Jay H. Jasanoff

Balto-Slavic Mobility as an Indo-European Problem*

§1. Background and relative chronology

In a recent long article in *Baltistica* (Jasanoff 2008) I proposed a new explanation for the accentual mobility of Balto-Slavic presents of the type 1 sg. **u̯èdō* 'I lead' : 2 sg. **u̯edesi̯*, 3 sg. **u̯edeti̯*, etc. (= Sl. **vèdǫ* : **vedeši*, **vedetь*, etc.).[1] The goal of the present contribution is to present a more expansive picture — to show, in particular, how the new framework for understanding mobility in verbs translates into a *general* historical theory of mobility, one that uses the same explanatory apparatus to account for the rise of mobility in nouns and verbs alike.

To put this goal in perspective, let us recall that the prosodic system of Proto-Balto-Slavic exhibits two striking new features vis-à-vis Proto-Indo-European. One of these is the accent-independent contrast between "acute" and non-acute long vowels and diphthongs, most commonly realized in the daughter languages as an intonational contrast on accented vowels. Following a practice adopted in earlier publications, I will mark acuteness here by underlining. Thus, e.g., the nom. sg. of the oft-cited BS word for "crow" was **u̯o̰rnā*, with two acute syllables, the first accented and the second not; the nom. sg. of the etymologically related word for "raven" was **u̯ornó̰s*, with two non-acute syllables, the second accented and the first not. Proto-BS **u̯o̰rnā* eventually gave Lith. *várna*, with falling (formerly rising) intonation on the first syllable, and Bosnian-Croatian-Serbian *vrâna*, with short falling intonation on the first syllable. Proto-BS **u̯ornó̰s* eventually gave Lith. *vařnas*, with rising (formerly falling) intonation on the first syllable, and BCS *vrân*, with long falling intonation on the first syllable. In order to understand developments in the post-BS period, it is essential to remember that acuteness at the BS level was wholly independent of the accent; a word might have as many acute syllables as it had long vowels or diphthongs, but only one accented syllable, which could be acute or non-acute. The phonetic interpretation of the acuteness contrast is debated. Pitch as such is not likely to have been involved; the pitch-related (i.e., intonational) effects associated with acuteness in the historical Baltic and Slavic languages are the result of interactions of acuteness with the accent. A more probable hypothesis is that acute nuclei were originally "checked" vis-à-vis their non-acute counterparts, i.e., provided with a glottal feature similar to a Danish *stød* or Latvian broken tone.[2]

---

* I am indebted to Michael Flier for his patient advice and assistance while this paper was in the planning stages. In preparing the written version I have found it useful to consult Olander's recent study of mobility (Olander 2009; henceforth simply "Olander"), which was not available to me at the time of the Opava Workshop.

[1] I use the standard symbols to mark the Slavic accent; where no confusion would result, forms are cited as they would have appeared prior to the retraction from final yers. For Balto-Slavic preforms I employ the accent signs /ˋ/ and /ˈ/, the use of which is explained in §2.

[2] The "glottalic" reading of acuteness is found as early as Vaillant (1936: 114 f.). Kortlandt (2009: 1) describes the glottalic character of the acute, which he links to the glottalic theory of the PIE stop system, as "the central tenet of my accentological theory." My own (quite different) view of the origin of acuteness, first presented in Jasanoff (2004: 251 f.), is repeated briefly below.

The other major prosodic innovation of Balto-Slavic is a new and distinctive type of accentual mobility in paradigms. Mobile nouns and verbs, which are far more numerous in Balto-Slavic than in any other branch of the IE family, show a "bipolar" stress pattern, with movement of the ictus between the first and last syllables of the word. Thus, e.g., the Lithuanian word for "head" is *galvà* in the nom. sg., but *gálvą* in the acc. sg. and *galvomìs* in the instr. pl.; the Old Russian verb meaning "bake" is *péku* in the 1 sg. pres., but *pečétъ* (< **-etь̀*) in the 3 sg. and *pečeté* in the 2 pl. It is characteristic and typical that the mobility of these forms is secondary in IE terms; *ā*-stems like *galvà* and simple thematic presents like pre-Sl. **peke/o-* had columnar accent in the parent language.[3]

Since the appearance of Stang (1957) and the ascendancy of the Moscow School's "morphological" approach to BS accentology (see, e.g., Dybo 1981), it has been clear that acuteness and mobility are historically independent phenomena. Prior to Stang's work, the dominant framework for the study of BS accentology was the so-called "classical" theory, which sought to explain the position of the accent in individual inflected forms through an assortment of intonation-sensitive advancement and retraction rules. Prominent among these rules were Saussure's Law, by which an acute syllable attracted the accent rightward from a non-acute syllable in Lithuanian and, it was claimed, Slavic; and Hirt's Law, by which the accent was (according to one interpretation) drawn leftwards by a preceding acute vowel. The desperate inadequacy of this approach, even under the most sympathetic reading of the case for Saussure's Law in Slavic, can be seen from the disorder and confusion of a presentation like Shevelov (1964: 38-80). The prevalent modern view, by contrast, holds that 1) Saussure's Law (e.g., **rȧ́nkā́* > Lith. *rankà* 'hand') was a purely Lithuanian development; 2) Saussure's Law-like effects in Slavic (e.g., pre-Sl. nom. **žėna*, acc. **žėnǫ* > Sl. **ženà*, **ženǫ̀* 'wife') were produced by a wholly different rule, Dybo's Law; and 3) Hirt's Law (e.g., **u̯ih$_1$-ró-* > Lith. *výras* 'husband') was triggered by tautosyllabic **-VH-* sequences, not by acute vowels or diphthongs. None of the three rules — Saussure's Law, Dybo's Law, or Hirt's Law — played any role in the creation of mobility.

Not only were the advent of mobility and the rise of the acute : non-acute contrast separate post-IE events; it is also clear that the former preceded the latter. The two were separated by Hirt's Law. As seen by Kortlandt (1977: 321-22) and Dybo (1981: 33 ff.), Hirt's Law was responsible for the retraction of the accent onto the stem vowel in the "heavy" case forms of mobile *ā*-stems, which under the normal rules for mobile stems would properly have been oxytone: cf. PSl. dat. pl. **golvā́mъ* < **-ȧ̀h$_2$-mos* < **-ah$_2$-mȯ́s*, loc. pl. **golvā́xъ* < **-ȧ̀h$_2$-su* < **-ah$_2$-sȕ*, etc.[4] Similarly in

[3] The contrary view — that the mobility of vocalic-stem nouns and thematic verbs was inherited from PIE — has had distinguished adherents in the past and continues to have them today, but is no longer remotely tenable from an IE point of view. Cf. Olander (47-8).

[4] Otherwise Olander (187 ff.), who considers the position of the accent in **golvā́mъ*, **-ā́xъ*, etc. to be original. Olander denies strict bipolarity for Balto-Slavic: for him, the final accent of Slavic dat. pl. **-mъ̀*, loc. pl. **-xъ̀*, instr. pl. **-mì*, 3 sg. **-tь̀*, 2 pl. **-tè*, etc. is due to Dybo's Law, and the final accent of the corresponding Lithuanian forms is due either to Saussure's Law (e.g., instr. pl. *-(i)mìs* < **-(i̇)mī́s*) or to analogy (e.g., loc. pl. (dial.) *-(i)sù*). Olander's preforms in **-i̇mos*, **-i̇su*, **-ė́ti*, etc. would in my view have been eliminated by Saussure-Pedersen's Law (§4) in the BS period.

mobile verbs, where the sigmatic forms of the aorist are in principle oxytone (e.g., PSl. 1 sg. **u-merxъ* 'I died'), the accent is displaced one syllable to the left in roots of the structure **C(R)VH-* (**dắxъ* 'I gave' < **dȯ̀h₃-s(o)m* < **doh₃-s(ȯ̀)m*). The fact that mobility is older than Hirt's Law means that it is also older than two changes that postdate Hirt's Law — the development of syllabic liquids and nasals (**R̥*) to sequences of the type **iR* (**uR*), and the loss of tautosyllabic laryngeals with compensatory lengthening. The chronological sequence is illustrated by the word for "full" (Lith. *pìlnas*): PIE **pl̥h₁-nó-* > **pl̥̀h₁-no-* (Hirt's Law) > **pl̀lh₁-no-* (**R̥* > **iR*) > **pl̀̄l-no-* (laryngeal loss).

