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A HISTORICAL STUDY OF ABLAUT IN COMMON SLAVIC,
OLD CHURCH SLAVONIC, AND RUSSIAN

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

Gary Lynn Harris, B.A., M.A.

* * * * *

The Ohio State University
1971

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PREFACE

The goal of this dissertation is to summarize the views of several prominent Indo-European linguists of the nineteenth and twentieth centuries in regard to ablaut and to apply similar views to an investigation of the role ablaut played in Common Slavic, Old Church Slavonic, and Modern Russian.

Prior to undertaking this investigation, it was not known to me to what extent ablaut influenced the choice of roots in inflectional and derivational processes. Furthermore, it was not known in advance how successful the attempt would be to recover this information by means of internal reconstruction. This dissertation is both a record of that investigation and an attempt to organize a coherent and readable introduction to the role of ablaut in Slavic.
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iii
TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>PREFACE</td>
<td>ii</td>
</tr>
<tr>
<td>VITA</td>
<td>iii</td>
</tr>
<tr>
<td>LIST OF ABBREVIATIONS</td>
<td>vi</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Chapter</td>
<td></td>
</tr>
<tr>
<td>I. HISTORY OF THE STUDY OF ABLAUT</td>
<td>5</td>
</tr>
<tr>
<td>August Schleicher</td>
<td></td>
</tr>
<tr>
<td>Ferdinand de Saussure</td>
<td></td>
</tr>
<tr>
<td>Karl Brugmann</td>
<td></td>
</tr>
<tr>
<td>Hermann Günert</td>
<td></td>
</tr>
<tr>
<td>Jerzy Kurylowicz</td>
<td></td>
</tr>
<tr>
<td>II. ABLAUT IN PREHISTORIC SLAVIC</td>
<td>59</td>
</tr>
<tr>
<td>Sound Changes in Proto-Slavic</td>
<td></td>
</tr>
<tr>
<td>Vowel Inventory and Ablaut Series</td>
<td></td>
</tr>
<tr>
<td>Alternation e → o</td>
<td></td>
</tr>
<tr>
<td>Alternation vowel → zero</td>
<td></td>
</tr>
<tr>
<td>Alternation full → lengthened</td>
<td></td>
</tr>
<tr>
<td>Derivational Ablaut</td>
<td></td>
</tr>
<tr>
<td>III. ABLAUT IN OLD CHURCH SLAVONIC</td>
<td>101</td>
</tr>
<tr>
<td>Vocalic Sound Changes</td>
<td></td>
</tr>
<tr>
<td>Diachronic View of Ablaut in Old Church Slavonic</td>
<td></td>
</tr>
<tr>
<td>Synchronic View of Ablaut in Old Church Slavonic</td>
<td></td>
</tr>
<tr>
<td>IV. ABLAUT IN MODERN RUSSIAN</td>
<td>125</td>
</tr>
<tr>
<td>Vocalic Sound Changes</td>
<td></td>
</tr>
<tr>
<td>Alternation e → o</td>
<td></td>
</tr>
</tbody>
</table>

iv
Alternation vowel : zero
Alternation full : long
Alternation full : lengthened
Mixed Alternations
Synchronic View of Ablaut in Modern Russian

V. SUMMARY AND CONCLUSIONS ............ 178
REFERENCES ............................. 189
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Language Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>Common Slavic</td>
</tr>
<tr>
<td>ECS</td>
<td>Early Common Slavic</td>
</tr>
<tr>
<td>IE</td>
<td>Indo-European</td>
</tr>
<tr>
<td>Germ.</td>
<td>Germanic</td>
</tr>
<tr>
<td>Gk.</td>
<td>Greek</td>
</tr>
<tr>
<td>Lat.</td>
<td>Latin</td>
</tr>
<tr>
<td>Lith.</td>
<td>Lithuanian</td>
</tr>
<tr>
<td>LCS</td>
<td>Late Common Slavic</td>
</tr>
<tr>
<td>MP</td>
<td>Modern Polish</td>
</tr>
<tr>
<td>MR</td>
<td>Modern Russian</td>
</tr>
<tr>
<td>MSC</td>
<td>Modern Serbo-Croatian</td>
</tr>
<tr>
<td>OCS</td>
<td>Old Church Slavonic</td>
</tr>
<tr>
<td>OHG</td>
<td>Old High German</td>
</tr>
<tr>
<td>OP</td>
<td>Old Polish</td>
</tr>
<tr>
<td>OR</td>
<td>Old Russian</td>
</tr>
<tr>
<td>Skt.</td>
<td>Sanskrit</td>
</tr>
</tbody>
</table>
INTRODUCTION

The purpose of this dissertation is to trace the study and development of ablaut from its beginnings during the Indo-European period to its reflection in modern Slavic, particularly Russian. The term "ablaut" was introduced by the Germanist, Jakob Grimm, to describe a phenomenon regularly seen in the Germanic languages. The English term "vowel gradation" and the French term "apophonie" are equivalent to "ablaut"; however, as the German term is the more widely used, it will be used here.

Ablaut describes the phenomenon of regular vowel change within a group of semantically related roots. In Indo-European, it was found in both inflection and derivation. The alternation between the vowels of two or more roots which are semantically related occurred when one grade of vowel was chosen to represent the root in a particular grammatical category or in a particular function. Whether the appearance of a particular vowel was phonologically or morphologically conditioned was a source of debate among nineteenth-century scholars.
In some cases, the root vowel alternation was phonemic and produced minimal pairs, as for example in the English verbs *sing, sang, sung*. In derivation, the presence of additional elements, for example affixes, may provide information redundant to the structure of the formation. Conversely, one could say the vowel alternation under such circumstances has become nonphonemic.

Nevertheless, the vowel which appears in the derivative may be "characteristic" for the particular formation. For example, the vowel *a* in the German word, *Vorgang*, is characteristic for this type of deverbal noun. In all probability, a native speaker of German would correctly generate this noun from the infinitive, *vorgehen*, even if he had not previously known it. That he might generate *Vorging* is conceivable, but surely *Vorgeng* or *Vorgong* is not. This can be explained by the participation of strong German verbs in ablaut series. The root in question belongs to a particular set of vowel correspondences. Which member of the set is selected is determined by verbal tense, part of speech, etc.

These vocalic alternations can cause problems for the speaker. For example, on the basis of the series *i : a : u* in English *sing, sang, sung*, one
might erroneously generate bring, brang, brung. Exceptions to the series must be learned individually as separate lexical items.

The use of ablaut for morphological purposes originated during the period of Indo-European unity, and are reflected in all the daughter languages, although more extensively in some than in others. The aim of the present research is to review the role of ablaut in Indo-European as viewed through the writings of Indo-Europeanists and to discover what effect such ablaut relationships have had on the Slavic languages, especially Common Slavic, Old Church Slavonic, Old Russian, and Modern Standard Russian.

Chapter one will be devoted to the study of ablaut in Indo-European. Various scholars who have written on the subject will be considered in the chronological order of their publications. Subsequent chapters will be devoted to the reflections of these relationships in Slavic.

To this end, a few assumptions and definitions are in order. Indo-European is to be considered a monolithic unity, in which there are no dialects. In Bloomfield's terminology (1966:312) pre-Indo-European would initiate the period of Indo-European unity which would end with the Primitive Indo-European
period. Thus, "pre-" denotes a period of time during which a parent language is developing. The term "primitive" refers to the last stage of a parent language before it branches into daughter languages. For example, according to Bloomfield, pre-Germanic refers to the common Germanic language as it developed over a period of time and which concluded with Primitive Germanic just before the daughter languages, pre-West Germanic and pre-East Germanic began their separate branches.

It is here proposed to eliminate the term "primitive" for designating the end of a period of common development in favor of a term to designate the very beginning of a common period of development, this term being the prefix "proto-". Thus, Proto-Slavic refers to a timeless synchronic "slice" of Slavic at the hypothetically exact moment Slavic broke away from Indo-European. Proto-Slavic initiates the period of Common Slavic; this term being exactly equivalent to the period Bloomfield would term pre-Slavic.
1. HISTORY OF THE STUDY OF ABLAUT

The pre-Saussurean Indo-Europeanists attempted to explain the vowels ø and o in the daughter languages by means of "weakening" the original Indo-European *a which underlay both. This weakening occurred independently in the individual daughter languages. Sanskrit, which often showed a for a, e, and o in cognates of the western daughter languages, was believed to reflect the original vocalism of Indo-European.

August Schleicher was one of the first linguists to deal systematically with Indo-European. In his Compendium der vergleichenden Grammatik der indogermanischen Sprachen (1876:11-14), he shows the Indo-European vowel system to consist of three basic vowels, each of which constitutes the kernel of a series which he terms the "a-reihe, i-reihe, u-reihe". Each series possesses two gradations (Steigerung). The first gradation is formed by compounding the vowel a with each of the three basic vowels resulting in aa, ai, and au. The second gradation is formed by compounding an additional initial a to the first gradation forms resulting in āa, āi, and āu.
The vowel *a was the most frequently occurring vowel in the "Ursprache". Both *u and *i were different from *a in that *u and *i could function as consonants in certain environments. The relative frequency of occurrence of *a was believed to have been twice that of the other two vowels.

Each vowel could move within its own series. "This happens for the purpose of expressing the relationship of the root." The vowels of the stem and derivational suffixes are all capable of gradation, "because they have come from independent roots." The base form of the root was always with the basic vowel. Gradation never occurred before two following consonants within the same stem, and the vowels *u and *i never occurred in roots which were closed by two consonants.

