Comments on "Dissimilation, Assimilation and Vowel Reduction"

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1. Introduction

Tore Nesset's 2002 paper considers the various unstressed vowel patterns found in Russian and Belorussian (and elsewhere, but these are the languages analyzed), traditionally called "dissimiliatve *akan'e*" and "dissimilative *jakan'e*." Traditionally this is considered to be vowel dissimilation, with slightly different patterns found in the "soft environment" (*"jakan'e*," unstressed vowels after palatalized consonants) which I will call the palatalized environment, and the "hard environment" ("*akan'e*," unstressed vowels elsewhere) which I will call the velarized environment[1]. Nesset provides a unified account of four patterns, representing the palatalized and velarized environments in two dialects which he calls the *i-dialect* and the *schwa-dialect*. Previously the palatalized and velarized environments had only been treated separately, and the focus had been on the palatalized environment. The patterns addressed are summarized in table 1 below:

	palatalized	velarized			palatalized	velarized
__high V	nʲosú→nʲasú	travú→ travú		__high V	nʲosú→nʲasú	travú→travú
__low V	nʲoslá→nʲislá	sová[2]→sivá		__low V	nʲoslá→nʲislá	sová→sǝvá

Table 1a (i-dialect)   *Table 1b (schwa-dialect)*

As one can see, the difference between the two environments has to do with the realization of the unstressed vowel before low vowels in the velarized environment. In the i-dialect, these are realized as [i], just as in the palatalized environment. In the schwa-dialect, they are rendered as [ǝ]. Nesset points out that the difference between the two dialects is problematic for an account of these vowel patterns which relies on dissimilation alone. He proposes an assimilatory process to capture the schwa case.

2. Dissimilation

Nesset makes reference to two constraints to account for the dissimilation process in question. Each is a foot-local self-conjunction, one of a constraint against matching [high] values, and the other against matching [low] values. One violation is evaluated for each pair of matching values.

> (1) ***[αHIGH]²FOOT:** Vowels with the same specification for [high] are prohibited within the foot.
>
> (2) ***[αLOW]²FOOT:** Vowels with the same specification for [low] are prohibited within the foot.

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[1] Nesset's hard environment is actually the "elsewhere" environment (the not palatalized environment); I call it "velarized" for ease of exposition, despite the fact that it may not be strictly accurate.
[2] Consonants not marked as palatalized are assumed to be velarized.

The ordering of these two constraints predict either a dissimilatory process (e.g. the "i-dialect"), or an also attested non-dissimilatory dialect, depending on their ranking. If the constraint against matching low values dominates the constraint against matching high values, then a form such as /travòj/ will surface as [travòj], without dissimilation; if the other ranking holds, /travòj/ will surface as [trivòj] (is in the "i-dialect"). Beyond this point, Nesset is only concerned with dissimilatory dialects, and thus refers to the two constraints singularly as "OCP-APERTURE," a shortcut I will also adopt.

In order to assure that the unstressed vowel is the one which assimilates, rather than the stress vowel assimilating to the unstressed one, another constraint is needed. Nesset presents the possibility of a positional-faithfulness constraint, forcing the head of a foot to be faithful; thus under his analysis, stressed syllables in Russian project an iambic foot (he is concerned with the behavior of vowels preceding stressed ones). As long as this constraint (called FAITH-HEAD) and OCP-APERTURE are both ranked above the broader faithfulness constraint, dissimilation obtains and the unstressed vowel assimilates. This is a clean analysis, but is perhaps open to criticism due to the reliance on foot structure in a language with predominately lexical stress. I will discuss this further in a later section.

3. Assimilation and reduction

Nesset provides an account of the schwa-dialect which, he points out, has been mostly ignored up to now. In order to predict the occurrence of schwa in the dialects where it occurs, he provides an assimilatory analysis. He assumes that in the schwa-dialect the occurrence of [i] in the palatalized environment is due to assimilation; i.e., the vowel is assimilating in terms of the features [high, low, cor] to the preceding consonant. To accomplish this, Nesset formulates the following constraint:

(3) **AGREE-VOCALIC:**   Syllables where either onset or peak is specified as [+high, –low, cor], but the other constituent is not, are prohibited.

Once again, a system to restrict repair to the proper directionality is needed. Nesset makes reference to two positional-faithfulness constraints, FAITH-ONSET and FAITH-PEAK, allowing for the following patterns (Nesset's 13):

(4) **AGREE-VOCALIC typology**

a) Progressive: FAITH-ONSET, AGREE-VOCALIC	>>	FAITH-PEAK
b) Regressive: FAITH-PEAK, AGREE-VOCALIC	>>	FAITH-ONSET
c) No assimilation: FAITH-ONSET, FAITH-PEAK	>>	AGREE-VOCALIC

(4a) being the ranking adopted in this analysis, since progressive assimilation obtains (the vowel assimilates to the onset). This predicts /nʲoslá/ → [nʲislá]. The faithful candidate *[nʲoslá] incurs two violation marks for AGREE-VOCALIC because the consonant ([nʲ] = [+high, -low, cor]) differs

from the vowel ([o] = [-high, -low, dor]) with regard to both [high] and place. A configuration of [Cʲa] would incur three violation marks, because all three of the relevant features differ.

