

"On the History and Function of Ablaut in the Verb from Balto-Slavic to Russian," *University of Chicago Working Papers in Linguistics*, Vol. 5, 1990, pp. 1-15.

On The History and Function of Ablaut from Balto-Slavic to the Russian Verb
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In this paper I will sketch the development of a restricted set of phenomena relating to ablaut in Balto-Slavic, Slavic and Russian. I will be talking as much about the function of morphological forms which combine ablaut with affixation as I will about ablaut alone. Since ablaut is more a part of pure morphology than most mophonology, I find this unavoidable.

One of the topics I would like to touch on is the origin of the formal derivation of secondary imperfectives. Below we see several examples of derived imperfectives in Modern Russian, with some indication of older forms:

otvétit'	otvečát'
rodít'	rožát' (OR ražáti)
yteč'	utekát' (OR utěkati) -aju, aeš'
vleč'	vlegát' (OCS -lěgati, -lěžu, -žeši)
zažeč'	zažigát'
nabrát'	nabirát'
sotkát'	stykát'
otnestí	otnosít'
otvezít'	otvozít'

From the point of view of modern Russian morphology, the first seven examples are regular (cf. Levin 1978, Chapter 8). The last two, however, represent synchronically irregular forms. The motion verbs like *otnesti/otnosít'*, *otvezít'/otvozít'* are irregular in that that *-i-* is not a regular imperfectivizing suffix, and in that the perfective-imperfective pair seem to be formed by prefixing *ot-* onto a previously existing pair *nestí/nosít'*, *vezít'/vozít'*.

Not surprisingly, this synchronic irregularity represents an older regularity. When we reconstruct the prehistory of iterative/stative forms--from which the synchronic imperfectives were derived, we find that all the types of imperfectivization formally correspond to prefixation of independent iteratives, and that the verbs of the type *nosít'*, *vozít'* represent the oldest layer of iteratives in Balto-Slavic.

If one talks about the Balto-Slavic verb, he is obligated to at least mention the fact that some people do not believe there was such a thing. One of the arguments against the proposal for Balto-Slavic unity is the impossibility of reconstructing a unified system of the verb in Balto-Slavic. However, most of the differences between Baltic and Slavic are cases where one family has something very old which the other lacks--such as the s-aorist in Slavic or the s-future in Baltic. This is not an argument. The split between Baltic and Slavic is very old, and both families have had a long time to lose things, and to have independent innovations. In favor of a Balto-Slavic proto language we can point to a substantial set of shared phonological changes. Baltic and Slavic also share some morphological innovations in the verb.

When we compare Baltic and Slavic verbs, we often find that only pieces of the paradigms are comparable. In particular, some verbs have the same infinitive stems in Baltic and Slavic, but differ in present stem formations, while others agree in the present, but have different infinitive stems.

Verbs which agree in both the infinitive and present tense stems are:

Slavic	Lithuanian
vesti, vede-	vesti, veda- 'lead'
vezti, veze-	vežti, veža- 'take by vehicle'
nesti, nese-	nešti, neša- 'carry'
*bortise, borje-se	(Latv.) bārt, baŗa-
pēti, pīne- 'stretch'	pinti, pīna- 'weave, twist'
dati, damī	duoti, duomi 'give'
denominal -ati, -aje-	-oti, -oja-, possibly -uoti, -uoja-
denominal -ēti, -ėje-	-ėti, -ėja-

Verbs which agree in present stems are:

pīsati, piše- 'write'	piešti, piešia- 'draw'
rězati, rěže- 'cut'	rėžti, rėžia- 'cut'
-zīdati, -zižde- 'build'	žiesti, žiedžia- 'make(from clay)'
gūnati, žene- 'drive'	giñti, gena- 'drive'
kovāti, kuje- 'forge'	káuti, kauja- 'hit, forge'
-ovati, -uje-	-auti, -auja-