It was with the last of these developments, laryngeal loss, that the conditions were created for the rise of contrastive acuteness. The loss of laryngeals left the emerging BS dialect cluster (like its neighbor, Proto-Germanic) with three contrasting vowel lengths — short, long, and hyperlong. As detailed in Jasanoff (2004), the "normal" (bimoric) long monophthongs had three sources: PIE tautosyllabic **-VH-* sequences (e.g., Lith. (dial.) *móter-*, Sl. **mắter-* 'mother' < **mah₂-ter-*), PIE short vowels lengthened before a voiced stop (Winter's Law; cf. Lith. *núogas* 'naked' < **nogᵘ̯-o-*), and PIE "organic" long vowels except in absolute auslaut (cf. Lith. *žvėrìs*, acc. *žvėrį̃* 'wild animal' < **ĝhu̯ēr-*).[5] The less frequent hyperlong (trimoric) monophthongs were the reflex of PIE long vowels in absolute auslaut (cf. Lith. *akmuõ* 'stone' < **-ō̃*) and of secondary long vowels arising from contraction across a laryngeal hiatus (e.g., Lith. gen. sg. *galvõs* < **-ah₂-es*). The classical BS acute : non-acute contrast arose through a reversal of markedness: the former hyperlongs (marked) were reinterpreted as longs (unmarked), and the former longs (unmarked) were reinterpreted as shortened or "checked" longs (marked). The assignment of the "checked" feature (probably glottalization) to bimoric longs was systematic, extending also to cases like **pl̀̄lno-*, **źl̀̄nto-* 'son-in-law' (< **ĝenh₁-*), etc., where the long vowel was followed by a sonant in the same syllable. When the vowel in such sequences was subsequently shortened by Osthoff's Law (**-V̄R.-* > **-V̆R.-*), the "checkedness" spread to the **-VR-* sequence as a whole, producing contrastively acute liquid and nasal diphthongs (**pl̲̀lnos*, **źl̲̀ntos* vs. non-acute **u̯ĺlkos* 'wolf', **ŕànkā̲*; Lith. *pìlnas*, *žéntas*, *viĨkas*, *rankà*).

The relative chronology of the establishment of mobility and contrastive acuteness can accordingly be established as follows:

1. advent of bipolar mobility
2. Hirt's Law
3. change of **R̥* to **iR* (**uR*)
4. laryngeal loss/rise of acuteness

The creation of mobility, in its special bipolar form, was a very early development — arguably the earliest identifiable innovation of Balto-Slavic. Let us now consider what this innovation actually entailed.

---

[5] The Slavic counterpart of Lith. *žvėrį̃* is **zvə̂rъ*. Note that the intonational disagreement is regular, a consequence of the descriptive rule that acutes become circumflex in mobile paradigms in Slavic ("Meillet's Law"; see further below).

§2. The nature of mobility

The phenomenon that we call mobility in Balto-Slavic differs from the mobility traditionally reconstructed for PIE in a number of essential respects, bipolarity being only one of them. Movement of the accent between the two ends of the word, skipping intervening material, is not, strictly speaking, unknown in PIE; it occurs in nominal stems of the "amphikinetic" or "holokinetic" type, which were characterized by "strong" cases of the structure R(*é*)-S(*o*)-D(*z*) and "weak" cases of the structure R(*z*)-S(*z*)-D(*é*) (e.g., nom. sg. **u̯éid-u̯ōs* 'knowing', acc. sg. **u̯éid-u̯os-m̥*, gen. sg. **u̯id-us-és*, dat. sg. **u̯id-us-éi*).[6] But it is virtually impossible to see how the PIE amphikinetic pattern, confined to nouns in the protolanguage and moribund in Greek, Anatolian, and Indo-Iranian, could have been generalized to all mobile stems, both nominal and verbal, in Balto-Slavic. In actual fact, BS mobility does not seem to have been based on PIE mobility at all. For simple nominal stems, mobility in Balto-Slavic was determined not by whether the corresponding PIE form was mobile, but by whether or not the inherited nom. sg. was accented on its final syllable.[7] If the nom. sg. of an unmotivated PIE noun or adjective was oxytone, the associated paradigm is mobile in Balto-Slavic, with a characteristic distribution of word-initial and word-final accents (here denoted *x̀ . . x* and *x . . x́*, respectively) that in most cases varies only minimally from stem type to stem type. The accentual "curve" of a mobile nominal stem can be illustrated with the *u*-stem **sūnu-* 'son':[8]

	sg.		pl.	
nom.	x . . x́	(Lith. *sūnùs*)	x̀ . . x	([*sū́nūs*], **sŷnove*)
acc.	x̀ . . x	(*sū́nų*)	x̀ . . x	(*sū́nus*)
gen.	x . . x́	(*sūnaũs*)	x . . x́	([*sūnų̃*], **synòvъ* < **-ovъ̀*)
loc.	x . . x́	([*sūnujè*], PSl. **synù*)	x . . x́	(*sūnusè*)
dat.	x̀ . . x	([*sū́nui*], **sŷnovi*)[9]	x . . x́	(*sūnúms*)
instr.	x . . x́	(*sūnumì*)	x . . x́	(*sūnumìs*)

The distribution of left- and right-accented forms is almost identical in *i*-, *ā*-, and consonant stems. Individual cases, such as the deviant instr. sg. of *ā*-stems and the interestingly aberrant accentual paradigm of *o*-stems, will be covered at appropriate points in the discussion below.

The most important group of mobile *verbs* go back to stably root-accented simple thematic presents of the type PIE **u̯édh-e/o-* 'lead', **pék^{u}-e/o-* 'bake', etc. Thematic stems containing a suffix or infix (**-i̯e/o-*, **-n(C)e/o-*, etc.) were for the most part not mobile in Balto-Slavic; nor were athematic presents other than BS **ēd-* 'eat' and

[6] For the notation and an overview of the PIE nominal ablaut-accent types see Meier-Brügger (2002: 203 ff.).

[7] So Illich-Svitych (1963), who, however, wrongly attributed the "oxytone-mobile" accent type to PIE itself.

[8] Illustrations are from Lithuanian alone unless a more interesting or original form is preserved in Slavic. For reasons of space and focus, the dual is not discussed in this paper.

[9] Cf. Olander (173 f.). The direct comparative evidence for **sŷnovi*, with initial accent, is meager. But since all other dat. sg.'s were accented on the root syllable in Proto-Slavic, there is no reason to believe the *u*-stems were an exception.

dō̲d-* 'give', which were mobile in Balto-Slavic but had fixed initial accent in PIE (ē̲d-* < "Narten" present **h₁é̲d-mi*, 3 pl. **h₁éd-n̥ti*; **dō̲d-* < reduplicated present **dódoh₃-mi* for **dédoh₃-mi*, 3 pl. **dédh₃-n̥ti*). Mobility in verbs was manifested in two ways. As in nouns, the accent alternated between the beginning and end of the word according to a prescribed pattern. In addition, the subset of forms with initial accent "threw back" the accent onto an accompanying preverb or preverbal particle. Since only the latter feature is preserved in Lithuanian,[10] the accentual curve for mobile verbs must be drawn up on the basis of Slavic alone. The relevant forms of the present **vede/o-*, with and without a preverb, are as follows:

	without preverb		with preverb	
1 sg. pres.	x̀ . . x	(**vě̀dǫ*)	x̀ . . [x . . x]	(**dȍ̀-vedǫ*)
2	x . . x́	(**vedešì*)	x . . [x . . x́]	(**do-vedešì*)
3	x . . x́	(**vedetь̀*)[11]	x . . [x . . x́]	(**do-vedetь̀*)
1 pl.	x . . x́	(**vedemь̀*)	x . . [x . . x́]	(**do-vedemь̀*)
2	x . . x́	(**vedetè*)	x . . [x . . x́]	(**do-vedetè*)
3	x . . x́	(**vedǫtь̀*)	x . . [x . . x́]	(**do-vedǫtь̀*)
2, 3 sg. impf. (> aor.)	x̀ . . x	(**vě̀de*)	x̀ . . [x . . x]	(**dȍ̀-vede*)
nom. sg. ptcp.	x̀ . . x	(**vě̀dy*)	x̀ . . [x . . x]	(**dȍ̀-vedy*)
gen. sg. ptcp.	x . . x́	(**vedǫtjà*)	x . . [x . . x́]	(**do-vedǫtjà*)

The *character* of the accent in mobile paradigms is also noteworthy. Two kinds of initial accent have to be distinguished in Proto-Balto-Slavic: 1) the accent that stood on the left-accented forms in mobile paradigms (e.g., the nom. pl. of (non-*o*-stem) mobile nouns or the 1 sg. pres. of mobile verbs); and 2) the accent that stood on the first syllable in other kinds of words, including non-mobile nouns and verbs. The first kind of accent will be called a *left-marginal accent* and will be marked with a grave (*x̀*). The second kind of initial accent — and *any* accent that is not a left-marginal accent — will be termed an *in situ accent* and marked *x́* (cf. the usage in the tables above). The reason for distinguishing the two types is the fact, not always sufficiently appreciated, that the left-marginal and *in situ* accents were phonetically and phonologically contrastive in Proto-Balto-Slavic.[12] The contrast is highlighted by three key differences in their treatment in the later languages:

1) In Slavic, Dybo's Law shifted the accent of a non-acute syllable one syllable to the right *in non-mobile paradigms only*. Russ. nom. *žená*, acc. *ženú* (non-mobile) is uniformly accented on the second syllable (PSl. **ženà*, **ženǫ̀*), while *gorá*

[10] at least in the finite forms; the present participle is mobile (nom. *vedą̃s* : acc. *vẽdantį*).