The following are examples given by Schleicher to illustrate the three series:

*vak-mi 'I speak', *vak 'speech', *va-vāk-ma 'I said' (perf.), *vāk-s 'voice'
*bhar-āmi *ba-bhar-mi 'I carry', *bhar-ta-s 'carried', *ba-bhār-ta 'he carried' (perf.), *bhār-a-s 'load', *bhār-aja-ti 'he causes to carry'
*da-ta-s *da-tā 'data', *da-dā-mi 'I give', *dha-ta-s *dha-tā 'given' (past pass. part. nom. sg. masc. and fem.), *da-dhā-mi 'I set'
*i-masi 'we go', *ai-mi 'I go'
In spite of the fact that Schleicher uses the term "Steigerung" and shows the diphthongs aa, ai, and au to have been formed by an additive process, i.e. a + a = aa etc., his footnotes indicate that only the second "Steigerung" was not extant in the early period of Indo-European.

Furthermore, Schleicher is not sure that the second "Steigerung" occurred during Indo-European. It is found in the Asiatic, South European, and North European divisions of Indo-European and with "great probability" has its origin in Indo-European, "although the individual languages often do not agree in the use of it."
The first and second gradations of \(a\), resulting in \(aa\) and \(\ddot{a}a\) respectively, perhaps fell together with \(\ddot{a}\) at an earlier period in Indo-European. However, both must have retained some difference, "as the \(\ddot{a}\) from the first and second gradations were distinguished in Gothic and Greek." (1876:12)

All other vowels are developed in the individual languages. The Slavic branch of Indo-European is represented by Old Church Slavonic ("altbulgarisch"). Schleicher gives the following table (1876:156-57):

<table>
<thead>
<tr>
<th>Weak</th>
<th>Basic Vowel</th>
<th>1st. Gradation</th>
<th>2nd. Gradation</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\ddot{i}, \ddot{u})</td>
<td>(i, u, e, o, a)</td>
<td>(A-Sei-Series)</td>
<td>(o, \dot{e}, \dot{o}, j) (prevocalic)</td>
</tr>
<tr>
<td>(\ddot{i})</td>
<td>(i)</td>
<td>(I-Series)</td>
<td>(\dot{e}, oj) (prevocalic)</td>
</tr>
<tr>
<td>(\ddot{u})</td>
<td>(y)</td>
<td>(U-Series)</td>
<td>(u, o) (prevocalic)</td>
</tr>
</tbody>
</table>

It is not at all clear how the Indo-European voca­calic series resulted in the Slavic series above. By some means, both Slavic \(e\) and \(o\) resulted from Indo-European \(a\). Note that a short \(\ddot{i}\) and \(\ddot{u}\) somehow relate to the Indo-European \(a\)-series. The first gradation of the \(a\)-series can result in Slavic \(o\), although one does not expect \(o\) if the first gradation of \(a\) is equivalent to \(a + a > \ddot{a}\). The \(\ddot{e}\) of the first gradation of the \(a\)-series must be interpreted as resulting from Slavic \(e + e > \ddot{e}\).
Das urspr. a wird zu a, e, o gespalten, wie im graecoitalokelitischen; urspr. u wird wie im griech. zu y (û); o hat, wie im griech. und lat., doppelte function es ist = urspr. a und = urspr. a (dem a gegenüber); û erscheint ebenfalls als steigerung von urspr. a, besonders aber als denung von e (= urspr. a), es ist also auch û = urspr. a und zwar ist dann o erste und a zweite steigerung.

Hier, wie in den nördlichen europäischen sprachen überhaupt, findet sich nicht selten ein überschlagen der a-reihe in die i-reihe. (1876:117)

Following are examples brought by Schleicher, in his orthography, to show the various gradations (1876: 118-124):

<table>
<thead>
<tr>
<th>A-Series</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Weak. IE a &gt; OCS i, u</td>
<td></td>
</tr>
<tr>
<td>OCS lig-ûkû 'light'</td>
<td></td>
</tr>
<tr>
<td>Skt. lagh-us</td>
<td></td>
</tr>
<tr>
<td>Gk. e-lax-us</td>
<td></td>
</tr>
<tr>
<td>OHG lih-t</td>
<td></td>
</tr>
<tr>
<td>IE root *lagh-</td>
<td></td>
</tr>
<tr>
<td>OCS ric-i 'speak!'</td>
<td></td>
</tr>
<tr>
<td>IE root *rak-</td>
<td></td>
</tr>
<tr>
<td>OCS bir-ati 'to take'</td>
<td></td>
</tr>
<tr>
<td>Skt. bhär-âmi 'I take'</td>
<td></td>
</tr>
<tr>
<td>IE root *bhar-</td>
<td></td>
</tr>
<tr>
<td>OCS pút-ica 'bird'</td>
<td></td>
</tr>
<tr>
<td>Gk. pet-o mai</td>
<td></td>
</tr>
<tr>
<td>IE root *pat-</td>
<td></td>
</tr>
<tr>
<td>OCS vlûkû 'wolf'¹</td>
<td></td>
</tr>
<tr>
<td>Skt. vṛkas</td>
<td></td>
</tr>
<tr>
<td>IE root *vark-</td>
<td></td>
</tr>
<tr>
<td>Basic Vowel. IE a &gt; OCS e</td>
<td></td>
</tr>
<tr>
<td>OCS vret-eno 'spindle'</td>
<td></td>
</tr>
<tr>
<td>IE root *vrat-aman,</td>
<td></td>
</tr>
<tr>
<td>*vart-aman</td>
<td></td>
</tr>
</tbody>
</table>

¹Schleicher states that IE *a + *r changed to *a + *l when followed by a consonant in OCS. He does not explain how *al becomes OCS lû.
<table>
<thead>
<tr>
<th>IE a &gt; OCS o</th>
<th>OCS vez-ʌ 'I carry'</th>
<th>Skt. vāh-Śam</th>
<th>Lat. veh-o</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCS med-ʌ 'honey'</td>
<td>Skt. mádh-u</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**IE a > OCS ɐ > ė**

<table>
<thead>
<tr>
<th>OCS dom-ʌ 'house'</th>
<th>Skt. damā-s, damā-m</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCS og-ni 'fire'</td>
<td>Skt. ag-ni-s</td>
</tr>
<tr>
<td>Lith. ug-ni-s</td>
<td>Lat. ig-ni-s</td>
</tr>
<tr>
<td>OCS az-ʌ 'I'</td>
<td>Lith. āž</td>
</tr>
<tr>
<td>Lith. ah-ām</td>
<td>Gk. eg-Ū</td>
</tr>
<tr>
<td>IE root *agh-am</td>
<td></td>
</tr>
</tbody>
</table>

**IE a > OCS ə > ė**

<table>
<thead>
<tr>
<th>OCS nēs-ʌ 'I carried'</th>
<th>IE root *a-nak-sam</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCS rēch-ʌ 'I said'</td>
<td>IE root *a-rak-sam</td>
</tr>
<tr>
<td>OCS sed-ēti 'to sit'</td>
<td>IE root *sad-</td>
</tr>
<tr>
<td>OCS ē-mi 'I eat'</td>
<td>Skt. ād-mi</td>
</tr>
<tr>
<td>IE root *ad-</td>
<td></td>
</tr>
</tbody>
</table>

1st. Gradation. **IE ā > OCS ə**

<table>
<thead>
<tr>
<th>OCS voz-iti 'to transport'</th>
<th>Skt. vāh-a-s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gk. fōx-o-s</td>
<td></td>
</tr>
<tr>
<td>OCS tok-ʌ 'river'</td>
<td>Lith. tāk-as 'path'</td>
</tr>
<tr>
<td>IE root *tāk-a-s</td>
<td></td>
</tr>
</tbody>
</table>

**IE ā > OCS ē**

<table>
<thead>
<tr>
<th>OCS vē-jati 'to blow'</th>
<th>OCS vē-trū 'wind'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lith. vē-ja-s</td>
<td>Skt. vā-ti</td>
</tr>
<tr>
<td>IE root *vā-</td>
<td></td>
</tr>
<tr>
<td>OCS mrē-ti 'to die'</td>
<td>IE root *mār-</td>
</tr>
</tbody>
</table>
2nd. Gradation. IE ā > OCS a
OCS is-tak-ati 'to pour'
is-tač-ati 'to pour'
IE root *tāk-
OCS bratrū 'brother'
Skt. bhrā-tar-

I-Series

Weak. IE i > OCS i
OCS cvisti 'to bloom'
Goth. hveit-s
Skt. čvēt-as
Lith. szvit

Basic Vowel. IE i > OCS i
OCS vid-ēti 'to see'
Lat. vid-ēre
Skt. root vid-
Gk. fid

1st. Gradation. IE ai > OCS ē
OCS cvēt-ū 'flower'
IE root *kvai-

IE ai > OCS oj
OCS poj-a 'I sing'
IE root *paj-āmi <*pi-

2nd. Gradation. IE ai > OCS aj
OCS na-poi-ti 'to give a drink'
*na-poj-iti
IE root *pai-<*pi-

U-Series

Weak. IE u > OCS ŭ
OCS būd-ēti 'to wake'
Skt. budh-

Basic Vowel. IE u > OCS y
OCS by-ti 'to be'
Lith. bū-ти
IE root *bhu-

1st. Gradation. IE au > OCS ŭ
OCS bud-iti 'he wakes'
Skt. bodhājati
IE root *baudh-

²No explanation is given for OCS oj instead of aj.
12

IE au > OCS ov OCS plov-ə 'I sail'
Gk. plef-ō
Lat. plov-o

2nd. Gradation. IE əu > OCS əv OCS plav-ati 'to sail'

From a contemporary standpoint, many of the correspondences make little sense. It is apparent from the examples that Schleicher believed that Indo-European and Sanskrit were very close in the similarity of their vocalic systems. Often root forms of Sanskrit and Indo-European are identical. This assumption has resulted in a number of errors in listing the Slavic (OCS) correspondences, especially in his a-series.