Two major classes of verbs agree in the infinitive stem, but differ in the present formation. These are: (1) the causative/iteratives with infinitives in *-ī-*, which have Slavic presents with *-ī-*, Baltic presents in *-o-* (**ā*), and (2) stative/duratives with infinitives in *-ē-*, which have Slavic presents in *-ī-*, Baltic presents in short *-i-* or *-a-*. Examples of exact cognates are:

broditi, broditū 'wade'	bradyti, brado (dial)
buditi 'wake up [tr.]'	pa-si-baudyti 'get up [intr.]'
goniti 'drive'	ganyti
mėniti 'change'	mainyti
mėšiti 'mix'	maišyti
prošiti 'ask'	prašyti
būdėti, būditū 'be awake'	budėti, budi
gorėti 'burn'	garėti
mīnėti 'think'	minėti 'remember'
smīrdėti 'stink'	smirdėti
sėdėti 'sit'	sėdėti
vidėti 'see'	pavydė' ti 'envy'
	Latv. viēdēt 'see', vidēt 'envy; be in sight'
kypėti, kypitū 'boil'	kūpėti, kūpa 'boil, rise'
	Latv. kūpēt, kūpu 'smoke'
svītėti 'shine'	svītėti 'shine'

The system which Balto-Slavic inherited from PIE included the following features:

- 1) Primary athematic verbs had alternations between zero-grade and e-grade ablaut. In the present this involved e-grade in the sing., zero grade in the dual and plural.
- 2) Primary verbs with thematic (-e/o-) inflection had either e- or zero-grade, depending on the accent.
- 3) Derived iteratives/factitives had o-grade ablaut.
- 4) Derived verbal nouns with o-stem inflection had o-grade ablaut.
- 5) The sigmatic aorist had lengthened grade. This is the only candidate for common IE lengthened grade in the verb.

The alternations in athematic verbs were eliminated in Balto-Slavic.

After the syllabic sonorants yielded short *ī* and *ū* plus sonorant, the ablaut system underwent a restructuring. The final result was that, except for the true zero in alternations between **CeuC* and **CuC*, *ī* was the only rule-governed reduced grade ablaut. (In addition, Baltic developed an alternation *ē / ī*). There are a few cases of *ū* next to a sonorant (from a syllabic sonorant), such as Slavic *gūnati, žene-* 'drive', compared to Lith *ginti, gena* 'drive', but these must be considered exceptional. One can also find examples of true etymological zero grade, such as Slavic *grėti* 'heat', which must be related to *gorėti* 'burn'. This is not, however, a case of rule-governed ablaut. *Gorėti*, in fact, is in a stem shape where we would expect zero-grade. Whatever its source, *gorėti* had been reinterpreted as having a basic *-o-*, which did not take a zero grade.

This new i-grade which alternated with e-grade affected several verbal patterns in ways that are normally described as analogical departures from the regular behavior of syllabic sonorants. In the new system, alternations like OR *bresti, brīdu, pomereti, pomīru* are morphophonologically regular, even though the forms with *ī* are not phonologically regular developments from **b•d•*, *pom••*. We even find *ī* for the zero grade between obstruents in **pīzdėti*, Sln *pėzdėti*, R. *bzdet'* 'fart silently' (Lith *bezdėti*, Latin *pėdere*, (**pesdere*), Gk *bdėō*), OR *žėči, žīgu* 'burn' (Lith *degti*). In general, however, zero grade was not allowed between obstruents in the later languages.

Another of the major B-S innovations in ablaut was the development of lengthened grade-- including the lengthening of *i* or *u* introduced next to syllabic sonorants. Kurylowicz (1968: 318-9) suggests that this lengthened grade was introduced into verbal paradigms with the loss of laryngeals. Stems of the shape C(V)RH- (of which there are a substantial number) developed alternations in Length. Before consonants the laryngeal lengthened the preceding syllabic (Cv:RC or CR:C > CīRC/CūRC). Before a vowel the laryngeal disappeared without lengthening (CVRV). This pattern, with length in closed syllables and shortness in open syllables, was hardly a natural distribution, and was a candidate for morphologization.