[11] whence later **vedètь* < **-etь̀*; cf. note 1.

[12] Separate phonetic and phonological assertions are embodied in this statement. The *phonetic* claim is that the two accents were audibly different, so that a speaker, hearing a form like acc. sg. **sū̀nun* and a form like acc. sg. **u̯ī́ron*, could tell that the first belonged to a mobile paradigm and the second did not. No position will be taken here on the precise phonetic character of the difference, although a better case can be made for a rising *in situ* accent and a falling left-marginal accent than vice versa. The *phonological* claim is that the two accents were represented differently in the Proto-BS lexicon. Here too there is more than one possibility: /`/ and /'/ could have been distinct prosodic phonemes, or the left-marginal accent could have been a *zero* accent, assigned by rule to the first syllable of unaccented words. The historical account developed below is compatible with either analysis. See further §6.

'mountain' (mobile) has root-accented *góru* in the acc. sg. (PSl. nom. **gorà*, acc. **gòrǫ*). The pre-Dybo's Law acc. sg. forms were **žę̀nǫ* (BS **gę̀nān*) and **gòrǫ* (BS **gòrān*), respectively; only the *in situ* accent was subject to the rule.

2) Likewise in Slavic, the two accents had different *intonational* reflexes in acute syllables. Acute vowels with left-marginal accent (i.e., $\underline{\grave{x}}$) eventually surfaced with the Slavic falling ("circumflex") intonation (cf. PSl. acc. **gôlvǫ* (Russ. *gólovu*) < BS **gòlu̯ān* (mobile; nom. **golu̯ā̀*)), while acute vowels with *in situ* accent ($\underline{\acute{x}}$) surfaced with the Slavic rising ("acute") intonation (cf. PSl. acc. **vőrnǫ* (Russ. *vorónu*) < BS **u̯ǫ́rnān* (immobile; nom. **u̯ǫ́rnā*)).[13]

3) $\underline{\grave{x}}$ and $\underline{\acute{x}}$ also had different reflexes in Latvian. The left-marginal accent on an acute vowel ($\underline{\grave{x}}$) gave the Latvian "broken tone" (*galvu* < BS **gòlu̯ān*), while the *in situ* accent on an acute vowel ($\underline{\acute{x}}$) gave the Latvian "level tone" (*vãrnu* < BS **u̯ǫ́rnān*). The left-marginal and *in situ* acutes fell together in Lithuanian (*gálvą*, *várną*).[14]

§3. Framing the problem

The preceding discussion has tried to show that mobility, in the special BS sense of the term, is a unitary phenomenon. Mobility is robustly present in both Baltic and Slavic, in both nouns and verbs. The nominal and verbal stems that are mobile in Baltic are etymologically approximately the same as the stems that are mobile in Slavic, and different from the stems that were mobile in PIE. The endings that bear the accent in mobile paradigms are the same in both branches, and largely different from the endings that were accented in PIE. The bipolar alternation pattern of mobile paradigms, with the accent moving between the left and right extremities of the inflected word, is likewise common to both branches, and different from the normal form of mobility in PIE. Finally, Baltic and Slavic agree in contrasting the initial accent in mobile paradigms, both nominal and verbal, with the initial accent in non-mobile forms. All these features were firmly in place before three other defining innovations of Balto-Slavic — Hirt's Law, the change of **R̥* to **iR* (**uR*), and the rise of the acute : non-acute contrast.

The creation of mobility, then, must have been both very early and very rapid. The pre-BS linguistic system in which mobility arose still had consonantal laryngeals, three series of tectals (**k̂*-, **k*-, and **kᵘ*-series), and voiceless, voiced, and breathy voiced ("voiced aspirated") stops.[15] While it may have lost the PIE **ă* : **ŏ*

---

[13] Contrast this interpretation of Meillet's Law (cf. note 5) with the more complicated standard account, according to which acuteness was lost by sound change in unaccented syllables (e.g., pre-Slav. nom. sg. **golu̯ā̀* > **golu̯ā́*) and subsequently lost by analogy in root syllables (acc. sg. *gôlvǫ* for **gőlvǫ*).

[14] So in the same vein Young (1994), who localizes the broken tone in "unaccented" syllables, a term that for him includes the left-accented syllables in mobile paradigms. Putting it in more neutral terms, one might say that acute vowels received level tone under the unshifted (= *in situ*) accent and broken tone otherwise.

[15] The claim that the labiovelars would still have been distinct from the velars is based on words like OPr. *guntwei* 'chase' = Sl. *gъnati*, where the post-Hirt's Law vocalization of **n̥* as **un* must have been triggered by the preceding **gᵘh-* (PIE **gᵘhen-* 'strike'). Cf. most recently Young (2006), with

distinction, it retained five long vowels and a full complement of long and short diphthongs, along with a moveable accent and a rich array of morphological categories. It was, in short, a late PIE dialect, and the task of discovering the origin of BS mobility can in this sense be considered an IE problem.

Our search for a solution does not begin in a vacuum. We know that end-accented nouns in nom. sg. (PIE) *-*ís*, *-*ús*, *-*áh₂*, etc. were the locus of mobility in (animate) nouns,[16] and that root-accented presents of the **u̯édh-e/o-* type were the locus (or at least *a* locus) of mobility in verbs. A historical theory of mobility will therefore minimally need to include two components:

1) a "retraction module," to account for the nominal forms (e.g., the acc. sg., dat. sg., nom. pl.) with left-marginal accent on the root syllable rather than the suffixal syllable (acc. sg. **sū̀nun*, etc.), *and* the compound verbal forms (e.g., the 1 sg. pres.) with left-marginal accent on the preverb rather than the verbal root (PSl. **dȍ-vedǫ*, etc.);

2) an "advancement module," to account for the "heavy" case forms of nouns (e.g., the dat. pl., loc. pl., and instr. pl.) where the accent is one syllable to the right of its historical location (dat. pl. **sūnumȯ́s*, loc. pl. **sūnusú̯*, etc.), *and* the verbal forms (e.g., the 3 sg. and 3 pl. pres.) where the accent is two syllables to the right of its historical location (PSl. **(do-)vedetь̀*, **(do-)vedǫtь̀*, etc.).

The BS "toolkit" contains many real and alleged accent movement rules, most of which (e.g., Saussure's Law, Hirt's Law, Dybo's Law; many others) were too late to have played a role in the origin of mobility. The conspicuous exception, with which any serious discussion of the problem of BS mobility must begin, is the so-called "*dùkter*-retraction" described by Saussure in 1896 (= Saussure 1896[1922]: 533 ff.).

§4. The retraction module: "Saussure-Pedersen's Law"

In a seminal discussion that has been summarized many times over the past century, Saussure noted that the Lithuanian word for "daughter" was accented on the ending where the PIE form had final stress, and on the first syllable where the accent of the corresponding PIE form was word-medial:

nom. sg.	*duktẽ*	<	**dhugh₂-tḗr*
gen. sg.	*dukterès* (OLith.)	<	**dhugh₂-tr-és*
acc. sg.	*dùkterį*	<	**dhugh₂-tér-m̥*
nom. pl.	*dùkteres* (OLith.)	<	**dhugh₂-tér-es*
etc.			

---

references. Proof that the voiced stops and voiced aspirates were still separate at this stage comes from the fact that the reduplicated present **dód(o)h₃-* 'give', which eventually became **dōd(o)h₃-* by Winter's Law (cf. Lith. *dúod-*, Sl. *dad-*), was assigned to the mobile class on the basis of its *short* initial syllable (like **u̯édhe-*; see §4 below). Where no confusion would result, the transcriptions used here will be informal.

[16] The neuter, like the dual, must await discussion elsewhere.