No Indo-European correspondent is listed for the Slavic "weak" forms. It was his belief, apparently, that the vowel reduction visible in Old Church Slavonic was not due to any inherited feature. Note that no schwa is posited for the vocalic system of Indo-European. Also note that the only vowel which possessed the possibility of having length was ə. Although lengthening was not listed in the table, this term was used in his description of Old Church Slavonic vowels and pertained to a process of lengthening which occurred in the daughter language; for example, when Indo-European *a became Old Church Slavonic ě in něs-ũ mentioned in the table above.

Probably the most serious mistake was the assignment of all three Slavic vowels, ə, q, and a as having
originated from Indo-European *a. Note that the first gradation, which is based on Indo-European long *ā is shown as having the Slavic reflex o. The existence of a "laryngeal" consonant is accepted, but is not applied to any of the reconstructions:

Der momentane consonant, welcher der aussprache eines an lautenden vocals voraus geht, der so ge­nante spiritus lenis, das aleph oder hamza der Semiten, welcher durch plötzliche öfnung der stim­bänder gebildet wird, wäre eigentlich hier und bei den anderen sprachen in der tabelle mit auf zu führen und durch ein besonderes zeichen (etwa nach vorgang der Griechen) zu geben. Es ist ein im Kelkopfe selbst gebildeter consonantischer laut und müste in der tabelle deshalb eine classe laryngaler laute bei gefügt werden (zu denen auch h gehört ...). Doch glaubte ich der merzal der indogermanischen schreibungen mich an schliessen und diesen laut unbezeichnet lassen zu dürfen.

(1876:11)

Other than to show the origin of the long vowel *ā and the origin of the diphthongs *ai, *ēi, *au and *ēu in Indo-European, Schleicher made no attempt to ex­plain the genesis of the vowel gradations in Indo­European. The implication is made that the gradations are meaningful only after the break-up of Indo-European unity.

In 1879 Ferdinand de Saussure published his Mémoire sur le système primitif des voyelles dans les langues indo-européennes. Applying the method of in­ternal reconstruction to Indo-European, he proposed that long vowels existed alongside short vowels in
Indo-European before the branching into daughter languages. The object of Mémoire was to propose a different schema of the Indo-European vowel system. Saussure believed that previous Indo-European linguists were in error when they advocated a vowel system containing only the vowels *a, *i, and *u.

A belief in such a three vowel system required an explanation of the presence of the additional vowels *o and *e in the daughter languages of northern Europe and southern Europe. The picture was further clouded by the fact that there seemed to be no direct correspondence between these vowels in the southern and northern European languages. Thus, Greek would often have *e where Germanic would have *a.

Saussure (1879) credits Georg Curtius for the hypothesis that *o appeared in the same place in all the European languages and that it could not have developed independently in each of them. The model presented by Curtius was:

1. Early Indo-European possessed the vowels *a, *i, and *u.

2. Later Indo-European split *a under unknown conditions to *a and *e.

3. The remaining *a's in the post Indo-European period sometimes split to *a and *e.
Saussure points out that the split of post Indo-European *a to *a and *o could not have occurred later than the common Greco-Italic period, as both Greek and Latin agree in the appearance of o.

In sum, one sees that for the languages of the West, the different authors, whatever their point of view, operate with three entities: g, a, and o of the European languages. It will be our task to clarify the fact that there are really four different units, not three; that the languages of the North confused two fundamentally distinct phonemes still distinguished in southern Europe: a, a simple vowel, opposed to o; and g, a reinforced vowel, which is merely a in its higher form of expression. The dispute between those who favor the split (originally a partially weakened to o) and those who favor a twofold original a (a1, a2 becoming o and a)—this dispute, it is necessary to state, gets us nowhere, because by the a of the languages of Europe is understood an aggregate which has no organic unity.

These four kinds of a which we are going to try to find at the basis of the European vocalism we will pursue further still and arrive at the conclusion that they even belonged to the mother language from which the languages of the East and West arose (1967:222).

Thus, Saussure talks about four different kinds of *a existing in the mother language, or Indo-European. The first three are clear. Indo-European possessed *a, *a₁, and *a₂ which were his designations for Indo-European *a, *a, and *o. The fourth *a is more complex. This *a which he designated by the capital A is not a vowel at all, but a laryngeal. Its function can be understood only within the framework of Saussure's theory of the Indo-European root.
In the mother language, liquids and nasals existed not only as consonants but also in the state of sonants, that is to say they could form a syllable nucleus and carry the word stress. "Everything leads one to believe that the sonant liquids never arose except through weakening, because of which the a which preceded the liquid was expelled; but this does not hinder our placing them ... on the very same plane with i and u ...." (1967: 222)

It seems clear that for Saussure roots containing syllabic i and u were weakened from diphthongs ending in non-syllabic *i and *u. The i and u of these roots as well as the syllabic liquids and nasals of roots were termed "sonant coefficients" by Saussure.

The fourth Saussurean *A is in fact such a sonant coefficient, which, if found in the zero grade due to the expulsion of a preceding full vowel, resulted in a in the daughter languages of southern and northern Europe. The a from Indo-European *A was found to never alternate with e, whereas the a in the languages of the North which resulted from Indo-European o (i.e. *a₂) did participate in such an alternation.

Thus Saussure was primarily responsible for 1) establishing the Early Indo-European vocalic inventory as containing three vowels, *a, *e, and *o, and 2) for formu-
lating the idea of what later was to become known as the "zero grade." He further suggests that *ə was the root vowel of all roots and that under certain unknown conditions *ə was replaced by *o. (1967:224)

In addition to the laryngeal *A mentioned above, Saussure believed in the existence of a second laryngeal *0. Neither could constitute the vocalic element of a root unless the root was in the "reduced state." If the vocalic element followed by *A or *0 did not drop out, a contraction occurred as follows:

\[
\begin{align*}
a_1A & \text{ contracts to } \bar{A}_1 \\
a_10 & \text{ contracts to } \bar{0}_1 \\
a_2A & \text{ contracts to } \bar{A}_2 \\
a_20 & \text{ contracts to } \bar{0}_2
\end{align*}
\]

What is not clear is the value of \(\bar{A}_1, \bar{A}_2, \bar{0}_1, \text{ and } \bar{0}_2\). In view of the later use of the laryngeal designations \(H_1, H_2, \text{ and } H_3\) to account for vocalic length (Shevelov, 1965:28-30), it is possible that Saussure's thinking was in this direction.

Also attributable to Saussure is the theory of four different types of Indo-European roots:

1) Monosyllabic light base - contains a short vowel, e.g. *dhe- or *es-

2) Monosyllabic heavy base - contains a long vowel, e.g. *dhe-
3) Disyllabic light base - contains a short vowel in both syllables, e.g. *pela-

4) Disyllabic heavy base - contains a short vowel in the first syllable and a long vowel in the second syllable, e.g. *pelâ-

The syllable may contain a diphthong composed of a full vowel plus a sonant coefficient or a full vowel alone, e.g. *kei-, *ki-, *bher-, *bhr-, *men-, *mn-, *deik-, *dik-, *bheugh-, *derk-, *drk-, *bhendh-, *bhnrdh-, *bhndh-, or with no vowel at all, e.g. *pt-, *sk-, *zd-.

As can be seen from the examples, the root may be open or closed with either a sonant coefficient or consonant or both simultaneously. Furthermore, sonants may take on the properties of full vowels. The laryngeals can follow other sonant coefficients, e.g. *peul-, which constitutes a closed base in the same manner as *bheudh-.

In 1886, the first volume of Karl Brugmann’s Grundriss der vergleichenden Grammatik der indogermanischen Sprachen was published. Just ten years after the appearance of Schleicher’s Compendium, it brought a great change in the idea of the vocalic inventory of Indo-European.

By using the comparative method between the eight branches of Indo-European daughter languages, Brugmann posited the following Indo-European vowels: (1886:20)
Brugmann was one of the first linguists to mold the vocalic alternations of Indo-European into any coherent system. He defines ablaut:


As examples of an ablaut series, he gives:

*beheidh- : *bhoidh- : *bhidh-
*behendh- : *bhondh- : *bhndh-

Brugmann differentiates six ablaut series. They all have a grade ("Stufe") in which the vowel has completely disappeared, indicated below as zero:

1. e-series: zero, e, o, ē, ō
2. ē-series: zero, ē, ē, ō
3. ā-series: zero, ā, ā, ō
4. ō-series: zero, ō, ō
5. a-series: zero, a, (o?), ā, ō
6. o-series: zero, o, ō
Referring to Hübschmann’s *Das Indogermanische Vocalsystem* of 1885, Brugmann states that many attempts have been made to systematize the various series morphologically. For example, the root *do-* appearing with *o* in the past tense form *∅-dø-m 'I gave' and the missing vowel in the past participle *d-tø-s 'given', or *-na- occurring in the singular present stem *kr-na-mi 'I break' in contrast to *-n- in the 3rd. pl. *kr-n-nti.

