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Intensity peak shift as a precursor of stress shift?

The stress system of the dialects spoken in the village of Malyja Aŭcjuki (MA) in south-east Belarus and in the Upper Snov Basin in north-east Ukraine has a typologically unusual property: a high tone, lengthening, and an intensity peak may be introduced on the immediately pretonic syllable, depending on the height of the pretonic and the stressed vowel. Specifically, this phenomenon is found in environments where the pretonic vowel is non-high and the stressed vowel is non-low. The goal of this paper is two-fold: (i) to show that intrinsic loudness/intensity of the stressed vowel is the driving force behind the changes that affect the pretonic vowel and (ii) to show that the dialects at hand are currently undergoing a stress retraction process.

It has been noted by fieldworkers since 1970s that certain dialects in the MA region in south-east Belarus and in the Upper Snov Basin in north-east Ukraine exhibit a 'musical intonation' and a high tone on the immediately pretonic syllable (Vojtovič, 1972; Belaja, 1974). Similar developments have been reported for some Russian dialects since early 20th century: cf. Broch (1916) on Mosal'sk dialects, Avenesov (1927) on Vladimir-Volga Basin dialects, Nikolaev (2009) on Tver dialects. In a recent account by Bethin (2006a, 2006b) the latter (Russian) dialects are called Type 1 dialects, while the former (Belarusian and Ukrainian) are Type 2 dialects. The main difference between the two types is in that only Type 2 dialects exhibit a dependency between the changes that affect the pretonic vowel, and vowel height. This sets Type 2 dialects apart from Type 1, and the present account will only consider the former.

Leaving aside the differences between the Belarusian and Ukrainian subtypes of Type 2, in these dialects non-high pretonic vowels ([ɛ, ɔ, a]) receive a high tone, lengthening and higher intensity in cases where the stressed vowel is non-low ([i, y, u, ɛ, ɔ, e, o, uo, ie]) - cf. (1) vs. (2). Data from Belaja (1974):

(1)	a. *sestru* 'sister.ACC'	[sj**ɛː**ˈstru]	(2)	a. *sestra* 'sister'	[sjɛˈstra]
	b. *dvoru* 'courtyard.DAT'	[dv**ɔː**ˈru]		b. *nazad* 'backwards'	[naˈzad]
	c. *zavod* 'plant, factory'	[z**aː**ˈvod]		c. *krušyna* 'buckthorn'	[kruˈʃyna]

Instrumental data from Belaja (1974) confirms that in examples like those in (1) the pretonic vowel is consistently longer and higher in intensity than the stressed vowel, as well as comparable to it in height. Bethin (2006a, 2006b) provides an autosegmental account for these developments. According to it, in examples like (1), where the stressed vowel is high or mid-high, it is phonetically too short to bear the HL contour tone a stressed vowel should have. Consequently, the H peak shifts one syllable to the left, and causes introduction of lengthening and higher intensity on the pretonic vowel. In sum, according to Bethin, shifted pitch peak is the driving force for the pretonic vowel developments in Type 2 dialects, with length and intensity following pitch peak shift. This account successfully explains the dependence of the pretonic vowel developments on the height of the stressed vowel. Unfortunately, it also wrongly predicts that all pretonic vowels, including high ones, will develop higher pitch, intensity and length, as long as the stressed vowel is non-low and, as a consequence, cannot bear the HL contour tone. However, this is not the case, as (2c) above shows.

The present account suggests that intensity shift and not pitch shift plays the primary role in the pretonic developments in Type 2 dialects. Specifically, since non-high vowels are intrinsically more loud/intense, they can attract the peak of intensity from less loud/intense non-low vowels. This is what takes place when a non-high pretonic vowel is followed by a non-low stressed vowel. Pitch and lengthening, in turn, follow the shifted intensity peak. Such an approach successfully accounts for the data and does not over-generate: in cases like (2c), where both the pretonic and stressed vowels are high, no pretonic

developments are predicted, because the pretonic vowel is not more loud/intense than the stressed vowel.

The second objective of this paper is to argue that Type 2 dialects are currently undergoing a stress retraction process. It has been noted by fieldworkers that, impressionistically, in Type 2 dialects stress is retracted one syllable to the left (Belaja, 1974). Instrumental data showing that the pretonic syllable can receive highest intensity, length and pitch in a phonological word speaks strongly for the fact that it receives stress. It should be noted, though, that in addition to the three main correlates of stress - length, pitch and intensity - Type 2 dialects considered here exhibit vowel reduction in unstressed syllables. The prediction then is that, had the stress retraction process been completed and the once pretonic vowel received stress, the etymologically stressed vowel would show vowel reduction. This prediction is not supported by the data. For instance, the word *basonožki* 'open-toe sandals' is produced as [baso:ˈnoʃki] not [baˈso:naʃki]. Therefore, stress in Type 2 dialects seems to be "dissected". In words where a non-high vowel in the pretonic syllable is followed by a non-low stressed vowel, ¾ of the stress correlates (length, intensity and pitch) are on the etymologically pretonic syllable, and ¼ (lack of vowel reduction) is on the etymologically stressed syllable. A reasonable conclusion is that the stress retraction process is in progress in Type 2 dialects. Newer instrumental data would show whether this process has been completed or interrupted.

To conclude, this paper has shown that: (i) in Type 2 dialects, low phonetic intensity/loudness of the stressed vowel causes shift of the intensity peak to the pretonic vowel, which, in turn, attracts higher length and pitch to the pretonic syllable (ii) Type 2 dialects are currently undergoing a stress retraction process. Additionally, these results allow to make a conclusion that a shift of intensity peak may be a precursor of a stress shift.

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