He inferred that the initial accent of the root-accented forms had been retracted from the following medial syllable, and that mobility had spread analogically from such words to *all* animate nouns with inherited final stress (in our notation, nom. **golų̀ā́*, acc. **golų̀án* ⇒ nom. **golų̀ā́*, acc. **gòlų̀ān*; nom. **gostı̀s* 'guest', acc. **gostı̀n* ⇒ nom. **gostı̀s*, acc. **gòstin*; etc.). The result was a framework for explaining the rise of mobility in nouns that still ranks as the most widely accepted approach to the problem of mobility as a whole. As such, it provides the natural point of departure for the analysis advanced here.

The *dùkter*-retraction resisted formulation as a strict sound change in Saussure's time; Saussure himself was famously unsure what to make of it.[17] For most of the twentieth century, the rule was given a teleological interpretation and codified as "Pedersen's Law" — an analogical change sometimes confusingly presented as a sound law.[18] In the post-Stang-Dybo period, however, the objections to a purely phonological interpretation have all but vanished. The retraction can now be stated as a Neogrammarian sound change:

> **Saussure-Pedersen's Law (SPL):** The PIE accent was drawn one syllable to the left from a word-internal short open syllable. When the newly accented syllable was word-initial, it received a distinctive left-marginal (falling?) contour:
>
> # x – x̀ - . . . > # x̀ – x - . . .

The left-marginal accent thus emerges as a phonological retraction product, typologically comparable to the Štokavian rising accent(s) (e.g., nom. sg. *vòda* < PSl. **vodà*; contrast acc. *vȍdu* < PSl. **vȍdǫ*), the late Proto-Slavic neoacute (3 sg. **mòžetь* < **možètь*), and (at the subphonemic level) the Vedic Sanskrit *anudātta* (orthographic *deva-* for *devá-* 'god'). In all three of these instances, the shifted accent originated as a phonetic anticipation of the historically accented vowel in the next syllable (a rise before a fall, a dip before a rise, etc.). The same must have been true of the left-marginal accent generated by SPL.[19]

There are many advantages to the formulation of SPL as a sound change. The greatest weakness of Saussure's original theory was that it placed all the responsibility for mobility on words like **dukter-*: the comparatively rare and unproductive consonant stems were said to have imposed their mobility on the vastly

---

[17] "Il est malheureusement difficile de dire le caractère qu'aurait cette loi, car il y a des obstacles à la transformer en loi phonétique pure et simple" (Saussure 1896 [1922]: 533, note 1).

[18] Cf. Olander (48 f., 210 ff.), with special reference to the role and changing character of Pedersen's Law in Kortlandt's work.

[19] Kortlandt (2009: 60-61) seems to have misunderstood my position when he objects that "[t]he main problem with Jasanoff's reformulation of Pedersen's law as a leftward accent shift is that we would expect a rising tone on the newly accented syllable, as in SCr. *vòda* 'water' < **vodà* . . . , whereas we actually find a falling tone as its Slavic reflex, e.g. in acc.sg. *vȍdu*." I am not aware of any typologically grounded reason to believe that a retracted accent would *intrinsically* have favored a rising contour.

more common and productive vowel stems.[20] With the *dùkter*-retraction recast as a sound law, it is no longer necessary to regard consonant stems as the special locus of mobility in nouns. The accentual curve of mobile nouns (cf. §2) is hardly less at home in *i*-, *u*-, and *ā*-stems than in consonant stems, as can be seen from a side-by-side comparison of the "light" cases in each declension:[21]

case[22]	**accent**	***i*-stems**	***u*-stems**	***ā*-stems**	**cons. stems**
nom. sg.	x . . x́	**-ís* (regular)	**-ús* (regular)	**-áh₂* (regular)	**-ḗ(R)*, **-ṓ(R)* (regular)
acc. sg.	x̀ . . x	**-ím* (analogical)	**-úm* (analogical)	**-áh₂m̥* > **-ah₂m̥*(?)[23] (regular)	**-éRm̥* > **-eRm̥* (regular)
gen. sg.	x . . x́	**-éis* (regular)	**-éus* (regular)	**-áh₂es* > **-ah₂es* (analogical)	**-(e)Rés* (regular)
loc. sg.	x . . x́	**-ḗi* (regular)	**-ḗu* (regular)	**-áh₂i* > **-ah₂i* (analogical)	**-ḗR*(?)[24] (regular)
dat. sg.	x̀ . . x	**-éi̯ei* > **-ei̯ei* (regular)	**-éu̯ei* > **-eu̯ei* (regular)	**-áh₂ei* > **-ah₂ei* (regular)	**-(e)Réi* (analogical)
nom. pl.	x̀ . . x	**-éi̯es* > **-ei̯es* (regular)	**-éu̯es* > **-eu̯es* (regular)	**-áh₂es* > **-ah₂es* (regular)	**-éRes* > **-eRes* (regular)
acc. pl.	x̀ . . x	**-íns* (analogical)	**-úns* (analogical)	**-áh₂s* (< ***-áh₂ms*)[25] (analogical)	**-éRn̥s* > **-eRn̥s* (regular)

Also interesting in connection with these forms are the mobile *o*-stems, which partly maintained their independence vis-à-vis the amalgamated accentual paradigm of the *i*-, *u*-, *ā*-, and consonant stems. Here the conspicuous archaisms are the gen. sg. (e.g., BS **dròugā* 'friend'), where the left-marginal accent contrasts with final accent in the other stem types, and the nom. pl. (**drougo̱i*), where the final accent contrasts with

---

[20] The point is well made by Olander (50 f.).

[21] The "heavy" cases (i.e., those (usually) marked by an ending of the form **-(V)CV(C)*) will be discussed in §5.

[22] For each "light" case form, the table shows 1) the position of the accent in the shared synchronic BS accent paradigm (§2); and 2) whether the application of SPL to the inherited *i*-, *u*-, *ā*-, or consonant stem ending would have yielded the synchronic accentuation we find (in which case it is marked "regular"), or whether the accentuation of that particular form is analogical. Thus, e.g., the gen. sg. had final accent in Proto-BS (*x . . x́*); this was phonologically regular in the *i*-stems, *u*-stems (*pace* Olander 171 f.), and consonant stems, but analogical in the *ā*-stems. The dat. sg. had left-marginal accent in Proto-BS (*x̀ . . x*); this was regular in the *i*-, *u*-, and *ā*-stems, but analogical in the consonant stems.

[23] The PIE ending was monosyllabic **-ah₂m* > **-ām*, with non-syllabic **-m* by the IE syllabification convention known as Stang's Law (unrelated to the Slavic retraction rule of the same name; cf. Mayrhofer 1986: 163 f.). The conjectural reconstruction **-ah₂m̥* presupposes an analogical recombination of the stem in **-ah₂-* with the postconsonantal accusative variant **-m̥*; weak support for this reanalysis comes from the non-acuteness of the *ā*-stem acc. sg. in Lithuanian (*rañką*, etc.).

[24] The form shown is the endingless locative; the longer form in **-eRi* was probably the source of the archaic and dialectal Lith. dat. sg. *dukteri*.

[25] In contrast to the acc. sg. (cf. note 23), there is no justification for positing a recombined disyllabic form (***-ah₂m̥s*) in the acc. pl.

left-marginal accent in the other stem types. Both *ˋ-*ā* and *-*o̰i* are in fact phonologically regular: in the gen. sg. the preform was the PIE *o*-stem ablative in *-*ó-h₂ad*, whence *ˋ-*o-h₂ad* (> *ˋ-*ā*) by SPL; in the nom. pl., where *-*ói* was the replacement of older *-*ṓs*, the environment for SPL was not satisfied.[26]

Let us now consider the forms that would have been subject to SPL in the *verbal system*. Verbs are the forgotten category in discussions of the origin of mobility; surveying the literature on the problem, one could easily get the impression that the only mobile words in Balto-Slavic were nouns.[27] Yet mobility is a unitary phenomenon, no less robust in verbs than in nouns, and marked by the same distinctive peculiarities (bipolarity, contrastive left-marginal accent, etc.) in both categories. If SPL, or any similar retraction, was involved in the creation of mobility in nouns, it would almost certainly have played a role in verbs as well.

In thematic presents of the simple root-accented type, an uncompounded stem like PIE *u̯édhe/o- would have given BS *u̯ḛ̀de/o-, with initial *in situ* accent. In the presence of a proclitic particle, however, the accent on the root syllable would have shifted leftwards by SPL (*do-u̯édhe/o- > BS *dò-u̯ede/o-). Stable *in situ* accent in the simplex would thus have contrasted with stable left-marginal accent in compounds:[28]

---

[26] Of the other *o*-stem forms, the nom. sg. shows secondary retraction in Lithuanian (*draũgas*; "Nieminen's Law"); the dat. sg. has left-marginal accent, as in all the other stem classes (*draũgui*, *drûgu*, analogical for expected *-*o̰i*); and the loc. sg. has analogical root accentuation in Slavic (*drûzě) but retains its original final accent in Lith. *namiẽ* 'at home' (< *-*o̰i*). The acc. pl. has the same left-marginal accentuation as other mobile animate nouns (*draugùs* < *draũgō̰s* (Saussure's Law), *drûgy*) — here, as everywhere outside the consonant stems, analogical.