Morphologically, the series do not have as many members. In the first three series listed above, one finds the following alternations:

<table>
<thead>
<tr>
<th>Series</th>
<th>Zero</th>
<th>(e)</th>
<th>e</th>
<th>o</th>
</tr>
</thead>
<tbody>
<tr>
<td>e-series</td>
<td>zero</td>
<td>(e)</td>
<td>e</td>
<td>o</td>
</tr>
<tr>
<td>ë-series</td>
<td>zero</td>
<td>ë</td>
<td>ë</td>
<td>ë</td>
</tr>
<tr>
<td>ā-series</td>
<td>zero</td>
<td>ā</td>
<td>ō</td>
<td>ō</td>
</tr>
</tbody>
</table>

When speaking of morphological alternations, the term "Tiefstufe" refers to both zero and schwa, the term "Mittelstufe" to the basic grade, and the term "Hochstufe" to the vowel o both long and short.

Brugmann states that research in the area of morphological ablaut had not succeeded in establishing a comprehensive system of alternations, and that he doubts that it ever will be possible, as several layers of formations ("Bildungsschichten") overlapped. In an earlier system, many of the alternations may have resulted from form-transfer ("Formübertragung") before the newer ablaut-causing factor or factors came into
existence, and that a new sound law bringing forth new differences did not operate in the same manner as the earlier one or ones. "In diesem Fall kann von vorherein gar nicht erwartet werden, das Überall Parallelen zu gewinnen seien." (Brugmann, 1886:249)

The Tiefstufe possesses the most clarity, as it occurs in each series and is clearly represented by two members in most series. It is based on vowel reduction which was caused by the main stress occurring on the following syllable. The relationship between tone and ablaut is best represented by Sanskrit, as Sanskrit best preserves the Indo-European accentuation.

The low grades contrast with the high grades ("Hochstufen"), which consist of all the remaining phases of each series. One does not know whether the same form of the high grade always came into being under the same conditions.

Using the suffix *-ter- as an example, the schema of the e-series is:

<table>
<thead>
<tr>
<th>unstressed</th>
<th>pretonic</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>(e)</td>
<td>õ</td>
<td>0</td>
<td>õ</td>
<td>õ</td>
</tr>
<tr>
<td>-tr</td>
<td>-trr³</td>
<td>-t̥r</td>
<td>-tor</td>
<td>-t̥r</td>
<td>-t̥r</td>
</tr>
</tbody>
</table>

³The difference between *-tr² and *-trr posited by Brugmann is not clear.
Using the root *ped- as an example, the schema of the *e-series is:

unstressed pretonic 1 2 3 4
ped- ped- ped- pod- pőd-

Following is an example of the use of the different grades in some of the Indo-European daughter languages:

Low Grades  -tr- Gk. pa-tr-ós (gen. sg.)
Skt. pi-tr-ā (instr. sg.)
Goth. fā-dru-m (gen. sg.)

-ṭr- Skt. sthā-tur (nom./acc.)

High Grades  -ter- Gk. pa-tēr-a (acc. sg.)
Skt. pi-tār-am (acc. sg.)
Lith. dūk-ter-ī
OCS dš-ter-e (gen. sg.)

-tor- Gk. frā-tor-a (acc. sg.)
Skt. svās-ār-am
Goth. brō-tar

-tēr- Gk. pa-tār (nom. sg.)
Lat. pa-ter
Lith. duktē
OCS dštī

-tōr- Gk. frā-tōr (nom. sg.)
Skt. bhrā-tā
Lat. dā-tōr
Lith. sesū

Brugmann mentions that the alternation between e and o were possibly determined by the position of the ictus in the word. The o and ē occurred when the ictus occurred in the immediately preceding syllable.

While the low grade had only two forms in formations ending in a consonant ("Geräuschlaut"), four
possibilities existed for those ending in a sonant. This is due to both the non-stressed and pretonic positions each having two possibilities. For example, the root *bhеu-:

*bhе- prevocalic stressless
*bhеu- prevocalic pretonic
*bhе- preconsonantal stressless
*bhу- preconsonantal pretonic

For example, *bhе- in Skt. а-bхв-а-, OCS бе from *бу-е; *bhе- in Gk. фу-си-s, Lat. фу-туру-s; *bhеu- in Skt. gen. sg. бхув-ас, Gk. ефта; *bhе- in Skt. бху-ти, Gk. фу-ма.

The parallelism between -i-, -u-, -n-, -r- on one hand and -ii-, -uu-, -nn-, and -rr- on the other is reflected in forms such as Skt. бху-с 'world', gen. sg. бхув-ас, and in Skt. пу r *пųрs IE * pll-s, gen. sg. pur-ас IE * pll-еs or * pll-ос.

4 Both of the "low grade" reflexes of *-еu- in pretonic position, *bhеu- prevocally and *bhе- preconsonantally, look very much like the zero grade and lengthened zero grade respectively in Slavic.

5 From the example of IE * pll-es in the same paragraph, it appears that the syllabic liquids in presonant position developed into regular full vowels. Thus, * pll-es became pur-ас in Skt. Although the phonology of syllabic sonant followed by a sonant of the same order seems to be acoustically unsound, it does provide a very symmetrical system with reference to у > uu > uv and i > ii > ii when followed by a vowel.
Less weakening is found in type \( b \) of the low grade. The lesser weakening was due to its pretonic position. The type \( a \) occurred when the ictus moved ("der Nebenton zur Tonl"osigkeit herabsank") due to affixation. This theory advocates the prior existence of type \( b \) to type \( a \).

The schema for the \( \hat{e} \)-series:

<table>
<thead>
<tr>
<th>Low Grade</th>
<th>High Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>stressless</td>
<td>pretonic</td>
</tr>
<tr>
<td>( \emptyset )</td>
<td>( \varepsilon )</td>
</tr>
<tr>
<td>( *\text{dh}- *\text{dh}^{-} )</td>
<td>( *\text{d}h\text{-} *\text{d}h\text{-} )</td>
</tr>
</tbody>
</table>

Here the basic grade is found in \( *\text{dh}^{-} \). The low grade type \( a \) (i.e., stressless) is seen in Sanskrit da-dh-más 'we put, set' and in OCS dežda < \( *\text{de-d}^{-}\text{-ia} \). The low grade type \( b \) (i.e., pretonic) is seen in the Skt. participle -dhi-ta-s and in the 3rd. sg. aorist á-dhi-ta, in Lat. crēdi-tu-s < \( *\text{crēda-tu-s} \). The high grade type 1 in Gk. tí-thā-mi, Skt. á-dhā-mi 'seat, place', OCS dē-ti 'to put' and aorist dē-xa. The high grade type 2 in Gk. thō-mō-s 'stack, rick', Goth. dōms 'judgment'.

The schema for the \( \hat{a} \)-series:

<table>
<thead>
<tr>
<th>Low Grade</th>
<th>High Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>stressless</td>
<td>pretonic</td>
</tr>
<tr>
<td>( \emptyset )</td>
<td>( \ddot{a} )</td>
</tr>
</tbody>
</table>

Here the basic grade contains the long vowel \( \ddot{a} \). The low grade type \( a \) is evidenced in Skt. as the reflex of
of the basic root *sta- 'stand' in the active participle ta-sth-ūṣ. Low grade type b by Skt. 3rd. sg. aorist ā-sthi-ta, Gk. sta-tō-g, Lat. status, Lith. sta-taũ, OCS stoja. High grade type 1 by Skt. aorist ā-sthā-m, Gk. ī-stā-mi, Lat. stā-men, Goth. stō-ma 'foundation', Lith. pa-stō-ju 'come to something', OCS sta-ja 'I stand'. The high grade type 2 is not attested with certainty, but may be represented in Skt. perfect 3rd. sg. ta-sthāũ.

The schema for the ā-series:

<table>
<thead>
<tr>
<th>Low Grade</th>
<th>High Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>stressless</td>
<td>pretonic</td>
</tr>
</tbody>
</table>

For example, the basic grade ā in the root *dō- 'give'. The low grade type a is attested by Skt. 1st. pl. present da-d-mās and 3rd. pl. perfect da-d-yr, Lith. dū-ste < *dū-đ-te, OCS da-s-te < *dā-d-te and 3rd. pl. da-d-ȝtē. The low grade type b as in Skt. dī-ṭi-ŷ 'possession' and 3rd. sg. aorist ā-di-ta, Gk. dá-nos, do-tō-s, dó-si-s, Lat. da-tu-s, da-tor, da-mus. The high grade is evidenced by Skt. dā-dā-mi, ā-dā-m, Gk. dī-dō-mi, dō-so, Lat. dō-nu-m, gōs, Lith. inf. dū-ti, OCS da-ṭi 'to give', da-rā 'gift'.

The schema for the ā-series:

<table>
<thead>
<tr>
<th>Low Grade</th>
<th>High Grades</th>
</tr>
</thead>
<tbody>
<tr>
<td>stressless</td>
<td>pretonic</td>
</tr>
</tbody>
</table>
For example, the basic grade a in the root *bhag- 'enjoy'. The low grade type a root *bhag is seen in Skt. bhēj-ē (irregular formation). The low grade type b root *bhag is seen in Skt. bhak-tā-m 'part, food', Gk. ἐσθιν 'to eat'. The basic high grade type l is reflected in Skt. bhājāmi 'enjoy', unless this appeared for *bhajāmi in which case it reflects low grade type b. Other examples are bhāga-s 'distributor', Avest. bāra 'God', OCS bogt. The high grade type 2 is seen in Skt. bhag-ā-s 'share, portion'.