In order to account for the difference between the i-dialect and the schwa-dialect he also makes reference to *HIGH, a constraint he discusses extensively (I will leave it to the reader to explore that section). He also makes reference to MAX-VOCALIC, which requires that every feature under a vocalic node in the input be represented in the output. The reason that schwa occurs in the schwa-dialect is that MAX-VOCALIC is ranked quite low, allowing for more complete vowel reduction, while it is ranked higher in the i-dialect, penalizing occurrences of schwa. The analysis assumes that schwa is an empty vowel, with no specification for [high, low, back]. This allows it to be an ideal candidate for vowel reduction since it does not violate constraints such as * HIGH, and is low cost in that regard. It also allows it to be punished severely by a constraint such as MAX-VOCALIC, since any vowel will lose numerous features in reducing to schwa. I discuss this further later on.

For the i-dialect, *[savá] is ruled out by virtue of violating MAX-VOCALIC; Nesset is proposing that /a/ is undefined in terms of [back], and thus o~a results in a surface form [a] which lacks a feature [back] which was specified in the input. In the schwa dialect, the higher ranking of * HIGH results in [səvá] over *[sivá] because schwa is undefined for [high]. In the palatalized environment, the dialects require only variation in the ranking of * HIGH and MAX-VOCALIC. To render the correct results in the velarized environment, it is necessary to consider more constraints. Remember that the two dialects have the same ouput in the velarized environment; thus AGR-VOC must be employed to rule out the schwa candidate in the schwa dialect (since MAX-VOCALIC is low-ranking in that dialect). The following tableaux demonstrate evaluations of both the palatalized and velarized environments in each dialect. That the two dialects are different from each other by virtue of just one change slightly (MAX-VOCALIC >> *HIGH vs. *HIGH >> MAX-VOCALIC) one of the merits of the analysis.

/nʲoslá/	OCP-APERTURE	AGR-VOC	*HIGH	MAX-VOCALIC
☞ a. nʲislá			*	
b. nʲaslá	*!*	***		*
c. nʲəslá		*!**		***
/n'osú/	OCP-APERTURE	AGR-VOC	*HIGH	MAX-VOCALIC
a. nʲisú	*!*		*	
☞ b. nʲasú		***		*
c. nʲəsú		***		**!*
/sová/	OCP-APERTURE	AGR-VOC	*HIGH	MAX-VOCALIC
a. sivá		?	*!	
b. savá	*!*			*
☞ c. səvá				***

Table 2a: schwa-dialect

/nʲoslá/	OCP-APERTURE	AGR-VOC	MAX-VOCALIC	*HIGH
☞ d. nʲislá				*
e. nʲaslá	*!**	***	*!	*
f. nʲəslá		*!**	***	

/nʲosú/	OCP-APERTURE	AGR-VOC	MAX-VOCALIC	*HIGH
d. nʲisú	*!*			*
☞ e. nʲasú		***	*	
f. nʲəsú		*!**	***	

/sová/	OCP-APERTURE	AGR-VOC	MAX-VOCALIC	*HIGH
☞ a. sivá		?		*
b. savá	*!		*!*	*
c. səvá			*!**	

Table 2b: i-dialect

There are a few outstanding issues which I discuss in the next section; of particular is the ranking and formulation of AGR-VOC. It seems to me that the current analysis results in at least one incorrect evaluation: namely, *[sivá] loses to [səvá] in the i-dialect; Nesset does not provide a tableau for this form, so it is unclear what he intends.

4. Discussion

Nesset has presented an interesting analysis, which unifies a previously disparate discussion, predicting four patterns (palatalized/i-dialect, velarized/i-dialect, palatalized/schwa-dialect, velarized/schwa-dialect), by formalizing two constraint rankings (dialects). The similarity in the two dialectal grammars is desirable, since there is widespread variation between the two. Overall, Nesset's analysis impacts phonological theory positively in a number of ways, and I wish to comment on one way in particular. As previously mentioned, the analysis assumes that schwa is an empty vowel, with no specification for [high, low, back]. This has ramifications in terms of how vowel reduction is realized. While this is not an entirely new idea, Nesset's analysis very nicely provides a theory-internal motivation for the assumption: namely, that making the assumption allows a unified analysis for what had previously been unconnected issues. The nature of schwa as an empty vowel allows Nesset to create a preference for or against schwa, depending on the weight given to MAX-VOCALIC relative to markedness constraints such as *HIGH. Thus, dialects which use schwa and those which do not can be easily differentiated. It also provides an empirical case study, demonstrating that the assumption is viable, and perhaps even adds explanatory power to the theory.