SPL thus gives a much better account of the "light" cases than Saussure's original formulation or its Pedersen's Law elaboration. While the latter attributes mobility as a whole to the consonant stems (and makes even these analogical to root nouns), SPL explains the accentuation of most or all of the attested gen. sg., dat. sg., loc. sg., and nom. pl. forms of vowel stems, including the exceptional gen. sg. and nom. pl. of *o*-stems, by sound change. Only the acc. sg. and pl. seem to owe their accentuation mainly or exclusively to the consonant stems. The consistent left-marginal accent of the acc. pl. (*ˋ-*ins*, *-ˋ*uns*, etc.) is not, perhaps, too surprising in view of the left-marginal accent of the acc. sg. and nom. pl., especially since the contrasting oblique plural cases are all "heavy" and oxytone (cf. below). But in the acc. sg., where PIE *-*ím*, *-*úm*, *-*óm* and even unrecombined *-*áh₂m* (cf. note 23) should all have remained oxytone, the universality of the *x̀ . . x* pattern is genuinely puzzling. The possibility cannot be excluded that a separate rule, or a separate provision of SPL, retracted the accent from final *-*VN#* sequences.

[27] Olander's compendious and extremely useful *histoire de la recherche*, covering over thirty pages of his monograph (14-45), contains more references to nouns and nominal forms than it is convenient to count, but only a single sentence (on p. 22) about verbs.

[28] I assume that prior to SPL, compound verbs in Balto-Slavic, including combinations with particles like the negation *ne*, put the main stress on the verb proper, as in Germanic (cf. Go. *fra-báiriþ*, *du-gínniþ, ni húgjiþ*, etc.).

	without preverb	with preverb
1 sg. pres.	*u̯ȅdoh₂	*dò-u̯edoh₂
2	*u̯ȅdesi	*dò-u̯edesi
3	*u̯ȅdeti	*dò-u̯edeti
1 pl.	*u̯ȅdomos	*dò-u̯edomos
2	*u̯ȅdete	*dò-u̯edete
3	*u̯ȅdonti	*dò-u̯edonti
2 sg. impf. (> aor.)	*u̯ȅdes	*dò-u̯edes
3	*u̯ȅdet	*dò-u̯edet
nom. sg. ptcp.	*u̯ȅdonts	*dò-u̯edonts
gen. sg. ptcp.	*u̯ȅdonti̯-	*dò-u̯edonti̯-

This display is quite different from the system we would be led to reconstruct for Proto-BS on the strength of the synchronic accentual paradigm of mobile verbs in Slavic (cf. §2). As we shall see, however, it was almost certainly an intermediate stage along the way to the attested distribution of left- and right-accented forms.

In overview, it can be said that the effect of SPL was to create, *in nuce*, the category of mobility. A mobile paradigm, in the sense we will henceforth use the term, was one in which one or more forms began with a left-marginal accent (*x̀*). In nouns, at least in the "light" cases of *i*-, *u*-, *ā*-, and consonant stems, SPL directly generated the left-marginal accent in more than half the forms surveyed; analogical leveling across stem types did the rest. But SPL also vastly *overgenerated* left-marginal accent in the "heavy" cases (cf. note 21). Thus, e.g., in the *u*-stems, the gen. pl. (**-éu̯oHom*), loc. pl. (**-úsu*), and *m*-cases (e.g., instr. pl. **-úmīs*, *vel sim.*) ought all to have undergone SPL (**ˋ-eu̯oHom*, **ˋ-usu*, **ˋ-umīs*); yet these forms had final accent in Proto-BS (**sū̲neu̯ò̲n*, **sū̲nusù̯*, **sū̲numì̯s*, etc.). The same was true in the *i*-stems, the consonant stems, and some forms of the *o*-stems.[29] In verbs, where only the compounds of simple thematic presents were mobile, the overgeneration was extreme: SPL produced left-marginal accent everywhere (**dò-u̯edoh₂*, **dò-u̯edesi*, **dò-u̯edeti*, etc.; cf. above), yet the actual forms are more often than not oxytone (PSlav. **dȍ-vedǫ*, but **do-vedešì*, **do-vedetȍ*, etc.). These "wrong" retractions were corrected in the next phase in the development of mobility — the advancement module anticipated in §3.

§5. The advancement module: "Proto-Vasil'ev-Dolobko's Law"

In Jasanoff (2008: 364 ff.) I proposed a phonological solution to the "overgeneration problem" — the problem of too many left-marginal accents in mobile paradigms. The basic claim was that sometime after the operation of SPL, but still very early in the history of Balto-Slavic, the left-marginal accent came to be restricted to words of fewer than four syllables. Longer words, which had perhaps already developed a non-phonemic final secondary stress, underwent a new sound law:

---

[29] In the *o*-stems, SPL would have been regular in the gen. pl. (if < **-óHom*), the dat. pl. (**-ómos*), and the remade instr. sg. (**-ómi*; Slavic only), but not in the original instr. sg. (**-óh₁*), instr. pl. (**-ṓis*), or loc. pl. (**-óisu*). In the *ā*-stems, SPL would only have been regular in the gen. pl. (**-áh₂oHom*); we shall see below, however, that the rule probably applied analogically in the other "heavy" cases (**-áh₂su*, **-áh₂mos*, etc.).

Proto-Vasil'ev-Dolobko's Law (Proto-VDL): Phonological words of four or more syllables headed by a left-marginal accent became oxytone:

$$\#\ \grave{x}_1 - x_2 - x_3 - \ldots - x_n \quad > \quad \#\ x_1 - x_2 - x_3 - \ldots - \acute{x}_n$$

The name "Proto-VDL" was inspired by the obvious similarity of this rule to the synchronic morphophonological rule of Slavic known as "Vasil'ev-Dolobko's Law." The synchronic Vasil'ev-Dolobko's Law (VDL) applies to strings of clitics and "enclinomena," the Slavic reflexes of BS words headed by a left-marginal accent. The relevant part of the rule states that when an enclinomenon, either simple (e.g., ORuss. 1 sg. *stvórju* 'I will make') or complex (e.g., negated *né stvorju*), is followed by an enclitic, the resulting sequence is accented on the last syllable: *stvórju + že = stvorju žè*, *né stvorju + že = ne stvorju žè*.[30] Since morphophonological processes of this kind are normally the morphologized remains of former sound laws, and since VDL in effect converts overlong strings of the type $\#\ \grave{x} - x - \ldots - x$ to $\#\ x - x - \ldots - \acute{x}$, the hypothesis of a pre-Slavic or BS sound law along the lines of Proto-VDL would seem entirely reasonable. It is important to realize, however, that the motivation for Proto-VDL comes from the distribution of left-marginal and final accents in Balto-Slavic, not the behavior of enclinomena in Slavic. Even if a wholly different source were found for VDL — borrowing from Finnic, say — Proto-VDL would still be needed for its role as the advancement mechanism in a general theory of BS mobility.[31]

The specific form of Proto-VDL was suggested by the straightforward correlation of accent placement and word length in mobile verbs:

	pre-SPL	post-SPL		post-Proto-VDL	
				3 syllables	4 syllables
1 sg. pres.	**do-u̯édhoh₂*	**dò-u̯edoh₂*	=	**dò-u̯edoh₂*	
2	**do-u̯édhesi*	**dò-u̯edesi*	>		**do-u̯edesi̇*
3	**do-u̯édheti*	**dò-u̯edeti*	>		**do-u̯edeti̇*
1 pl.	**do-u̯édhomos*	**dò-u̯edomos*	>		**do-u̯edomȯs*
2	**do-u̯édhete*	**dò-u̯edete*	>		**do-u̯edetė*
3	**do-u̯édhonti*	**dò-u̯edonti*	>		**do-u̯edonti̇*
2 sg. impf.	**do-u̯édhes*	**dò-u̯edes*	=	**dò-u̯edes*	
3	**do-u̯édhet*	**dò-u̯edet*	=	**dò-u̯edet*	
nom. sg. ptcp.	**do-u̯édhonts*	**dò-u̯edonts*	=	**dò-u̯edonts*	
gen. sg. ptcp.	**do-u̯édhonti̯-*	**dò-u̯edonti̯-*	>		**do-u̯edonti̯-̇*

[30] example taken from Lehfeldt (2001: 34).