There is an unmistakable parallelism between the ḍ-series and the ō-series. One notes this especially in the nominal suffixes -ā- : -o- : -q- : -s-. For example, the acc. sg. *ekua-m : voc. sg. *ekua and *ekuo-m : *ekue. Brugmann states that it is questionable how the ō in this ablaut series, which occurs more frequently than the other members, is to be judged, for example Gk. κόσμος 'jewels' contrasted to κέκασται 'is excellent'.

The schema for the ḍ-series:

<table>
<thead>
<tr>
<th>Low Grade</th>
<th>High Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>stressless</td>
<td>1</td>
</tr>
<tr>
<td>pretonic</td>
<td>2</td>
</tr>
<tr>
<td>ō</td>
<td>0</td>
</tr>
<tr>
<td>ē</td>
<td>1</td>
</tr>
</tbody>
</table>

For example, the root *bhod- or *bhodh- 'stick, dig'. The low grade type a is not attested. The low grade
type b or high grade type 1 root, *bhodh- is seen in Lat. fodiō, OCS bodā 'I stick', Lith. badaų 'I poke, stir', Gk. bóth-ro-s 'pit,mine' (if one can accept Gk. b from p by analogy to bathú-s, bênthos). The high grade type 2 is seen in Lat. fōdi, OCS aorist bāṣa, OCS 1st. sg. present badaja.

In summation, in 1886 Brugmann was not talking about vocalic phonemes, but rather about vocalic sounds or phones. He made no attempt to show any phonemic contrast between long and short vowels or long and short sonants.

Brugmann's ablaut theory is primarily based on the alternations observed by comparing words of the different Indo-European languages, relying very heavily in this regard on Sanskrit, Greek, and Latin. He made no attempt to develope the observed vocalic alternations into a system other than to compile a list of alternations occurring in comparative sets. No attempt was made to show how ablaut operated in Indo-European as a meaningful functional element of the language.

When introducing the different ablaut series, he initially makes use of a "Mittelstufe" which corresponds to the basic or normal grade of a root. However, the term is abandoned during later discussion, and all grades became types of either the low grade ("Tief-
stufe") or high grade ("Hochstufe").

A dichotomy is always made in the low grade between vowels which are stressless ("tonlos") and pretonic ("nebentonig"). Although the examples lead one to conclude that the term "nebentonig" should be translated "pretonic", the term itself is sufficiently ambiguous to also include the possibility of translating it "posttonic" in addition.

The low grade vowels are all without stress, and it is their lack of stress which effected their reduced quality. According to Brugmann, vowels which stood before the stressed syllable were reduced to the qualitative state of low grade type ã. If a later shift of stress resulted in this reduced vowel being further from the stressed syllable, the vowel again reduced to the state of low grade type ă. The results, however, are not symmetrical. Although zero results in low grade type ă for all six basic grades, low grade type ã has schwa in three instances and a full vowel in the remaining three. In the case of syllabic sonants, low grade type ă shows a pure syllabic sonant, while type ã shows the syllabic sonant plus liquid or nasal consonant. Although it is not explained, it is possible that Brugmann means schwa plus liquid or nasal consonant in the latter type.

Brugmann does not directly deal with the question
of the origin of the qualitative alternations, other than to make a reference to Hübelschmann's hypothesis that the alternation \( a : o \) is a result of \( a > o \) when following the word stress.

It is significant in Brugmann's work that the earlier idea of "Wurzelverstärkung" has been rejected in favor of root vowel reduction. The former theory held that the basic root vowels were \( i \) and \( u \) which strengthened to diphthongal combinations or combinations resulting in long vowels.

Brugmann did, however, see the relationship of the various grades. The cited ablaut series \(*bheidh- : *bhoidh- : *bhidh- \) and \(*bhendh- : *bhendh- : *bhendh-\) are valid, although it is an example of a "mixed" series, that is, both qualitative and quantitative ablaut relationships are intermixed.

He does not, apparently, accept Saussure's notion of laryngeals, although he lists a schwa in the unstressed inventory of Indo-European vowels. This schwa, which occurs in the reduced grade type \( \beta \) of the second, third, and fourth series (i.e., long \( e, a, \) and \( o \)) would be equivalent to Saussure's \( A \) or \( \Lambda \).

The syllabic sonants are generated by the loss of a preceding full vowel. This is in full agreement with Saussure, although Brugmann proposes quantitative differences among syllabic sonants, unlike Saussure.
Brugmann has a very complex system for representing the various possibilities of the syllabic sonants in the low grade. Four possible reflexes exist in accordance with whether the syllable is or is not pretonic and whether the following element is vocalic or consonantal. As mentioned in a footnote, this is very similar to the situation in Slavic.

Unlike Saussure, Brugmann lists *ʌ and *ã as full Indo-European vowels. It is not clear whether he would agree with Saussure that both vowels occur syllabically only in the reduced state of the root.

His ablaut series are the first to be symmetrical in the sense that both low grades and high grades are logically based on the normal grade.

Although the idea of a second schwa vowel existing in Indo-European had been advanced at an earlier time, Hermann Günert built a strong case for it in his Indo-germanische Ablautprobleme in 1916. He states:

... erhob sich mir immer mehr die schon von Hirt, Osthoff, Fortunatov u.a. geäußerte Vermutung zur vollen Sicherheit, dass nicht ein Schwa sondern zwei reduzierte Vokale dem Bestande des vereinzelsprachlichen idg. Vokalismus zuzuerkennen seien, und bald zeigte sich, dass mit dem ernstlich durchgeführten Ansatz dieses zweiten Schwa die leidige 'Sonantentheorie' aufhört, ein besonderes Problem zu bilden: Nasale und Liquiden wurden genau so behandelt, wie andere Konsonanten, und der Ansatz besonderer Gruppen, wie *rr, *rr, u.s.w., ist in

6 These symbols designate some sort of syllabic liquidity.
den bekannten Sonderfällen nicht berechtigt; ... (Güntert, 1916:viii).

In other words, the same hyper-short reduced vowel, which up to this time was accepted only before or after a nasal or liquid should be accepted in any consonantal environment. Thus, it is not a question of a positional variant, but rather of an independent "Murmelvokal" of the Indo-European parent language. This schwa is different from the schwa which gives the reflex i in Indo-Iranian and is termed "Schwa secundum" by Güntert.

*Schwa indogermanicum* existed during the Indo-European period, but can only be distinguished from Indo-European *a* in Indo-Iranian. *Schwa indogermanicum* fell together with *a* in Indo-European for all other daughter languages.

Güntert's ablaut theory is based on two basic premises: 1) Ablaut relationships could not have arisen all in one and the same period. We have at least two different epochs which differed by their accentual systems (note that this agrees with Brugmann's statement). 2) The ablaut system is a result of early generalizations, and the *o*–*o* alternation ("o-Abtönung") is connected with the old Indo-European accentuation. (Güntert, 1916:124)

In one of the clearest statements made concerning
the ablaut system of Indo-European, Günert has drawn up a list of twelve introductory points ("Leitsätze") (1916:124-31):

1) The starting point for the origin of the vocalic relationships termed "ablaut" is an epoch in which a large inventory of vowels existed. For this oldest period, one accepts the vowels *i and *u as well as long and short diphthongs. The division of root vowels into grades and the establishment of vocalic series cannot be confidently reconstructed for the Indo-European protolanguage, since we are dealing with the comparative method. Because of this method, an actual "ablaut system" has often been proposed for the daughter languages rather than for Indo-European. Ablaut, therefore, became a tool for form-building, as for example in the Germanic verb, and the ablaut relationships were molded for this or for similar purposes.

2) The accentual relationships have destroyed and greatly changed the vocalism of Indo-European. To be sure, there were no less than two main periods to be distinguished which were far apart in time. The accent always operated throughout the

7Apparently, Günert believed that IE had original *i and *u which were not the result of the zero grade of sonantal diphthongs.
word and not only on the first syllable; therefore, the establishment of "bases" is only an expedient and should be replaced by complete "proto-words" ("Urwörter") where possible, for otherwise only the beginning syllables are observed and not the end of the word or the syllables following the main stress.

3) First, a strong expiratory stress took over, and the main pressure ("Hauptdruck") applied so strongly to the stressed syllable of a word that a weakening of the other unstressed vowels resulted.

4) Two of these whispered vowels were distinguished from one another up to the end of the Indo-European period: in addition to the schwa primum\(^8\) from the reduction of long vowels, there was a schwa secundum from the weakening of the short vowels \(*a\), \(*e\), and \(*o\).

5) After the vowel in such unstressed syllables had reduced to a whispered vowel, or had completely disappeared, two weakened grades were to be distinguished: the reduced grade and the zero grade. Both of these weakened grades were found not only in syllables with length but also in short syllables.\(^9\)

\(^8\)The schwa primum became \(\varepsilon\) in Slavic. There is little evidence for this reflex in Slavic.