The long vowels were later shortened in closed syllables, leaving acute intonation as evidence of the old length. A concrete example is Lith. *ginti, gina* 'defend' (C' inC indicates acute intonation on *i* or *u* diphthongs), OCS *žęti, žin* • (SC *žęti*) 'cut'. The acute intonation in the infinitive indicates old **ginti* opposed to present *gin-e/o-*.

The consonantal endings which would have conditioned the lengthened variant included the infinitive, the s-future, the s-past, and the l-participles, insofar as they existed in each language. Where stem variants occurred elsewhere in Balto-Slavic, they generally opposed the present tense stem to the rest of the paradigm. Kurylowicz suggests that this pattern provided the model for the spread of the new length to the entire nonpresent stem, including the prevocalic stem of the past in Lithuanian (e.g. *gynę*). One might even argue that the nonpresent stem was the basic variant. It thus became a logical candidate for a stem to be used in derivation. The later shortening of diphthongs in closed syllables changed the system. Insofar as length had spread to positions before vowels and was preserved, it became interpretable as a morphologically conditioned lengthening. It then could spread within morphological categories to forms which did not originally have laryngeals.

One of the main areas of spread of the lengthened grade in the verb was in the formation of derived iteratives and statives. Lithuanian seems to preserve the most archaic system. The primary iteratives are still formed with o-grade vocalism with the suffix *-ī-* in the infinitive stem. (*-st-ī-* is also productive). The word classes with lengthened grade are peripheral in the system, forming iteratives and statives with special nuances. One clear category is that of resultative statives, called durative in the Academy Grammar (Ulvydas 1971: 15). The grammar (p. 24) also provides categories it calls 'diminutive' and 'intensive' iterative. I will not attempt to define these categories. Examples are:

Resultative statives with infinitives in *-o-* (**ā*), and present tenses with *-*ā-*, or infinitives in *-*ē-*, presents in *-i-*. These verbs show lengthened zero grade, *e* is replaced by *ī* short *a* (**o, a*) is unaffected.

kýšoti, kýšo, kýšojo 'be sticking out' < kišti 'stick into'
tvýroti, tvýro, tvýrojo 'be attached, remain' < tvérti, tveria 'attach'
rýmoti 'lie propped up' < rémti, remia 'support'
týsoti 'lie stretched out' < tiesti 'stretch'
glūdoti 'lie hidden' < glausti, glaudžia 'press against'
karóti 'hang' < kárti, kária, kóre 'hang'
kyšėti, kŷši, kyšėjo = kýšoti
tysėti = týsoti
glūdėti = glūdoti

Iteratives (often 'intensive') in *-auti* or *-•oti*

búbauti/ búbuoti [intens. iter] < baubti 'roar'.
dūsauti/dūsuoti 'breathe heavily, sigh [iter]' < dus- in dūsteleti 'sigh'.
pútauti/pútłoti 'breathe heavily, blow' < pūsti, pūčia, pūtė 'blow', pūsti, punta, puto 'swell'.
rékauti/rýkauti/rékoti [intens. iter.] < rékti, rėkia, rėké 'shout'.
kvėpuóti 'breathe', kvėpti, kvepia 'inhale'.

Iteratives in *-*jā-ti*. These formations seem to have been originally secondary iteratives with 'diminutive' meaning, derived from the primary iteratives with o-grade in the root and the *-ī-* suffix. This

suffix leaves *-o-* in an open syllable unaffected, but conditions an acute accent on a diphthongal root syllable. The diminutive meaning is largely gone, but Skardžius (1943: 517) often glosses the derivatives as synonymous with derivatives in *-inėti*, which is the productive diminutive iterative suffix in the modern language.

