A speaker-oriented analysis of the phonologization of cumulative phonetic vowel duration in Kashubian

Bartłomiej Czaplicki
University of Warsaw

We propose a speaker-oriented analysis of data from Kashubian that illustrate the preservation and loss of Late Common Slavic (LCS) ultra-short vowels (jers). Unlike in Polish, in Kashubian the effect of open syllable lengthening was not sufficient to preserve a jer and had to be reinforced by the effect of the lengthening due to a following voiced consonant. Put differently, a jer was preserved when open syllable lengthening was enhanced by lengthening due to the voicing of the following consonant (Andersen 1970, Timberlake 1988). This is an instance of a cumulative effect, as neither of the two conditions is sufficient on its own (Lionnet 2016). As a result, jers were preserved before voiced consonants, but lost before voiceless consonants. In (1), the evolution of jers from LCS to Kashubian is schematized and exemplified. (1a) shows the context of a voiced consonant, while in (1b), the context of a voiceless consonant is illustrated. The context in (1a) shows phonetic lengthening of the penultimate jer (open syllable & voiced consonant) and phonologization of length accompanied by the loss of the conditioning context – a final jer. In the context in (1b), there was no phonetic lengthening (voiceless consonant) and the penultimate jer was eventually lost, as was the final jer.

(1)	*LCS*	a.	CYdY	*grudĭŋĭ	b.	CYtY	*palĭtsĭ
			CY(:)dY	grudĭ(:)ŋĭ		CYtY	palĭtsĭ
			CY:d	grudĭ:ŋ		CYt	palĭts
			CVd	grud’e:ŋ		Ct	pa:lts
	Kash.			grədziɨŋ ‘December’			pɵlts ‘finger’

The proposed formal analysis couched within the framework of the Realized Input model (Flemming 2008) is speaker-oriented and assumes that phonological constraints have access to phonetically detailed representations (Steriade 1997). Cumulative effects are treated using local constraint conjunction (Smolensky 1993). The crucial assumption of the RI model is that there are three serially organized components of the grammar. In (2) the effects of each component are shown on the example of the development /CYdY/ > /CVd/ in Kashubian. Both auditory and acoustic categories are referred to, which accords with the assumption that the speaker draws on their phonetic knowledge (Kingston and Diehl 1994, Hayes & Steriade 2004). The Input uses auditory categories (Y stands for a jer). The Realized Input (RI), which adds knowledge of contextual realization and prosodic structure (contextual lengthening and prosodic shortening of vowels), uses acoustic categories (e.g. $V_{d=3}$ stands for a vowel with duration [3]). The Output is the product of markedness and correspondence (P-map) constraints and uses auditory categories. Correspondence constraints determine that $V_{d=1}$ corresponds to /ə/, a vowel with insufficient duration to be detected. The vowel /ə/ is targeted by the relevant markedness constraint and deleted. As a result, $V_{d=3}$ is now in the shortening context (a closed syllable) and is phonologized as a full vowel by means of a correspondence constraint.

(2) Phonological computation in the RI model

Input →	(Phonetic Realization) →	Realized Input →	(Phonotactics) →	Output
/CYdY/	contextual realization	[$CV_{d=3}.dV_{d=1}$]	markedness c.	/CVd/

(Y = $V_{d=2}$, V = $V_{d=3}$, etc.)

The discussed change provides support for phonological models that (i) propose that phonetic realization precedes some phonological operations, and (ii) allow phonological constraints to access fine-grained phonetic information (Jun 1995, Steriade 1997, 2009). The data contribute to the typology of processes analyzed within the phonetically grounded models by providing novel evidence of alternations that are conditioned by the cumulative effects of the prosodic and segmental context on vowel duration.