnega jedra, nato rahlo pade, vendar se konča višje od začetne točke. Povprečni dolgi zlog se dvigne za 41 Hz do vrhunca pri 274 Hz, nato pa proti koncu zloga pade za 25 Hz. Povprečni kratki zlog se dvigne za 34 Hz do vrhunca 273 Hz, nato pa pade za 16 Hz proti koncu zloga. Razlika je v tem, da je v kratkem zlogu trajanje sicer enakega poteka kot v dolgem za polovico krajše, tj. potek je v kratkem zlogu znatno bolj navpičen.

Pomembno je, da se je po izgubi tonemskega nasprotja v haloških govorih splošil rastoči in ne padajoči tonski potek. Ta pa ni ne rastoči potek drugih slovenskih narečij ne »visoki« ton cirkumfleksa v slovenskem ali srbohrvaškem knjižnem

jeziku, temveč rastoči potek, ki se najde v kajkavskih narečjih. To ni nepričakovano glede na močne zgodovinske zveze med vzhodnimi Haložani in njihovimi kajkavsko govorečimi sosedi.

Ena od možnih razlag za nenavadno tonemskost v haloških narečjih izhaja iz tipološke razčlenbe podatkov. Haloški govori morda predstavljajo drugo razvojno fazo v izgubi tonemskih nasprotij kot drugi štajerski oz. panonski govori. V prispevku so haloški podatki predstavljeni v okviru tipologije izgube tonemskosti na kontinuumu od jezikov s popolno tonemskostjo na eni strani do jezikov, ki imajo le naglas oz. ustaljeno mesto naglasa na drugi. Ta tipološki kontinuum je mogoče definirati v smislu visokega tona. Jeziki s popolno tonemskostjo imajo skoraj v vsakem zlogu tonski potek, kar pomeni, da ima beseda lahko več kot dva visoka tona. Jeziki s tonemsko naglašeno besedo imajo le po en visoki ton v besedi in mesto tega visokega tona v odnosu do drugih prozodičnih prvin, npr. količine, pogojuje tonski potek. Jeziki z dinamičnim naglasom sploh ne opredeljujejo visokega tona na ravni besede, temveč na ravni stavka. Tipologija se torej premika od jezikov, v katerih so tonemska nasprotja nakopičena v besedah, preko jezikov, v katerih so visoki toni razporejeni tako, da se nahajajo le med leksikalnimi enotami, do jezikov s preprostim naglasom, v katerih je ton opredeljen le na stavčni ravni.

Za opis, kako v okviru te tipologije poteka jezikovni razvoj, se v razpravi uporablja nelinearna formalizacija, ki predstavlja ton in naglas ločeno na tonski in naglasni ravni, ki delujeta vzajemno. Jezik se lahko premakne od tonemsko naglašene ga do naglasnega sistema tako, da postopoma zmanjšuje število nasprotij na tonski ravni. Navajajo se primeri iz drugih slovanskih in svetovnih jezikov, ki ponazarjajo občutljivost tonske ravni v pogojih jezikovnega stika.

Po tej tipologiji se haloški govori približujejo koncu kontinuuma. Lahko bi rekli, da se je kontinuum začel z indoevropsčino, ki je morda, kot domnevajo nekateri znanstveniki, prešla obdobje s tonemskimi nasprotji. V nekaterih hčerinskih jezikih, med njimi tudi v baltoslovanščini, so se razvili tonemsko-naglasni sistemi. Slovenska in srbohrvaška narečja s tonemskim naglaševanjem predstavljajo različice te razvojne stopnje. Vzhodni in osrednji haloški govori predstavljajo vmesno razvojno stopnjo med tonemskim in dinamičnim naglaševanjem. Zahodni haloški in štajerski govori, ki jih obkrožajo, pa so sistemi brez prozodičnih nasprotij, z izjemo mesta naglasa.