There are examples of this suffix added directly to basic verbal stems, in which case we do find examples of lengthening. These are likely to be later formations, however:

kámšioti < kamšýti, kaĩšo < kiĩšti 'pack'
knáisioti < knaisýti < knisti 'burrow'
lándžioti < landýti < lįsti, leĩda
mėćioti < métyti < mēsti 'throw'
sagióti < sagýti < sėgti 'button'
skáinioti/skynioti < skinti, skĩna, skýnė 'tear'
mýnioti < mĩnti, mĩna, mýnė 'trample'
stúmioti < stũmti, stũma, stũmė 'push'

All the building blocks for the eventual processes of forming Slavic derived imperfectives are in Lithuanian. There is lengthening with infinitives in *-ā-ti*, and with denominal type formations in **ō-ti*, and *-auti*, and there are derivatives in **jā-ti* which were or could be interpreted as secondary derivatives from verbs with infinitives in *-ī-*. There are differences of course. There is no lengthening a short **o/a*, and there is only marginal lengthening of **e*. The change of *e* to *ī* in *remti > rymoti, rėkti > rykauti* may parallel formations like OCS *naricati* (**nō-rikātei*), from *-rek-*, which may then be as old or older than formations with *e > ě*.

The Lithuanian formations are peripheral not only in that they are less numerous than the verbs in infinitives in *-ī-*, but also in that verbs with lengthened root vowels are not used to form iteratives from prefixed verbs --as are the *-ī-* stems. The only secondary suffix which has become a productive iterative suffix with prefixed verbs is the suffix *-joti* (**jā-ti*), which in its synchronically productive use does not lengthen.

What Slavic did was make the peripheral formations part of the core derivational pattern. It also generalized the lengthening to include **o* and **e*, and in the course of attested history has fixed the accent on the suffix. Examples of parallel formations, some of which show older patterns with stem accent are:

sl̥šati (<i>*slóusjāti</i>) < Lith klausýti, klaũso 'listen', klũsti 'begin to hear', paklũsti 'heed'
R.vorócat', SC vracáti < vorotíti, vrátiti

These are the only forms I have found which seem to show the metatonic acute on the root diphthong. This Baltic evidence, if considered Balto-Slavic, solves the problem of the root accent in *slušati*, since this is clearly a short-diphthongal stem, which would be expected to have suffixal accent (viz *paklũsti*, OCS *sl̥šati* in competition with *slyšati*, (Vaillant 1966: 389).

R. sl̥šati, slyxáti (Uk slyxáty, slyšu)
R. dyšát, dyšl̥, dýšiš, OCS dyxati, dyšu, Lith dūsėti
R. sýpat' < suti, sũpe-
SC mĩcati < mũknqti
R. týkat' (older) týčet Latv. tũkāt. -āju (Erdz)[iter] 'press'
R. mětát' 'throw' Latv. mētāt -āju [iter] 'throw'.

The Slavic forms like *slyšati*, *dyšati* clearly parallel the Lith. forms with infinitives in *-*ē-*, present in *-i-*. It is hard to say for sure whether the Slavic forms with inf. in *-ā-*, present in *-je-* without the *ā*, come from the same source as the Baltic forms with inf. in *-*ā-*, present in *-ā-*. They may be parallel developments. They are both peculiarly deverbal patterns opposed to inflectional patterns with inf. in *-*ā-*, present in *-*ā-j-e/o-* which were probably originally denominal. The only direct cognate pairs link Slavic with Latvian, and Latvian merged the *-*ā-*, *-*ā-* pattern with that of *-*ā-*, *-*ājo-*.

Ultimately, derivatives in *-ā-ti*, *-ā-je-* replaced the pattern in *-ā-ti*, *-je-*. The length alternations, as we noted, spread to all four short vowels. After the Common Slavic changes in vowel quality, these are realized as the following alternations:

short > long	
ĩ > i	na-bīrati > na-birati
ũ > y	po-sūlati > po-sylati
e > ě	u-gnesti (ugnet●) > u-gnětati
o > a	pro-bosti (-bod●) > probadati

There are clear traces of of pattern of *e > i*, which, recalls the pattern *e > ī* found in Lithuanian:

pro-greti (-greb●) > progribati/progrėbati
na-rešti (-rek●) > naricati/narėkati

One key to the difference in development between Baltic and Slavic is in the fate of the *-ī-* stem verbs. In Slavic this was a mixed bag of iteratives, factitives, and denominal verbs. This is probably the original state of affairs. Greek, Sanskrit, and Germanic have related classes which combine iteratives, factitives and denominals (Szemerényi 1970: 254-5). Since deverbal nouns often had o-grade vocalism, it was easy to mix the patterns. A new verb derived from a deverbal noun looked like a deverbal formation, and vice versa. This was particularly true of the factitives, since the denominal i-stems were primarily transitive. Baltic solved this problem by shifting the factitives and denominals out of this class. They acquired the suffix *-in-* (Latvian *-inā-*), which is possibly denominal in origin (Stang 1968:367-74). In Slavic the class remained mixed, although the most numerous group of verbs in this class is the denominals. This made it easy for the distinctively iterative/durative formations with lengthened grade to take over the function of the original o-grade iteratives.