\(^9\)Note that the reduced grade could be either \(\varepsilon\) or \(\varepsilon\) depending on the length of the normal grade.
The result is the following table:

<table>
<thead>
<tr>
<th>Grade</th>
<th>PIE</th>
<th>IE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. normal grade</td>
<td>a, e</td>
<td>ø</td>
</tr>
<tr>
<td>reduced grade</td>
<td>a₁</td>
<td>ø</td>
</tr>
<tr>
<td>zero grade</td>
<td>ø</td>
<td>ø</td>
</tr>
<tr>
<td>B. normal grade</td>
<td>ai, ei, oi</td>
<td>a₁i &gt; i</td>
</tr>
<tr>
<td>reduced grade</td>
<td>a₁i</td>
<td>i</td>
</tr>
<tr>
<td>zero grade</td>
<td>i</td>
<td>i</td>
</tr>
<tr>
<td>C. normal grade</td>
<td>au, eu, ou</td>
<td>a₁u &gt; u</td>
</tr>
<tr>
<td>reduced grade</td>
<td>a₁u</td>
<td>u</td>
</tr>
<tr>
<td>zero grade</td>
<td>u</td>
<td>u</td>
</tr>
<tr>
<td>D. normal grade</td>
<td>a, e, o</td>
<td>a₂</td>
</tr>
<tr>
<td>reduced grade</td>
<td>a₂</td>
<td>ø</td>
</tr>
<tr>
<td>zero grade</td>
<td>ø</td>
<td>ø</td>
</tr>
<tr>
<td>E. normal grade</td>
<td>ai, ei, oi</td>
<td>a₂i &gt; i</td>
</tr>
<tr>
<td>reduced grade</td>
<td>a₂i</td>
<td>i</td>
</tr>
<tr>
<td>zero grade</td>
<td>i</td>
<td>i</td>
</tr>
<tr>
<td>F. normal grade</td>
<td>au, eu, ou</td>
<td>a₂u &gt; u</td>
</tr>
<tr>
<td>reduced grade</td>
<td>a₂u</td>
<td>u</td>
</tr>
<tr>
<td>zero grade</td>
<td>u</td>
<td>u</td>
</tr>
<tr>
<td>G. normal grade</td>
<td>ar, er, or</td>
<td>a₂r</td>
</tr>
<tr>
<td>reduced grade</td>
<td>a₂r</td>
<td>r</td>
</tr>
<tr>
<td>zero grade</td>
<td>r</td>
<td>r</td>
</tr>
</tbody>
</table>
6) It is a mistake to award a special treatment to nasals and liquids not given to the other consonants. The proof of this is that the same hyper-short reduced vowel appears with nasals and liquids that appears with all the other consonants in every other environment. Therefore the combinations \( \ell \ell, \ell l, \ell m, \ell n \) or \( \ell r, l l, m m, n n \) are to be abolished in favor of \( \ell r, \ell l, \ell m, \ell n, \ell r \ell \), \( \ell l, m \ell, n \ell \), whereby the \( \ell \) is not a sort of no longer unvoiced suggestion of a vowel ("nicht weiter bestimmbare Vokalvorschlag"), but is the schwa secundum met in every other position. The combinations \( \ell \ell, l l, \) etc., if they ever occurred at all, were only transitory forms in any case, and go back to an earlier \( \ell r, \ell l, \) etc., as \( i i \) and \( u u \) to \( \ell i \) and \( \ell u \). The \( \ell u \) is in no way a "positional sound" ("Stellungslaut") which customarily occurs with nasals and liquids, but is a completely independent Indo-European vowel. The combinations of sounds in a comparison such as Lat. *varus* to Lith. *viras* are equivalent sound for sound; one should not contrast Lat. *-ar-* with Lith. *-ir-* (IE *u\ell r*ros) as a special sound unity:
moreover, the syllabification of the words shows the division *uo₂-ros.

7) The reflexes of schwa secundum are:

- Sanskrit: a
- Iranian: a
- Armenian: a
- Albanian: a
- Greek: a
- Italic: a
- Celtic: a
- Germanic: u
- Lithuanian: i
- Slavic: i

In contrast, r and l are represented in Celtic only by ri and li, in Greek by ra and la, and in Germanic by ur and ul.

8) The following rules are important for the combinational change of a₂:

a) IE a₂i and a₂u followed by a vowel became ii and uu respectively. On the other hand, PIE i plus a₂ > i.

b) If IE a₂i or a₂u secondarily again acquired the stress ("Ton") in preconsonantal position, then these a₂i and a₂u plus consonant changed to i and í.

c) In the neighborhood ("Nachbarschaft")
of velars and labio-velars, $\ddot{e}_2 > u$ during PIE.

d) In Sanskrit $\ddot{e}_2 r > ir$ and $\ddot{e}_2 r^u > ur$.10

e) In Greek $\ddot{e}_2 > i$ by distant assimilation when in a consonantal environment and either $i$ or $u$ (long, short, or nonsyllabic) stood in the immediately adjacent syllable.

f) In Greek $\ddot{e}_2 > u$ if it stood between a nasal or liquid on one side and a labial, labio-velar, or pure velar ("Reinvelar") on the other and if $i$ followed in the next syllable.

9) The zero grade ("Schwundstufe") mainly occurs:

a) directly before and after the main stress ("Hauptton") before a consonant, especially when the preceding vowel is short.

b) as the second weakening of an earlier reduced grade during composition or secondary stress shift ($*\ddot{e}_2 r^t o s: *\ddot{e}_2 r^t o s$).

c) as a so-called allegroform according to the sentence-phonetic ("satzphonetisch") point of view.

The schwa secundum usually occurs:

a) when the reduced syllable secondarily

10 The applicability of this rule is uncertain.
acquires the main stress ("Hauptakzent").

b) when two or more syllables distant from the main stress ("Hauptton").

c) directly before the stress ("Ton"), if a long vowel precedes, especially in an open syllable,

d) as a lentoform according to the sentence-phonetic point of view.

e) if an extensive difficult-to-pronounce group of consonants occurs through the operation of regular zero grade procedures, schwa secundum appears to have been introduced to ease pronunciation.

f) in absolute word and sentence anlaut.

10) A long time after the quantitative ablaut had been formed, the type of stress ("Betonungsart") changed in a period, which is thought to be not too long before Indo-European dissolved. An intensive musical (chromatic) intonation was formed. This type of accentuation operated on the vocalism in which the unstressed vowels became articulated deeper and duller ("tiefer und dumpfer"). And again it was the syllables directly before and after the main stress ("Hauptakzent") which were changed the most.

11) The qualitative alternation ("die
Abtönung") was formed in the following way: If, in this epoch of Indo-European musical intonation, the rising accent of an unweakened ē or ē transferred one syllable toward the end of the word or backward toward the beginning of the word, then these bright ("hell") vowels changed into the dark ("dumpf") vowels œ and œ as a consequence of the greater deep tonality ("Tieftonigkeit") caused by the stress shift ("Akzentverschiebung") of one syllable.

12) Moreover, at the time ("zur Zeit") of the musical accent, a high grade œ before a following m in absolute auslaut and following the word stress ("Wortakzent") changed to œ as a consequence of the labial coloring of this nasal.

The short and long œ, which arose in accordance with rule 11 above, fell together completely with the old Indo-European short and long œ, so that analogical innovations could not fail to appear.

By ordering Günert's introductory sentences, the following rules emerge:

1) The vowel in the stressed syllable remains unchanged as long as it retains the ictus.

2) The pretonic and posttonic vowels reduce to zero before a consonant, especially when the vowel of the preceding syllable is short.

3) If the vowel in the pretonic syllable
follows a long vowel, it becomes schwa secundum, especially when the pretonic syllable is open.

4) Long vowels more than two syllables distant from the ictus become schwa primum.

5) Short vowels more than two syllables distant from the ictus become schwa secundum.

6) Either schwa followed by a sonant and a consonant results in a long syllabic sonant.

7) Schwa secundum followed by *i or *u and a vowel results in the combinations *ii and *uu respectively.

8) Stressed *e becomes *o if the ictus moves in either direction.

9) Schwa primum becomes schwa secundum if secondarily stressed.

Güntert's system, viewed in this way, reveals several weaknesses. He has attempted to systematize the ablaut relationships of Indo-European in accordance with phonological and prosodic features. The position of the ictus is central to his theory.

Rules two and three do not always operate. This is revealed by the "especially when." Rule two would produce a zero grade in every Indo-European word of more than one syllable. Rules two and three are not sufficiently explicit to enable one to decide which should operate in disyllabic words stressed on
the second syllable.

Rules four and five would require either schwa primum or schwa secundum in all syllables other than the tonic syllable or on either side of it.

Rules six and seven are very interesting. Rule six would result in long *i or *u. They could be viewed as lengthened zero grades of sonantal diphthongs. They appear frequently in Slavic. The choice between length and shortness would be made on the basis of whether the original diphthong became merely reduced or became a full zero grade. Earlier rules would not permit the length to appear in pre- and posttonic syllables, except when following long syllables. This again brings forth the question of how to treat disyllabic words stressed on the final syllable. Rule seven produces reflexes which are observed frequently in Slavic. The process could also be viewed as the split of two morae of long vowels into two contiguous homogeneous short vowels in the environment of a following vowel.

Rule eight is an attempt to explain the genesis of the ą : ą alternation. Günertt believes that many words containing *ą were already in existence prior to the operation of rule eight. In accordance with this rule, it would be fair to say that the ą : ą alternation was caused by stress shift, which was itself the
result of morphological processes.

Note that examples G and H in the preceding table (pp. 34-35) do not show schwa secundum plus the liquid sonants contracting to long liquid sonants. Güntert seems to be saying that in such an environment the schwa secundum gave a direct vocalic reflex, i for example in Slavic. Although he gives no examples of the combination schwa primum plus liquid sonant, presumably the result in Slavic should be o plus liquid sonant. Examples G and H also show a difference between a syllabic liquid and a liquid preceded by schwa secundum. Proto-Slavic did in fact have two possible reflexes for the syllabic liquids and nasals, although there is no reason to attribute such differences to such a dichotomy.

