A modularity-based classification of Polish velar palatalizations

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In his seminal paper Mikołaj Kruszewski (1881) proposed that segmental alternations be classified into three Categories. Category I includes alternations whose triggers are always synchronically present on the surface, which apply in all grammatical categories and without exceptions, and in which the input and the output are phonetically close. In the alternations that belong to Category II it may not be possible to identify a synchronic phonetic trigger. They are not exceptionless: such alternations may but do not have to take place under definable phonetic conditions. They may also be correlated with some morphological categories. The input and output segments of Category II alternations may but do not have to be phonetically close. Category III is different from Category II in that Category III alternations are necessarily correlated with some morphological alternations and, once their morphological conditions are established, they are obligatory.

My aim is to investigate how the alternations of Polish velar consonants could fit into Kruszewski’s model. While Surface Palatalization observed in velars (/k,g,x/ → /ɡ,ɬ,ʃ/) as well as other consonants is a straightforward example of a Category I alternation, a more in depth investigation reveals certain problems that Kruszewski’s classification encounters when other palatalizations of velars are considered. In particular, Kruszewski assigns the 1st Velar Palatalization (/k,g,x/ → /ʃ,ʒ,j/) to both Category II and Category III, which might suggest that Kruszewski’s criteria are erroneous. Moreover, Kruszewski’s classification forces both Surface Velar Palatalization (/k,g,x/ → /ɛ,ɹ,ʒ/) and the 2nd Velar Palatalization (/k,g,x/ → /dʒ,z,j/) to be classified as Category III alternations. Note that, SVP cannot be treated as Category I as it does not apply to most borrowings (c.f. /kɛ/liner ‘waiter, nom, sg.’, /ɡɛ/romań+ski ‘Germanic, nom, sg.’) and is not attested before some /ɛ/’s derived from underlying nasal vowels (c.f. /ɡɛm/b+a ‘mug, nom, sg.’, K/ɛn/t+y ‘placename, nom, sg.’).

However, on closer inspection the two alternations are markedly different. The inputs and outputs of SVP are phonetically close enough to treat the mapping as phonetically natural. The same cannot be said about the 2nd Velar Palatalization. What is more, the environment of SVP is easily describable in phonological terms: velar stops undergo the change before /i/ and non-nasal /e/, while /x/ becomes a palato-velar before /i/. This is not true about the 2nd Velar Palatalization, which applies without any segmental trigger in the Infinitives of athematic verbs, whose stems terminate in velars (e.g. tlu/k+/ɛ ‘I break’ - tlu/ɛs/ ‘to break’).

In sum, to classify SVP as a Category III alternation, means to enumerate all the affixes before which the rule takes place, without any regard for the naturalness of the environment. In general, if one classifies SVP and the 2nd Velar Palatalization as the same in nature, one is missing out on several factors, which clearly make the two alternations distinct. Unfortunately, this is exactly what Kruszewski’s classification does.

I propose a classification of the alternations of Polish velars which is couched within the modular architecture of grammar (see Scheer 2014). I claim that different properties of the
four processes that affect velars are the consequence of the fact that they apply or are under the influence of different modules of grammar.

I postulate that the Surface Palatalization, when applied to velars and otherwise, is a process applying in the Phonetic Implementation module (Scheer 2014). To be precise SP is a case of Gow’s (2001) anticipatory assimilation that facilitates the recognition of the following word without inhibiting the recognition of the word which is affected by the assimilation. Since for the vast majority of segments SP is not attested word-internally in native vocabulary, it may be argued to serve yet another purpose: providing cues for word-boundaries. Importantly, none of the properties of SP that make it a processing enhancing strategy are shared by SVP, the 1st and 2nd Velar Palatalizations. The latter changes are neutralizing, do not provide reliable information about the nature of the following segments, while the segments they result in are not characteristic of stem- or word-boundaries.

Surface Velar Palatalization cannot belong in the Phonetic Implementation module as it does not play any clear functional role and is opaque (it does not take place before some /e/’s derived from nasal vowels). I will show that SVP is a phonological process triggered by a requirement of the front vowel /i/ to follow a consonant which contains element /l/-head (AGR [l]) and the requirement of velar stops to be licensed by headed vowels (see Gussmann’s 2007:52 Empty Heads constraint). AGR [l] and Empty Heads outrank the constraint [l] Head that penalizes expressions in which element [l] plays the role of an operator, and a faithfulness constraint *SPREAD, which bans the addition of association lines to phonological representations. [l] Head and *SPREAD outrank IdentHead; [l], which bans the expressions in which [l] in the output has a different headedness status than [l] in the input. This set of constraints correctly derives the outputs of SVP whenever /k,g,x/ are concatenated with /i/ {I} (and violate AGR [l]) and with /i/ {I} and /e/ {I.A} (violation of Empty Heads and [l] Head). The ill formed expressions are repaired by the promotion of [l] to the status of the head (violating the low ranked IdentHead; [l]) and by spreading of [l] (violating *SPREAD).

The 1st and 2nd Velar Palatalizations are not phonological processes as their outputs cannot be derived by means of the promotion and/or spreading of [l]. Instead, I will argue that they are morphophonological changes that involve anchoring of autosegmental features on stem-final consonants. The relevant autosegments are the effect of translation of morpho-syntactic features and nodes into phonological information. I will argue that the the 1st Valar Palatalization is the effect of the anchoring of a C-place node specified for [A] and [l]-operators, while the 2nd Velar Palatalization involves the anchoring or a C-place specified for A-head and I-operator. A constraint */dY/ causes the 1st Velar Palatalization to derive /y/ from /g/ in most contexts it applies, while the requirement that [A.I] resonance co-occur with a stopness element, together with a low ranking of IdentHead; [A], derives /f/ {A.I.h} from /x/ {_h} in the environments where the 2nd Velar Palatalization is attested.