[31] Kortlandt (2009: 60) again misses the point when he refers to Proto-VDL as my "jargon" for Dolobko's Law. Dolobko's Law (= the rightward movement part of Vasil'ev-Dolobko's Law) was a synchronic rule of Proto-Slavic and its early daughters, directly exemplified by productive alternations in attested Slavic languages. Proto-VDL was a hypothetical sound change of the BS period, possibly millennia earlier than the breakup of Proto-Slavic. To identify the two would be like confusing *grammatischer Wechsel*, the alternation seen in Germanic strong verbs (e.g., Old High German *zio**h**an – zō**h** – zu**g**um – gi-zo**g**an* 'pull, *ziehen*'), with Verner's Law, the sound change that gave rise to it.

Notational differences aside, the post-Proto-VDL outputs are accentually identical to the quasi-attested Slavic forms in §2 (**dò-u̯edoh₂ = *dȍ-vedǫ*, **do-u̯edesi̯ = *do-vedešì*, **do-u̯edeti̯ = *do-vedetь̀*, etc.).

The accentual curve of prefixed mobile verbs can thus be directly traced to the sequential operation of SPL and Proto-VDL. The pattern, once established, was extended by analogy. Since SPL would not have applied in the absence of a prefix, the corresponding simplex forms ought theoretically to have remained **u̯ė́doh₂*, **u̯ė́desi*, **u̯ė́deti*, etc., immobile and with *in situ* accent. But a system in which a mobile "conjunct" paradigm (**`-u̯edoh₂*, **-u̯edesi̯*, **-u̯edeti̯*, etc.) contrasted with an immobile "absolute" paradigm (**u̯ė́doh₂*, etc.)[32] would have cried out for analogical repair. The chosen solution was the creation of free-standing **u̯èdoh₂*, **u̯edesi̯*, **u̯edeti̯*, etc., with mobility imported into the simplex from the compounds.[33] Mobility was also analogically extended from high-frequency thematic presents like **u̯ede/o-* (+ **peke/o-* < **pékʷe/o-* 'bake', **u̯eźe/o-* < **u̯éĝhe/o-* 'convey', **bere/o-* < **bhére/o-* 'take', etc.), where the root syllable was short and open, to cases like **u̯elke/o-* < **u̯élke/o-* 'drag' (Lith. *veĨka*, *nèvelka*; Sl. **vêlkǫ*, **velčetь̀*), where the root syllable was closed and impervious to SPL. Under the influence of roots of the structure **CVC-*, *all* simple thematic presents with historical root accentuation became mobile in Balto-Slavic.

Other morphologically defined groups of presents came to be associated with the *absence* of mobility. In the *-i̯e/o-*presents built to "heavy" roots (e.g., **léiĝh-i̯e/o-* 'lick', **péiĤ-i̯e/o-* 'paint, draw') neither SPL nor (*a fortiori*) Proto-VDL would ever have applied, regardless of whether a preverb was present. Sequences of the type 1 sg. **(ne) léiĝhi̯oh₂*, 3 sg. **(ne) léiĝhi̯eti* consequently persisted as **(ne) lėiźi̯oh₂*, **(ne) lėiźi̯eti*, regularly yielding immobile paradigms in both Baltic and Slavic (cf. Lith. *(ne)liežia*, ptcp. *liežiąs*;[34] Russ. *ližú*, *lížeš´*, etc. (type b)). In another immobile group, the BS inchoative nasal presents of the type Lith. 3 p. *(su-)buñda* 'wake(s) up', PSl. 3 sg. **(vъz-)bъ(d)nětь* (< **bu̯d-n-*) 'id.', a slightly different picture unfolded. Here there was tension between the simplex, where SPL generated a left-marginal accent in most of the forms (**bùndeti* ("mobile") < **bhundhéti*), and the compounds, where the retracted accent was word-internal and hence *in situ* (**su-bu̯ndeti*

[32] The terms are borrowed from Celtic, where finite verbs have a special "conjunct" form used with preverbs and proclitic particles. Cf. Old Irish 3 sg. *berid* 'brings' (absolute) vs. *ni·beir* 'does not bring', *do·beir* 'gives' (conjunct).

[33] As noted in my 2008 discussion (367, note 52), a close parallel to this development can be seen in the recessive accentuation of finite verbs in Greek. Greek presents of the type *deik-nŭ-* 'show' were originally accented on the suffix in the singular (1 sg. **deiknū́mi*; cf. Vedic Skt. sg. 1 *kr̥ṇómi* 'I do') and on the endings in the plural (1 pl. **deiknumén*; cf. *kr̥ṇumáḥ*). In composition, however, the verb proper cliticized to the preverb, giving sequences of the type **pródeiknūmi*, **pródeiknumen*, etc. These were eventually subject to the "recessive accent rule," which advanced the accent to the leftmost position permitted in Greek, the antepenult or (if the final syllable was long) the penult. Compound verbs thereby acquired "recessive" accent (**prodeíknūmi*, **prodeíknumen*). This, in a move highly reminiscent of Balto-Slavic, was analogically extended to the simplex (**deiknū́mi*, **deiknumén* ⇒ **deíknūmi*, **deíknumen*).

[34] The nom. sg. of the participle is accented in mobile paradigms in Lithuanian (*-ą̃s*, *-ĩs*, *-ę̃s*; cf. note 10).

("immobile") < **su-bhundhéti*). As in the **u̯ėde/o-* type, the influence of the compounds prevailed, and the attested paradigm is uniformly immobile. So too in the purely Baltic inchoatives in *-sta-* < **-sk̂e/o-* (e.g., Lith. *gìmsta* 'is/are born', *mìršta* 'die(s)'): the accented thematic suffix gave left-marginal/mobile accentuation in the simplex (**mr̥̀(h₁)šk̂eti* (*vel sim.*) < **mr̥(h₁)sk̂ét(o)i*) but *in situ* accent in the compounds (**Hau-mr̥̀(h₁)šk̂eti* < **h₂au-mr̥(h₁)sk̂ét(o)i*).[35] Again, the compounds carried the day.[36]

Especially interesting is the Slavic treatment of the PIE iterative-causatives in **-éi̯e/o-*. Prior to the contraction of **-ei̯e/o-* to *-ī-* and the other changes that gave the verbs in *-iti* their distinctive formal profile in Slavic, presents like **prok̂-éi̯e/o-* 'ask' underwent SPL, producing a "mobile" simplex 1 sg. **pròśei̯oh₂*, 3 sg. **pròśei̯eti*, and "immobile" compounds of the type **po-pr̀śei̯oh₂*, 3 sg. **po-pr̀śei̯eti*. Extrapolating from the way such mobile : immobile differences were resolved in the simple thematic presents (**u̯ede/o-*), the nasal presents (**bunde/o-*), and the Baltic presents in *-sta-*, one might have expected the pattern of the compounds — in this case immobility — to prevail. And so it did, at least in the majority of cases (cf. Russ. *prošú* and *poprošú*, *prósiš´* and *poprósiš´*, etc.; type b)). But it is notable that in the *-ei̯e/o-*presents, unlike the nasal and *-sk̂e/o-*types, the majority of the theoretically expected simplex forms with left-marginal accent would have been tetrasyllabic and hence subject to Proto-VDL (**pròśei̯esi* > **prośei̯esi̯*, **pròśei̯eti* > **prośei̯eti̯*, etc.). Mobility would thus have been more robustly established in the *-iti* verbs than in the nasal and *-sta-*presents — a fact that may help explain some of the accentological anomalies of this class in the historical languages.[37]

---

[35] The prehistory of the Baltic *-sta-*presents, with specific justification of the reconstruction **mr̥(h₁)sk̂é/ó-*, is discussed in Gorbachov (to appear).

[36] The *non*-mobile present types just discussed — the "heavy" *-i̯e/o-*presents, the thematic nasal presents, and the *-sta-* (i.e., *-sk̂e/o-*) presents — show why the specific formulation of SPL in §4 is important. The rule did not apply to *any* internal syllable, but only to short open ones; this is why we find Lith *nèvedu* and Sl. *ně vedǫ*, but not Lith. **nèliežiu* and Sl. **ně ležǫ*. The retraction did not automatically project the accent onto the first syllable of the word, but only onto the immediately preceding syllable; this is why we find Lith. *nebuñda* and not **nèbunda*. The non-mobility of the nasal and *-sta*-presents also makes it clear why Olander's effort (194 ff.) to trace mobility to the thematic-vowel-accenting "*tudáti*-type" (e.g., Lith. *sukù*, *nèsuku*, *sukãs* 'turn' < **suké/ó-*) cannot be correct: stems that accented the second syllable, when not analogically assimilated to the **u̯édhe/o-*type (as was the case with the *tudáti*-type), regularly came out immobile.