Güntert does not mention laryngeals in his theory; however, the idea of vocalic lengthening due to the presence of a schwa is reminiscent of Saussure's "sonant coefficients." The idea of having both a reduced grade and a zero grade simultaneously reminds one of Brugmann's two different types of low grade; however, a basic disagreement exists between the values of the grade type in the pretonic syllable. For Brugmann, the pretonic syllable contained the weakened vowel and the antepretonic syllables contained the zero vowels.
By 1916, the structure of the ablaut series was fairly well formulated. The fundamental ideas were quite close to what we believe today. The basic principle is the existence in Indo-European of a full grade vowel in every syllable and the modification of these full vowels to produce zero or reduced grades. What was not known was the causal factor or factors involved in the modifications.

According to Jerzy Kurylowicz (1956:405), vocalic ablaut is above all a morphological phenomenon. Traces of alternation directly dependent on phonetic factors have disappeared. The relationship between the main morpheme (suffix or ending) and ablaut throws light on the loss of ablaut processes inherited from Indo-European. So called "primary" morphological processes which act on roots (mainly verbal) transferred to stems (mainly nominal) and vowel gradation was levelled out. Root models, to which stems applied, were just those which could not show ablaut due to their particular vocalism.

When, for example, a noun of action of the Greek type toma (temno) began to form from stems of related verbs, they were modeled on these examples, which already had as the basic vocalism.

Because the stem contained two morphemes, a root and a suffix, the choice of which syllable was to
undergo the ablaut process was undecided. The position of ablaut in the Indo-European morphological system contained the basis for its future elimination. On the foundation of a growing number of secondary formations, deprived of root ablaut, the primary categories which still maintained it were cut off as strong or irregular forms and were considered exceptions.

Ablaut is seldom seen in the roots of words undergoing flexion, this being true for both declension and conjugation. Ablaut for suffixes, however, is direct evidence of a similar relationship existing at some time in the flexion of root nouns. The ablaut existing in suffixes may be characterized by the example: 


In nominal paradigms, the evolution of ablaut revolves around two central facts: (1) The ablaut of root flexion is advanced ("narzuca się") by the primary suffix of the stem. However, the root itself of the stem is cut off, and having found itself beyond the range of alternation, has a constant vocalism. (2) The constantly increasing number of stems derived from productive derivational series leads to various types of primary unmotivated nominal declensions. The constantness of the root vowel in all declensional types is advanced ("narzuca się") in the end, even
with a theme having a zero suffix. On the other hand, in conjugation, the type duéisme : duisme or éimé : imé was maintained a long time, even up to the later historical epoch (1956:405).

For Kurylowicz, the Proto-Indo-European verbal root is the source for all other parts of speech, and consequently, for ablaut:

In contrast to researchers before him, Kurylowicz is not willing to accept the hypothesis that the origin of the é : o alternation is due to the relationship of an original *é to the position of the ictus in a purely mechanical manner. He denies the "lautmechanisch" explanation offered by Güntert.

Güntert and others point to the suffix alternation -ter : -tor to support their contention that the o-grade results from an earlier *e in posttonic position. Greek is cited as proof, as for example in dotér : dótor. Kurylowicz brings the example *bhratér forth as a counter example to show that the original *e, although long, has been retained.

Kurylowicz believes that the origin of the é : o
alternation is more of a morphological than a phonological phenomenon. The ø-grade arose from a merger of the reduced variants of *e and *o. This merger had a resultant sound which was more ø-like than ø-like. But this fact alone was insufficient to cause the later qualitative alternation. The crucial factor was the reforming of normal ø-grade roots to *o by analogy to other forms in the same paradigm containing this reduced *o which came from an earlier unstressed pretonic *e. It is clear that this analogy would initially occur only in mobile paradigms in which certain cases or certain forms had the ictus on the syllable immediately following the ø-grade root syllable. Moreover, the merger of the reduced vowels may have initially occurred only in the environment of a following sonant. Following the analogical reformation of stressed *e to *o, the reduced *o could later completely disappear in the weak cases, resulting in an ø:zero alternation.

Qualitative ablaut developed first in the two categories: (1) nouns denoting action, and (2) verbs in the perfect. The merger of *e and *₁₁ before sonants launched an opposition between the strong *e

11The symbols Kurylowicz uses are small sub­scripts which indicate the reduced quality of the respective vowels.
of the verb-base and the vocalism *e : *o of the

derivative, which, conforming to the law of polari-
zation, generalized the relationship *e (verbal
base) : *o (*o) (derivative) for all roots. The
generalization spread to all roots, even to those
which did not have sonants (1956:389).

In the flexional suffixes: -t(or), -on-, (-mon-,
-won-), -ont-, -os-, (-ios-, -uos-), the a-grade is
a result of the opposition between the vocalism a of
the unmotivated flexional suffixes and the vocalism
o in derivational suffixes which were productive at
the time in question:

En face du contraste eR : oR des syllabes à voca-
lisme plein, celles à vocalisme réduit ne connais-
sent que oR. On peut affirmer que l'apophonie
a, loin d'être postérieure à la chute des
voyelles affaiblies (Güntert, Hirt) est au con-
traire le fait les plus anciens attestant une dif-
ference phonologique entre les vocalismes plein
et réduit. (1956:389)

In the historical languages, the perfect of the
type *(le)loike reappears ("rentre") in the normal
system of the conjugation, that is to say, represents
a flexional form and not a derived form. This his-
torical perfect continues without doubt an old nomi-
nal style, although "synthetic," and a reformed nomi-
nal style adapted to the flexional system already ex-

12 The derivatives having a mobile stress pat-
tern is implied.
isting for the present aorist.

In Kurylowicz' opinion, the medio-passive aorist and the perfect were similar in form. The perfect had an original oxytonic stress, which became mobile with the loss of final vocalic elements:

Le déplacement de l'accent aux formes fortes du parfait représente, selon notre opinion, justement le plus ancien trait différenciateur entre le parfait et l'aoriste médiopassif. Car d'une part le redoublement n'est pas essentiel et propre au parfait seul, de l'autre part le vocalisme o du parfait est dû ... à son caractère fondé et à la mobilité de son accent (cette dernière fait défaut à l'aoriste médiopassif). (1956:43)

The perfect was very tightly linked to the forms of the present. The present roots had both *e and *o vowels, and the perfect, at the earliest time, likewise had both *e and *o root vowels. However, the mobile stress which existed in the perfect caused weak vowels to appear in the root when not under stress, and, as we have already seen, a merger occurred in favor of a weak vowel having an o timbre. This o-like vowel spread to all roots of the perfect, replacing *e wherever the latter occurred. At this point, the perfect morphologized the o-grade. (1956:45)

<table>
<thead>
<tr>
<th>Present base</th>
<th>e</th>
<th>o</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perfect (weak)</td>
<td>o</td>
<td></td>
</tr>
<tr>
<td>Perfect (strong)</td>
<td>e</td>
<td>o</td>
</tr>
</tbody>
</table>

The perfect is a unique class in the system of
Indo-European conjugation. It alone had the necessary requirements for the genesis of an $a : o$ alternation in the verbal system, namely (1) it was a derived form, and (2) it had mobile stress resulting in the contrast full vowel : weak vowel. The athematic present is mobile, but far from being a derived form, it itself serves as the basis for the remainder of the present tense. The sigmatic aorist is a derived form, but the mobile stress and apophonic vowels are completely lacking. The thematic forms (present, imperfect, aorist in -$g$/-$g$-, future in -si$g$-/si$g$-, subjunctive) all have immobile stress and unchanging root vowel.

The vowel *$o$ of the strong forms of the perfect alternated with the weak vowel *$o$ of the weak forms up to the time the latter disappeared.

The second basic type of derivation mentioned by Kuryłowicz, the deverbal noun, has disappeared in the majority of Indo-European daughter languages. In Sanskrit and the classical languages, it played the role of nouns of action in relation to secondary verbs. The prehistoric state is very confusing. One sees both simple nouns of agent and compound (composed) nouns of action having a prefix. As for the root vowel, the zero grade usually appeared in roots having a sonant and the normal

13 Thus, the derivations do not necessarily have an automatic *$o$ in the root.
grade or o-grade in roots ending in a consonant:

Ces noms d'action comportaient, dans leur paradigme flexionnel, le degré normal aux formes fortes (avec allongement éventuel au nom. sing.), le degré réduit, aux formes faibles. Par rapport au verbe-base la situation était exactement la même que dans le cas du parfait. Dans les racines à sonant le passage de ə à o a dû différencier le vocalisme du nom-racine d'avec celui du verbe-base, d'où un paradigme à vocalisme o (cas forts) : o (cas faibles) pour tous les dérivés en question. Mais en composition, où les noms-racines font fonction secondaire de noms d'agent, le degré normal fut maintenu, ce qui permet de distinguer nettement les noms d'agent à vocalisme normal (ə : e ou e : o devant sonante) et les noms d'action à degré o (ə : ə). (1956:49)

After the disappearance of the weak vowels, the root derivations ("dérivés radicaux") assumed the following form:

nouns of action (simple)

strong  uort  kort  sod
weak  urt  krt(t)  sed

nouns of agent (compound)

strong  uert  kert  sed
>  urt  >  krt
weak  urt  krt  sd

*sod and *sed lengthen their vowels in the nominative singular to *sōd and *sēd.