One might also mention the possibility of iconic appropriateness of lengthened grade as a sign of durativity. This may have played a role in the original Balto-Slavic formations, and in their spread in Slavic.

In the motion verbs the original iteratives in o-grade with *-i-* suffix were preserved--perhaps because there was no factitive possible with motion verbs, perhaps because these verbs acquired special functions. Where the original iteratives were preserved, they were used with prefixes to form newly derived imperfectives.

Aside from the motion verbs, the verbs in *-i-* came to be treated as an independent class of verbs which were perfective when prefixed, and which took imperfectives in *-*jā-ti*, pres. *-jā-je-*. The imperfectivization and the lengthening in the imperfective was extended to include denominal verbs (cf. OR *novŭ* 'new' > *obŭnoviti* 'renew' > imperfective *obŭnavljati*.)

Inflectional Ablaut

In primary verbs, one of the surprising aspects of B-S ablaut is the fact that zero grade is much more common in the thematic present than it is in other IE languages. This is discussed in Vaillant (1966, III, 218-9). The distribution of zero-grade is different in Slavic and Baltic. In the earliest historically attested Slavic, there is a fairly coherent system. Assuming the e-grade to be basic, we can characterize the stems with a possibility of zero grade (really an *e ~ i* alternation) as of the shape C(e)RC-, C(e)R-, and CR(e)C-. Here R stands for any sonorant. Two verbs of the shape r(e)C- also show traces of ablaut. This means that stems in long vowels or stems with primary -o- did not ablaut within inflection¹. For Slavic we must add several additional qualifications. Before consonants we cannot differentiate *eN from *iN (original zero grade); both show up as OCS ě. Nor can we differentiate *e and *i before *j, since *e > i* in this environment. Finally, there is a strong tendency for stems with u not to ablaut. Given the isolated position of the *eu ~ u alternation in a system where the basic alternation is *e ~ i*, this is understandable--particularly after *eu > *jou.

In the oldest layer of the vocabulary, where we might speak of forming stems from roots rather than deriving words from other words, we can make generalizations about the appearance of *zero (i) vs e-grade. In general, if we form the aorist/infinitive stem by adding a vocalic affix to an ablauting root, we expect zero-grade before the suffix. In the corresponding present tense without the suffix, we expect e-grade with the thematic conjugations in -e/o- and j-e/o-, but no change of ablaut with presents in -n-e/o- or -ī-. Examples are:

Infinitive	Present
pīsati < *pisātei	piše- < *peisje-
bīrati < biratei < b•rātei	bere-
mīnēti < *minētei	mīni- < *minī
pīxn•ti < *pixnontei	pīxne- < *pixne-

Exceptional lack of e-grade in the present is found in *sūsati*, *sūse-* 'suck', *rūvati*, *rūve-* 'tear', *lūgati*, *lūže* 'lie', *tūkati*, *tūče-* 'weave', *sūlati*, *sūlje-* 'send', *rūzati*, *rūže-* 'neigh', all with root internal *u. A possible true exception is *pīxati*, *pīše-*, *pīxaje-* 'shove, kick', which is not attested in early texts.