[37] Among these anomalies, I mention only the dialectal BCS pattern *lòmim* 'break' (mobile) vs. *pòlomim*, *slȍmim* (immobile), which has recently given rise to a controversial exchange in the literature. Kortlandt (2005: 127) claims that the pattern is old, stating that in *pòlomim*, *slȍmim* "the root vowel received the stress from the prefix as a result of Dybo's law." Kapović (2005: 38 f.) denies this, arguing that *pò-, slȍ-* is an innovation and objecting to Kortlandt's reconstruction with an accented prefix. Neither position is entirely persuasive. On the one hand, the data cited by Kapović only reinforce the impression that the alternation pattern is proper to *-i-*presents, from which it spread analogically in some dialects. On the other, Kortlandt's "explanation" merely transports the problem back to Proto-Slavic. While the matter must be left to specialists, I note that the phonologically regular treatments would have been

simplex: **loméi̯eti* > **lòmei̯eti* (by SPL) > **lomei̯eti̯* (Proto-VDL) > **lomīti̯* > BCS *lòmi*
compound: **polomé i̯eti* > **polòmei̯eti* > **-lòmīti* > **-lomī̯ti* (Dybo) > **polòmīti* (Stang) > BCS *pòlomi*

The unexpected *lòmim* : *pòlomim* pattern thus emerges directly from our rules.

In nouns, Proto-VDL was the main engine for the phenomenon of "heavy shift," the movement of the accent onto the heavy case endings. In many of the relevant forms, as we have seen above (cf. §4), the PIE accent would initially have been driven leftwards by SPL (*-*úmīs* > *`-*umīs*, etc.). This was notably the case in the gen. pl., where the desinence proper was disyllabic *-*oHom*:[38]

pre-SPL	post-SPL	post-Proto-VDL	
**ghostéi̯oHom*	**gòstei̯oHom*	**gostei̯oHo̍m*	(PSl. **gostъjь̀*, [Lith. *-iũ̃*])
**suHnéu̯oHom*	**sùHneu̯oHom*	**suHneu̯oHo̍m*	(PSl. **synovъ̀*, [Lith. *-ũ̃*])
**golHu̯áh₂oHom*	**gòlHu̯ah₂oHom*	**golHu̯ah₂oHo̍m*	(PSl. **golvъ̀*, Lith. *galvũ̃*)
**dhugh₂tróHom*	**dùkteroHom*	**dukteroHo̍m*(?)[39]	(PSl. **dъt′erъ̀*, Lith. *dukterũ̃*)

The accentual history of the gen. pl. was thus precisely comparable to that of tetrasyllabic verbal forms like 3 sg. **do-u̯edeti̍* / **do-vedetь̀* (< **dò-u̯edeti* < **do-u̯édheti*), where the final accent was displaced from left-marginal position by Proto-VDL. Let us now consider whether this explanation can be extended to the other heavy cases.

Unlike the *-*oHom* of the gen. pl., the endings of the loc. pl. (*-*su*), dat. pl. (*-*mos*, *vel sim.*), instr. pl. (*-*mīs*, *vel sim.*), etc. were monosyllabic; the corresponding inflected forms of a disyllabic *i*-, *u*-, or *ā*-stem (e.g., post-SPL loc. pl. **gòstisu*, **sùHnusu*, **gòlHu̯ah₂su*[40]) would therefore have been too short to trigger Proto-VDL. Not all stems, however, were disyllabic. Even in a consonant stem like **dukter*-, an *-i*- is inserted before the consonant-initial heavy endings in both Baltic and Slavic (cf. Lith. *dukter-**i**-mìs*, PSl. **dъt′er-**ь**-mi*, etc.). If this vowel was already present at the time of Proto-VDL, then all the heavy case forms of such stems, not just the gen. pl., would regularly have developed final accentuation (**dùkterisu* > **dukterisu̍*, **dùkterimīs* > **dukterimi̍̄s*, etc.).[41] But there was another, more important source of "long" forms in the heavy cases, namely, the bulk of nouns and adjectives in which an underlying disyllabic stem was extended by a mobile derivational suffix. Consider, e.g., the case of the derived stem **h₂arh₃tli̯ó*- 'belonging to the plow' (> Lith. *arklỹs* 'horse'; cf. *árklas* 'plow'). With the establishment and analogical extension of mobility in the pre-Proto-VDL period, such a stem would have yielded a normal mobile paradigm with alternating final and left-marginal accent (nom. **h₂arh₃tli̯u̍̄s*, acc. **h₂àrh₃tli̯u̯om*, etc.). Included among the forms with left-marginal

[38] Despite the aprioristic view that the PIE gen. pl. "should" have ended in *-*ŏm* in consonant stems and *-*ŏŏm* in *o*-stems, the comparative IE evidence (Ved. *-aam*, GAv. *-aam*, Gk. *-ō̃m*, Gmc. *-*ō̃*^{N}) points clearly to a disyllabic ending in *all* stem classes. In Slavic, the resulting non-acute *-*ōn* was raised to *-*ūn* (cf. *-*ō* > *-*ū* (> *-y*) in nom. sg. *kamy* 'stone'). From this emerged a Proto-Slavic nasalized yer (*-*ъ̨*), which, like nasalized vowels generally, was presumably slightly longer than the corresponding oral vowel *-*ъ*. The added milliseconds of length would explain the special prosodic effects of the gen. pl. ending in the individual Slavic dialects (neocircumflex in Slovenian, etc.).

[39] regular only if full-grade *-*ter*- had already been substituted for *-*tr*- in the weak cases.

[40] The application of SPL would have been analogical in the *ā*-stems; cf. note 29 and note 42 below.

[41] It is impossible to date the insertion of the *-*i*-. Latin, where the consonant stems took on *i*-stem endings very early (cf. dat.-abl. pl. *patribus*, nom. pl. *patrēs* < *-*ei̯es*), shows that the spread of *-*i*- as a union vowel in Balto-Slavic, at least in *r*-stems, need not have postdated the relatively late (post-mobility) merger of *-*m̥* and *-*im* in the acc. sg.

accent would have been the "overgenerated" gen. pl. **h₂àrh₃tliu̯oHom*, loc. pl. **h₂àrh₃tliu̯oisu*, and dat. pl. **h₂àrh₃tliu̯omos*, all tetrasyllabic and all eventually subject to Proto-VDL (> **-iu̯oHo̍m*, **-iu̯oisu̍*, **-iu̯omo̍s*). The oxytone *-iu̯o-*stem forms produced in this way would have been a natural analogical source for **-oHo̍m*, **-oisu̍*, **-omo̍s* in the simple *o*-stems. Such scenarios would also have unfolded elsewhere, including in the *-iu̯ā-* and *ā*-stems. "Heavy shift" would have had a natural locus in cases like these.[42]

§6. Summary and conclusion

The main claim of this paper, elaborating on Jasanoff (2008), is that mobility in Balto-Slavic is a unitary phenomenon, the product of two simple Neogrammarian sound changes that applied equally to nouns and verbs.

The first of the two rules, Saussure-Pedersen's Law (SPL), states a commonly assumed retraction (Lith. *dùkterį* < **duktérin*) in a new way. Details aside, the main novelty of the formulation adopted here is that the phonologically regular output of the rule, when word-initial, is stipulated to have been a distinctive type of accent — the left-marginal accent (*x̀*) — which by its very presence marked certain forms and paradigms as "mobile." Mobility at this early stage was different in detail from what it was to become later. But the phonetic distinctness of the left-marginal accent,

---

[42] Note that starting from **-iu̯os*, with medial accent, would have led to the same result by a slightly different path.