Ta tipologija izgube tonemskosti je koristna za razumevanje sicer zelo nenavadnih tonskih razmer v haloških govorih. Dodatne spektrografske analize zahodnih južnoslovanskih narečij na meji med tonemskimi in netonemskimi sistemi bi lahko veliko prispevale k našemu dosedanjemu vedenju o izgubi tonemov.

Typology of Tone Loss in Haloze, Slovenia: An Acoustic and Autosegmental Analysis

The article presents a theoretical reexamination of an instrumental study of the pitch contour on accented syllables in the dialects of Haloze, a geographical region on the eastern border of Slovenia's historical province of Styria. Based on the data from this instrumental study, the contemporary situation in Haloze is discussed in terms of a typology of tone loss that is motivated by language contact phenomena.

In contrast to some statements in the literature, the spectrographic analysis presented here indicates that there is no distinctive tone in either long or short syllables Haloze. Rather, there is only one pattern—a rising pitch contour—on accented syllables. On stressed syllables the pitch level starts low and peaks 75 to 80% through the duration of the syllable nucleus, then it falls off slightly but finishes higher than it started. The average long syllable rises 41Hz to a peak at 274Hz and then falls 25Hz to the end of the syllable. The average short syllable rises 34Hz to a peak of 273Hz and then falls 16Hz to the end of the syllable. The difference is that the short syllable makes this contour fit within half the duration of the long syllable. The contour is, therefore, much sharper.

It is significant that when pitch distinctions were lost in Haloze, the rising rather than the falling contour was generalized. This is not the rising contour of other Slovene dialects nor the “high” tone found on the circumflex of Slovene and Serbo-Croatian. It appears to be the rising contour found in Kajkavian dialects. This is not unexpected in light of the strong historical and geographic connections of eastern Haloze to its Kajkavian-speaking neighboring population.

One possible explanation for the unusual tonemic situation in Haloze may be found in a typological approach to the data. Haloze may represent a stage of tone loss that is different from other Styrian or Pannonian dialects. In this paper Haloze is placed within a typology of tone loss that is set up as a continuum from a pure tonal language on one extreme to a language with only dynamic or fixed stress on the other. This typological continuum can be defined in terms of high tone. A tonal language is one that specifies tone levels on virtually every syllable. This means that there can be more than one high tone per word. Pitch-accent languages are those that allow only one high tone per word, and the placement of this high tone in relation to other prosodic features, such as quantity, determines the contour of that tone. Languages with simple stress do not specify tone at the word level at all. They indicate intonation on the phrasal level only. This typology, then, moves from tonal languages, where pitch distinctions are bunched together in each word, to pitch-accent languages, where tonal distinctions are spread out, so that they occur only between lexical items, and, finally, to simple stress systems, which specify tone only on the phrasal level.

As a mechanism for describing how linguistic development might occur within this typology, this study follows a non-linear formalism, which represents pitch and accent using a tonal tier and a stress tier that function together. A language might move from a pitch-accent system to a system of dynamic stress simply by reducing distinctions made on the tonal tier. Examples are given from Slavic and other world languages that show the vulnerability of the tonal tier in language contact situations.

According to this typology of tone loss, Haloze appears to be near the end of the typological continuum. This continuum might be said to have begun with Indo-European, which, some scholars believe, may have gone through a tonal stage. Several of the Indo-European daughter languages, Balto-Slavic being one of them, developed pitch-accent systems. The tonemic dialects of the Serbo-Croatian and Slovene speech territories represent variations of this stage. Eastern and central Haloze represent the middle ground between pitch accent and stress accent. Western Haloze

and the Styrian dialects that surround it are systems with no prosodic distinctions other than stress.

This typology of tone loss is a useful tool for understanding the otherwise unusual tonemic situation in Haloze. Additional spectrographic analyses of Western South Slavic dialects on the border between tonemic and non-tonemic systems would contribute significantly to what we know about tone loss.