Verbs with ablauting stems which take no suffix in the aorist/infinitive stem generally have presents with the thematic suffix -e/o-. These verbs have a pattern with e-grade in the infinitive, supine, and the sigmatic aorist, while *i (ī) occurs in all other forms. In verbs of the shape C(e)RC the zero grade even occurs in the second and third sing. aorist, which is based on the old asigmatic aorist (formally the IE imperfect.). Those with the pattern C(e)R- (all with r), have *e-grade in the second and third singular aorist in OCS. Examples are:

infinitive	čisti (*keit-tei)	cvisti (*kweit-tei)	*mertī (OCS mrēti)
supine	čistū	cvistū	*mertū
s-aorist	čisū	cvisū	*merxū(OCS mrēxū)
pres.	čīte-	cvīte-	mīre-
3 sing aorist	čīte	cvīte	mrě (OCS)/ mīre (OR)
l-participle	čīl-	cvīl-	mīrl- (OR)
pap	čītūš-	cvītūš-	mīrūš-

It is normally assumed that in the 2nd and 3rd sing. aorist OCS *mrě* (*mers, mert) is older than OR *mīre*, which is paired with a clearly young 1st sing *mīroxū*, 1st pl. *mīroxomū*, etc. However, it is easy to argue that PS had a *mīre* paralleling *čīte*, *cvīte*, and that OCS innovated. After metathesis changed *mertī, *merxū* to *mrēti*, *mrēxū*, OCS could have treated the inf./aorist as a vowel-final stem, for which 2nd 3rd sing. *mrě* would be regular (cf. *grēti*, *grēxū*, *grē*).

There are a few traces of e/ī alternations in stem which are not of the optimal shape. RVC- stems do not normally ablaut (vz. *nesti*, *nese-*, *vesti*, *vede-*, *vezti*, *veze-*), but the one (or two) stems with initial r do show traces of zero grade in ī. This is clear for OR *rīče-*, *rīkoxū*, OCS *rešti*, *reče-* 'say'. Russian *rtut'* 'mercury', Cz *rtut'*, P *rtę'c*, can be related to Lith *risti*, *rita* 'roll'. These words are not normally connected to *ret- in OI *rethim*, with o-grade nouns in Latin *rotā* 'wheel', Lith *ratas* 'wheel', but they may well be related. The Lith derivatives with i-diphthongs such as *raityti* 'twist' may be secondary formations like *braidyti* from *bristi*, *breda*. OR *žeči*, *žīg•* has a e/ī alternation between obstruents, which is extremely rare. The defective stem for 'go' has e-grade *ei- in the infinitive *iti*, zero grade with a -d- suffix in present *jīde-*, and *šīd-* as a suppletive stem in participles (R. *šēl*, *šla*, *šedšij*).

Both of the Slavic patterns may have IE pedigrees.

In Skt. the thematic aorist (without an augment) normally had the accent on the vocalic theme, and zero grade of the root (Whitney 306). This can create ablaut and accentual oppositions between the pres./imp. stem and the aorist, e.g. pres. *bódhati* (*béudeti), aorist *budánta*, 'be awake'. This is not a systematic pattern in Skt. According to Whitney (306) a large number of the aorists of this type are formed from roots which have end stress in the present as well. It is more systematic in Gk., where the opposition between pres/imp stem and second aorist stem is often impemented with e-grade in the pres, zero-grade in the second aorist. Examples (Smyth 157-8) are; *leipō* I leave [pres], *elipon* [aorist]; *feugō* 'I flee' [pres], *efugon* [aorist].

Lithuanian has a similar pattern in the C(e)RC stems, with e-grade in the present, zero grade in the infinitive/past tense stem, cf. *likti*, pres. *leika* (*leik-o), past *liko* 'leave', which is cognate with Gk *leipō*.

Lithuanian has this pattern is verbs where Slavic has just the opposite. Examples:

Lith. <i>milžti</i> , <i>melža</i> 'milk', Sln. <i>mlěsti/molsti</i> , <i>molze-</i> 'milk'.
Lith. <i>kirsti</i> , <i>kerta</i> 'hit', OCS <i>črěsti</i> , <i>črīte-</i> 'cut'.
Lith. <i>bristi</i> , <i>breda/brenda</i> 'wade', OR <i>brestī</i> , <i>brīde-</i> 'wade'.
Lith. <i>kirpti</i> , <i>kerpa</i> ', OCS -črēti, -črpe-.