An issue which must be addressed has to do with the formulation of the AGREE-VOCALIC constraint given in (3) and repeated here for convenience:

(3) **AGREE-VOCALIC:**   Syllables where either onset or peak is specified as [+high, –low, cor], but the other constituent is not, are prohibited.

This constraint is intended to punish candidates for forms such as /nʲoslá/ which do not have assimilation, e.g. *[nʲoslá], in favor of assimilatory candidates, e.g. [nʲislá] (the assimilatory forms match the relevant features in the relevant constituents. The analysis successfully restricts the language to progressive assimilation via highly ranked FAITH-ONSET, but it is left non directional in terms of what forms violate it. That is, *[nʲoslá] violates it, and it seems that (/sová/→) [sivá], an attested form, does too. Ci is a configuration where one constituent (the vowel) is [+high, -low, cor] and the other (the consonant) is not. If such forms do violate the constraint, than the previously discussed ranking for the i-dialect must be modified; if AGREE-VOCALIC >> MAX-VOCALIC holds, then wouldn't *[səvá] be preferred over the attested [sivá], making the i-dialect and the schwa-dialect identical and breaking the analysis (*[sʲivá] cannot win because of FAITH-ONSET). Admittedly, it would constituent a very odd repair strategy: the vowel lowering so that it is no longer a target for the agreement constraint is probably not what was intended; however, the form does avoid the violation, and it seems to me it should win out.

This is not necessarily a fatal issue, as a re-ranking of the constraints in the i-dialect (e.g. OCP-APERTURE >> MAX-VOCALIC >> AGREE-VOCALIC >> *HIGH) can produce the desired results; however, one of the merits of the analysis is that the two dialects differ only very slightly (MAX-VOCALIC >> *HIGH vs. *HIGH >> MAX-VOCALIC) and that advantage is lost with re-ranking of the i-dialect (it is necessary to maintain the given ranking, OCP-APERTURE >> AGREE-VOCALIC >> *HIGH >> MAX-VOCALIC, in the schwa-dialect) . It is also possible that constraint in question works differently than I have understood, or that it could be reformulated so that the issue is resolved with the original rankings intact. In any case, I think it's an issue worth addressing.

It would also be interesting to explore the productivity of AGREE-VOCALIC. Are there words of the form Cʲo, Cʲa, Cʲe, etc., in the dialects where AGREE-VOCALIC is undominated by *HIGH, *MID? How are words which have this form in other dialects pronounced in the dialects which punish them? Does assimilation obtain in loan words of the relevant form in the relevant dialect? I cannot lend any insight, but it is a question worth addressing if one were to further pursue the analysis at hand.

Another criticism worth discussing is that the dissimilatory process (OCP-APERTURE: *[αHIGH]²FOOT & *[αLOW]²FOOT) makes reference to the foot as its domain, so that Nesset is assuming iambic[3] feet. While this works nicely, it would not be unreasonable for someone to point out that main stress in Russian is not traditionally considered to be rhythmic in nature; generally, stress is either underlying or else given default position via markedness constraints which do not refer to the foot as a domain (cf. Roon 2006). Some other source of independent evidence that the foot is an operative unit in Russian might strengthen the analysis. In fact, some researchers do make use of iambic feet in other aspects of Russian phonology. For example, Gouskova (2010) employs iambic feet to predict the presence and position of secondary stress

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[3] Iambic because it's about a vowel preceding the stressed one: (wS).

patterns in Russian compounds (compounds are the only constituents in Russian that have more than a single primary stress); thus, at least one aspect of Russian stress is rhythmic after all. The iambic foot, together with constraints such as STEM→PROM, *FTFT, and ENDRULE-L allow her to correctly predict when a compound will surface with secondary stress, and where that stress will be. *FTFT relies on the presence of bounded feet. Gouskova (2010) gives the following definition (she is following Kager 1994, see her paper for that reference):

(4) ***FTFT:**   Assign a violation mark for every pair of adjacent feet dominated by the same PWd.

This punishes forms which have secondary stress to close to primary stress: /vʲér-o-lóm-stv-o/ cannot surface as *[(vʲè)(r-ʌ-lóm)stvə], *FTFT correctly resulting in the deletion of the secondary stress: [vʲi(r-ʌ-lóm)stvə] "treachery." Still, it is possible to get more or less the same effect as *FTFT using a form of *CLASH, e.g. *STRONGCLASH (Gouskova & Roon 2006).

(5) ***STRONGCLASH:**   assign a violation mark for every pair of adjacent columns of strong beats

This makes reference to the metrical grid, but does not require bounded feet. I cannot answer the question as to whether bounded feet should be posited in Russian, but I do feel that the analysis of dissimilation would benefit from further exploration in that respect.

Beyond the issues discussed, the analysis presents a strong analysis for the vowel dissimilation patterns discussed, convincingly arguing that that presence of [i] in some forms is in fact partially due to an assimilatory constraint, and providing an interesting analysis of the preference for schwa over [i] in the velarized environment in certain dialects.

References

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