It is not surprising that a rule as far-reaching as Proto-VDL would have been followed by a series of major analogical readjustments; as we have seen in §4, a period of consolidation must have followed SPL as well. The complex interplay of sound change and analogy in the history of BS accentuation can be seen in microcosm in the treatment of the endings of the instr. sg., which have thus far not been discussed. The "initial settings" here would have been

i-stems	*u*-stems	cons. stems	*ā*-stems		*o*-stems
**-ímmi*	**-úmmi*	**-Ŕ̥mmi*	a) **-áih₂oh₁*	b) **-áh₂mi*	**-óh₁*

The *i-*, *u-* and consonant-stem forms were replacements of PIE **-ih₁*, **-uh₁*, and **-Réh₁*, respectively; the corresponding *o*-stem ending was **-óh₁*, preserved in Balto-Slavic but eventually replaced by **-omi* in Slavic. The *ā*-stems show reflexes of two PIE preforms: a) **-áih₂oh₁* (< ***-áh₂ih₂oh₁*; cf. Ved. *-ayā*), and b) **-áh₂h₁*, remade to **-áh₂mi* in Balto-Slavic. From **-áh₂mi*, **-mi* was extended to the longer *ā*-stem ending, giving trisyllabic **-áih₂oh₁mi*. Following SPL, which took **-ímmi*, **-úmmi*, **-Ŕ̥mmi* to **ˋ-imi*, **ˋ-umi*, **ˋ-R̥mi*, the pattern *x̀ . . x* was generalized, so that *all* instr. sg. forms emerged with left-marginal accent:

**ˋ-imi*	**ˋ-umi*	**ˋ-R̥mi*	a) **ˋ-aih₂oh₁mi*	b) **ˋ-ah₂mi*	**ˋ-oh₁*

The inconveniently long ending **ˋ-aih₂oh₁mi* was now apocopated to **ˋ-aih₂oh₁m*, analogically inducing the same effect in **ˋ-ah₂mi* (> **ˋ-ah₂m*). On the eve of Proto-VDL the endings would thus have been

**ˋ-imi*	**ˋ-umi*	**ˋ-R̥mi* (**ˋ-eRimi*?)	a) **ˋ-aih₂oh₁m*	b) **ˋ-ah₂m*	**ˋ-oh₁*

With the exception of consonant-stem forms of the type **dùkterimi* (if these already existed), no "primary" instr. sg. forms (**gòstimi*, **sùHnumi*, etc.) would have been directly subject to Proto-VDL. But the disyllabic endings would have induced Proto-VDL in trisyllabic stems, and the analogical extension of this effect (= "heavy shift") would have led to the situation that underlies the actual forms:

**-imi̍*	**-umi̍*	**-eRimi̍*	a) **-aih₂o̍h₁m*	b) **ˋ-ah₂m*	**ˋ-oh₁*

For the *ā*- and *o*-stem forms, cf. Sl. **galvojǫ̀* (+ **drugomь̀*; final accent) and Lith. *gálva*, *lángu* ('window'; left-marginal accent).

which is independently confirmed by its reflexes in the later languages, made it possible for speakers to implement sound laws that applied only to mobile, or only to immobile forms.

It must be stressed that there is no conflict between the *historical* claim that SPL gave rise to a contrastive left-marginal accent and the widely accepted *synchronic* claim that the left-accented forms in mobile paradigms were actually accentless enclinomena. The latter view, according to which forms like PSl. acc. sg. **gôlvǫ* or 1 sg. **vèdǫ* were inherently unaccented and received their initial stress by a default stress assignment process, is very attractive for Slavic, where it receives support from the behavior of the left-marginal accent under Vasil'ev-Dolobko's Law (**nà golvǫ*, **na golvǫ žè*; **dȍ-vedǫ*, **do-vedǫ žè*). Whether the "enclinomenon" analysis can be extended to Proto-(East) Baltic or Proto-Balto-Slavic is less clear; no position has been taken taken on this question here. But at least for Slavic, and conceivably earlier, it seems likely that the phonetically and phonologically contrastive left-marginal accent of the immediate post-SPL period was rephonologized as a phonetically contrastive *zero* accent. Such phonological events are well documented elsewhere. In Romance, e.g., the position of the Vulgar Latin stress was not fully predictable and had to be lexically marked (cf. *fícatu* 'liver' vs. *plicátu* 'folded'). Modern French retains the stress in its Vulgar Latin position (*foie* vs. *plié*); yet in French, owing to changes in the segmental phonology, the position of the stress is predictable and assigned by a redundancy rule. The phonetic accent remains unaltered, while the phonological accent has been lost.[43]

Our second sound change, Proto-Vasil'ev-Dolobko's Law (Proto-VDL), takes its name from the morphophonological rule of Slavic to which it may have been ancestral. Its effect was to move an initial accent three or more syllables rightward — not *any* initial accent, which would clearly be false, but specifically the left-marginal accent of mobile forms. Unlike SPL, which can be regarded as a methodologically refined restatement of Pedersen's Law, Proto-VDL is not a reworking of any older formula, but a genuinely new rule. In the context of a general theory of mobility, its function is to relate the right-accented "long" forms of mobile paradigms (3 sg. **do-u̯edeti̯*, gen. pl. **sūneu̯ō̯n*, etc.) to the earlier forms with left-marginal accent from which they obviously derive.

Jay H. Jasanoff
Department of Linguistics
Harvard University
312 Boylston Hall
Cambridge, MA 02138
USA
e-mail: jasanoff@fas.harvard.edu

[43] On the other hand, the picture presented here is *not* compatible with a historical theory that replaces a one-syllable retraction rule like SPL with a general "loss of accentability" in all words with codas of a given prosodic structure. The latter is Olander's approach (155 ff. and *passim*), which I hope to discuss in detail elsewhere. Whatever the merits or demerits of Olander's theory on typological grounds, I do not believe it accounts for the data.

Works cited

Dybo, V. A. (1981). *Slavjanskaja akcentologija: opyt rekonstrukcii sistemy akcentnykh paradigm v praslavjanskom*. Moskva: Nauka.

Gorbachov, Y. V. (to appear). The origin of the Baltic inchoative in *-sta-* and a new Proto-Baltic sound law. Forthcoming in *HS*.

Illich-Svitych, V.M. (1963). *Imennaja akcentuacija v baltijskom i slavjanskom*. Moscow: Institut Slavjanovedenija, AN SSSR.

Jasanoff, J. H. (2004). Acute vs. circumflex: some notes on PIE and post-PIE prosodic phonology. In: Adam Hyllested, Anders Richardt Jørgensen, Jenny Helena Larsson, Thomas Olander (eds.), *Per aspera ad asteriscos. Studia Indogermanica in honorem Jens Elmegård Rasmussen sexagenarii Idibus Martiis anno MMMIV* [*Innsbrucker Beiträge zur Sprachwissenschaft* 112]. Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck. 247-255.

_____. (2008). The accentual type **vèdō*, **vedeti̯* and the origin of mobility in the Balto-Slavic verb. In: *Baltistica* 43(3):339-379.

Kapović, M. (2005). Slavic length again. In: *Filologija* 45:29-45.

Kortlandt, F. (1977). Historical laws of Baltic accentuation. In: *Baltistica* 13(2):319-330.

_____. (2005). From Serbo-Croatian to Indo-European. In: *Wiener Slavistisches Jahrbuch* 51:113-130.

_____. (2009). All's well that ends well. In: *Baltistica* 44(1):59-63.

Lehfeldt, W. (2001). *Einführung in die morphologische Konzeption der slavischen Akzentologie. 2., verbesserte und ergänzte Auflage mit einem Appendix von Willem Vermeer* [*Vorträge und Abhandlungen zur Slavistik* 42]. München: Verlag Otto Sagner.

Mayrhofer, M. (1986). *Indogermanische Grammatik*. I/2. *Lautlehre*. *Segmentale Phonologie des Indogermanischen*. Heidelberg: Carl Winter.

Meier-Brügger, M. (2002). *Indogermanische Sprachwissenschaft. 8., überarbeitete und ergänzte Auflage unter Mitarbeit von Mathias Fritz und Manfred Mayrhofer. Berlin/New York*: Walter de Gruyter.

Olander, T. (2009). *Balto-Slavic Accentual Mobility* [*Trends in Linguistics, Studies and Monographs* 199]. Berlin/New York: Mouton de Gruyter.

Pedersen, H. (1933). *Études lituaniennes*. Copenhagen: Levin & Munksgaard.

Saussure, Ferdinand de. (1922 [1896]). *Recueil des publications scientifiques de Ferdinand de Saussure.* Geneva: Sonor; Lausanne and Paris: Payot.

Shevelov, G. Y. (1964). *A Prehistory of Slavic: The Historical Phonology of Common Slavic*. Heidelberg: C. Winter Universitätsverlag.

Stang, Chr. S. (1957). *Slavonic Accentuation*. Oslo: Universitetsforlaget.

_____. (1966). *Vergleichende Grammatik der baltischen Sprachen*. Oslo: Universitetsforlaget.

Vaillant, A. (1936). Le problème des intonations balto-slaves. In: *BSL* 37:109-115.

Young, S. R. (1994). Endzelin's Law and acute tone in Latvian. In: *Linguistica Baltica* 3:101-108.

_____. (2006). Slavic **gr̂dъ* : Lith. *(pa)gìrtas.* In: *Baltistica* 41(3):371-374.