One might attempt to relate the above pattern in Lithuanian and in Greek to the Slavic pattern mentioned before, with e-grade in the present and zero-grade in the aorist/infinitive (*ber•*, *bīrati* 'carry');

piš•, pīšati 'write'). As noted, however, the Slavic zero grade in these forms is always associated with suffixation. It may have its own history.

The unsuffixed stems like *čisti, mrěti* differ in opposing the apparent e-grade in the s-aorist and infinite/supine to zero grade elsewhere. If we assume that the infinitive and supine are formed from the stem of the s-aorist, we have a near parallel to alternations which existed in Skt. when a root which formed a present tense stem with end stress had an s-aorist. Examples are Skt. pres. *muc'ati*, aorist *a-māuk(s)* 'loose', pres. *srjati*, aorist *a-srāk(s)* 'pour out.' The Skt. aorist forms reflect long **ē* in the root. We find overt long vowels in the sigmatic aorists of CVC stems in OCS (*nesti, nēsū, rešti, rēxū, bosti basū*). Since these s-aorists differ from the infinitives (which have short vowels) we might doubt that the vocalism of the infinitive comes from the aorist. We then have the possibility of three vowel grades in these patterns: *ē* in the s-aorist, *e* in the infinitive and supine, zero elsewhere. Slavic forms with diphthongs are ambiguous as to original length of the *e*, since Slavic merges long and short diphthongs. The lack of acute intonation in Slavic (SC *mrīj'eti* indicates **mrěti*) could be taken to indicate a short vowel, but this is not diagnostic. The synchronic aorist in S.C. *mr•jex* also indicates old end stress, rather than acute. Vaillant suggests that the e-grade of the infinitive comes from the supine, which--if it is the parallel descendant of the verbal nouns in *-tum* found in Skt.--had simple e-grade vocalism.

Vaillant assumes that the Lithuanian pattern in the unsuffixed verbs (like *kirsti, kerta*) is older than that of Slavic. He assumes original e-grade in the thematic present, and attributes the development of the innovative zero grade to the fact that Slavic generalized end stress in the present in this category. The e-grade in the supine and *ē* in the s-aorist he assumes to be original.

Without totally rejecting the possibility of the influence of stress, we should note that one cannot propose a sound change that would accomplish this--at least not one that would work outside of this class of verbs. As far as we can tell *berěši* had the same accent as *mīrěši*, and there are plenty of other examples of unstressed *e* which did not go to *ī*. Since the motivation must be at least in part morphological, it may be primarily morphological. The opposition between e-grade in the present with zero-grade in the aorist applies to Greek and Sanskrit stems with thematic aorists, not s-aorists. After the neutralization of length in diphthongs, the Slavic sigmatic aorists of ablautable stems no longer had long *ē*. Synchronically they had e-grade vocalism. The Slavic presents which disagree with Baltic in having zero grade are precisely the class which allowed s-aorists. The zero grade in the present, even if admittedly a Slavic innovation, may have developed in opposition to the vocalism of the aorist. Baltic, which lost or did not have the s-aorist, eliminated the possibility of such an opposition.

The subsequent history of Slavic shows continuous loss of ablaut patterns. Most of the ablaut within a single inflection has been eliminated. The process had actually started in prehistory, but is almost complete. Alternations like *brat', beru; zvat', zovu; umeret', umru* are clearly exceptional in Modern Russian. Verbs like *bljusti, budit', bdet'* are not even exceptional. They are not synchronically related. Aside from morphophonemically predictable vowel-zero alternations, the sole area of productive vowel alternations in the verb is in the formation of imperfectives. Even this has been restricted. The *o > a* alternation remained productive, and was extended to the imperfectives formed with the relatively young suffix *-yva-*, and is applied to the purely East Slavic *-o-* in pleophonic forms from liquid diphthongs (e.g. **gord- > gorodū* 'town' > (derived verb) *zagoroditi* > (imp.) *zagorāživati*). No trace of the *e > ē* alternation survives in Modern Russian, although it survives in Ukrainian as *e > i*. (MR *zagresti (-grebu) > zagrebat'*, U *zahrebsti, zahribati*). The loss in Russian is probably due to the early merger of *e* and *ē* in unstressed position. In modern Russian *o* and *a* merge in unstressed position, and the *o > a* alternation in this position is no longer reflected in the spelling (*obnovit' > obnovlját' /abnavl'át'/*).

One can argue that even where ablaut has been preserved, as in the case of derived imperfectives, it has changed its nature. Morphologically, there are at least two ways of treating ablauting systems. We can treat a system like IE as having a rich set of morphophonological rules which change vocalism, or we can use a system of nonconcatenative morphology like McCarthy (1981) has suggested for Semitic. In the case of the history of Slavic, or specifically Russian, we see a very clear evolution away from a system which might have been described with nonconcatenative morphology into a system which is best described with stems, affixes, and MP rules. The total elimination of vowel alternations rather obviously eliminates the necessity of nonconcatenative morphology. The alternations which formed iteratives were historically based on ablauting root variants, and might at one time have been considered morphologically independent vowel 'morphemes' spelled out in CV skeleta. However, as anyone who has read anything about synchronic imperfectivization knows, in the modern system the form of the imperfective is determined from the shape of the perfective stem--not from the root (cf Levin 1978, Chaper 8). If the perfective stem

is the input to the process, we are unambiguously dealing with a stem-affixing system, with MP rules which change the vowels.

The same is true of deverbial noun formation, which was the last bastion of o-grade ablaut. We can see a clear pattern of evolution in the formation of deverbial nouns which is eliminating abstract o-grade ablaut in favor of derivation by truncation from one of the forms of the verbal stem. Forms like *upěk* (from *upekat'*, *upeč'*), *zatěk* (from *zatekat'*, *zateč'*) have replaced older formations with -o-. *Prizyv*, *zazyv* represent more productive formations than *výzov* from *-zvat'*, *-zyvat'*. forms like *ybirka* (*ubirat'*, *ubrat'*) *obdirka* (*obdirat'*, *obodrat'*) are legitimate competitors for formations like *uborka* and *razdor*. We find absolutely stable derivatives in o-grade only where we have irregular imperfectives with o-grade, as in *unos* (*unosit'*, *unesti*), *uvoz* (*uvozit'* *uvesti*), *uxod* (*uxodit'* *ujti*). For these forms we do not have to propose ablaut in the noun formation itself. The o-grade is already in the verb. Forms like *unos* are synchronically parallel to *prizyv* and *ubirka*--formally derived from the imperfective verb by truncation (truncation plus affixation in the case of *ubirka*).

The process of shifting from an ablauting system to a stem-affixing system started in prehistory, although the older system was fairly clear at the time of the first attested language. This kind of change is always possible. Stem-affix derivation has advantages in transparency over ablauting derivation. Even Lithuanian shows some tendencies to replace ablauting patterns by transparent affixation. Nevertheless, we would like to find some reason for the drastic change in morphological type which took place in Slavic, and for the fact that it started so early, compared to Baltic. The most obvious candidate for the set of changes which initiated this process were the changes which eliminated the diphthongs in Slavic. This rendered incoherent the old ablaut system, which had been most clear in diphthongal stems. We can see the effects in the following table.

IE	Late Common Slavic	OR
-ei-	ī	i
-oi-	ǣ	è
-i-	ĩ	ĩ
-eu-	jū	ju
-ou-	ū	u
-u-	ǔ	ǔ
-nĭ-	ę (ǫ)	æ (u)
-en-	ę	æ
-on-	ǫ	u
-ĭ-	ĩl (ǔl)	ǔl
-el-	-el-	olo
-ol-	-ol-	olo
-r-	řr (ǔr)	řr (ǔr)
-er-	-er-	ere
-or-	-or-	oro

These changes in diphthongs were probably completed only shortly before the appearance of written texts. The historical period has been a long period of adjustment of the system, repairing the damage done by the phonology.

1) We must assume that *zŭvati*, *zove-* 'call' represents an *e/zero alternation, with *e > o before w. In this case at least, however, we have a zero grade of ŭ corresponding to a full grade with is synchronic o.

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