At a prehistoric date, the roots of nouns lost the paradigmatic alternations. The type *uorts : *urtes or *louks : *lukes generalized the zero vowel. In compo-
sition, heavy roots generalized root zero while light roots generalized the full grade e. Simple heavy roots, following the example of compositions, generalized the zero grade. Simple light roots, at first, generalized the vowel *o.

Simple nouns of action fell into obsolescence, being replaced by formations of the type Greek toma, by derivatives in -ti- etc. (1956:50). Thus, even in the conservative languages such as Greek or Sanskrit, deverbal nouns function mainly as nouns of agent when in composition, while in simple form and in forms with preverbs, they function both as nouns of agent and of action. Apparently, the latter category contains preverbs, because of "univerbation" or the rendering of adverbs which usually accompany a verb in the capacity of a preverb.

Schematically:

<table>
<thead>
<tr>
<th>Heavy Bases</th>
<th>Light Bases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple o/zero &gt; zero</td>
<td>o/e &gt; o</td>
</tr>
<tr>
<td>Compound e/zero &gt; zero</td>
<td>e/zero &gt; e</td>
</tr>
</tbody>
</table>

The vowel o of non-root syllables is explained similarly. A flexional suffix is the predesimal element which is subject to alternation. Thus, in Greek, the elements -ār, r, ar, and ra- which are added to pat- are examples of flexional suffixes. In derived (motivated) nouns, the flexional suffix usually forms a part of the derivational suffix. For example, in Greek dōtōr,
dōtoros, the flexional suffix -or-/or- is an element of the derivational suffix -tor/-tor-. As a consequence, one can speak of a primary and a secondary function for flexional suffixes. The primary function is to inflect the immediately preceding morpheme, as in *pat-er-.

The secondary function is to serve as a flexional suffix to a group of morphemes as in *somo-pat-or-, the latter part of which is not necessarily autonomous as in *do-t-or-. The mechanism is the same as for the perfect and for the deverbal nouns. There is a paradigm having an alternation between a full vowel and a reduced vowel, the latter becoming a position of neutralization for the weakened articulation of *e and *o before sonants. A contrast results between the derivational and the non-derivational versions of the suffixes. The 2-grade becomes generalized for the derivational function. Here, it is the form of the nominal stem which plays the role of distinguishing the form of the suffix as to its basic grade.

Following is the derivational schema proposed by Kurylowicz (1956:94):

<table>
<thead>
<tr>
<th>Verbal Root</th>
<th>leuk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st. Level</td>
<td>louk-</td>
</tr>
<tr>
<td>Nominal Root</td>
<td>luk-</td>
</tr>
<tr>
<td>2nd. Level</td>
<td>louko / louké</td>
</tr>
<tr>
<td>Denominal Adjective</td>
<td></td>
</tr>
<tr>
<td>Residual Type</td>
<td>louko / louke</td>
</tr>
</tbody>
</table>
3rd. Level
Denominal Noun in -ā- (abstract) loukā
Denominal Noun in -i- lóuki
Denominal Verb in -ie/o- loukei / lousei
Denominal Adjective lóuk(i)io / lóuk(i)ie

The alternation e : zero or o : zero is observed in morphological categories where a root or suffixal syllable is deprived of the stress due to its progressive movement. The paradigms such as *éimi : *imé, *kr-nea-mi : *kr-nu-mer, *paterm (acc.) : *patrei (dat.) are typical examples. The vowel : zero alternation in posttonic position appears only in the paradigms having a "fermee" flection with its opposition root stress : suffixal stress in place of root stress : desinential stress or suffixal stress : desinential stress (1956:98).

Since the reduced *e in *ektós becomes vocalized in all daughter languages, Kurylowicz reconstructs it as a full vowel. The situation is analogous to Old Russian, where a reduced vowel either disappears or becomes fully vocalized. The weakened atonic vocalism was replaced by full vowels: (1) under phonetic conditions which would have to be made precise,¹⁴ and (2) by morphological re-

¹⁴ W wewnętrznej zgłosce samogłoska zredukowana znika; w zgłosce początkowej utrzymuje się w zamkniętej sylabie między spółgłoskami, w otwartej sylabie między spółgłoskami znika, np. éktós, sxein. (1956:409-410)
structuring, namely the introduction of different morphemes in unstressed positions. The existence of full atonic vowels has been possible primarily by the processes of composition (1956:106).

The Indo-European root belongs to one of four different classes (1956:109):

1) -ERT Heavy Bases
2) -RET "Samprasāraṇa" Bases (where a sonant precedes the syllabic element)
3) -ER Light Bases
4) -ET Light Bases

where E = fundamental vowel, R = sonant (including ā and ū), and T = stop or s.

Concerning the lengthened grade, Kurylowicz believes that this development was not Indo-European per se, but developed in the daughter languages independently. However, "Ce qui était commun c'était la productivité de la formation dérivée en -aie/o- tandis que le degré long est né indépendamment en latin et en balto-slave." (1956:142) It is most frequently found:

1) in the root or suffix of the nominative singular, especially with stems in -r-, -n-, and -s-.
2) in the root of the active sigmatic aorist.
3) in the iterative.
4) in vṛddhi (lengthening the initial vowel
accompanying suffixation).

This short history of the study of ablaut points up the difficulty of formulating a concise and systematic theory. We can see that vowel alternations did and do occur, but we have not yet been able to state simply and clearly "how" and "why."

August Schleicher was heavily influenced by the alternations he observed in Sanskrit. As Sanskrit usually showed the vowel \(a\) in positions where other Indo-European languages showed \(\text{a}^*, \text{a}, \text{o}\), or \(\text{u}\), he mistakenly ascribed the alternations to the proto-vowel \(a\). In addition, he thought of the system as being "progressive" in that vocalic elements were joined together to form "higher levels."

Ferdinand de Saussure refuted this theory of vocalic "Steigerung" and the theory of an Indo-European three vowel system consisting of \(*\text{a}, *\text{i}, \text{and} *\text{u}\). He believed that that qualitative differences were due to the existence of "sonant coefficients" which followed underlying vowels. However, his theory is not symmetrical. He posits two sonant coefficients to account for more than two qualitative differences. In addition to adding syllabic liquids to the vocalic inventory, he introduced qualitative differences between the syllabic sonants.\(^{15}\)

\(^{15}\) Saussure credits Brugmann for the hypothesis of sonant nasals and Osthoff for sonant liquids.
Saussure believed that all Indo-European roots were based on the vowel *£, but he could not explain or state the conditions under which *£ became *o.

Karl Brugmann, similarly, could not state the conditions for the qualitative vocalic alternations, but he did reflect the thinking of his time as to the origin of quantitative alternations. He listed the alternations in series, morphologically and non-morphologically observed. He believed that the basic Indo-European root contained a full vowel and that quantitative differences were a result of the position of word stress. He posits two weakened grades of vowels which were conditioned by stress position. Brugmann was pessimistic about the possibility of ever establishing a coherent ablaut system for Indo-European which would include morphological differences.

Hermann Güntert, following Brugmann, further refined the system of quantitative ablaut relationships in accordance with stress position. He believed that Indo-European possessed not one, but two schwa vowels, and that qualitative and quantitative differences originated at two different periods. The qualitative relationship between *£ and *o was due to the shift of the ictus from *£ by one syllable in either direction. He, like Brugmann, posits both a reduced grade and a zero grade for Indo-European.
Jerzy Kurylowicz believes that the phonological approach to ablaut is in error, and he bases his theory on morphological extension of alternations which were set in motion by mobile accentual paradigms. In contrast to the scholars before him, he formulates a rather elaborate theory for the origin of qualitative differences, which took place in a period prior to the beginning of quantitative differences. The presence of various vocalic grades is determined by the type of morphological process involved.

From the preceding research, the following conclusions can be drawn about the nature and function of ablaut:

1) All Indo-European roots may have had one type of central vowel similar to \( \varepsilon \) in the earliest period.

2) The various vowel qualities, namely \( \varepsilon \) and \( \circ \) may have developed from this central vowel by the means of laryngeals.

3) Qualitative ablaut may have resulted from the different coloring produced by laryngeals, or may have resulted through accentual differences.

4) The zero grade is the result of the loss of a full vowel. If the syllable contained a sonant, it became syllabic.

5) Roots containing \( \mathbf{i} \) and \( \mathbf{u} \) are probably the result of the zero grade of diphthongs ending in the non-
syllabic sonants \( i \) and \( u \) (also written \( j \) and \( w \)).

6) Lengthened grades are due to the influence of laryngeals, or are due to analogy. The process by which the alternation zero grade : full grade is carried over to produce the alternation full grade : lengthened grade is termed vyddhi.

7) The ablaut relationships became morphologized during Indo-European, such that certain grades came to be used in certain morphological formations, regardless of the phonological or prosodic environment.

8) At the end of the Indo-European period, all sonants were completely syllabic interconsonantally.

9) Due to lexical changes, certain roots reflecting various vocalic grades were lost, and others, although owing their origin to the former in many cases, continued to survive.

10) The zero grade of long full vowels was probably a reduced vowel similar to schwa. This vowel produced a reflex of \( a \) in all daughter languages except Sanskrit and Slavic, where it was \( i \) and \( o \) respectively. As it was frequently dropped in Slavic, very little evidence can be found for it in the historically attested Slavic languages.
II. ABLAUT IN PREHISTORIC SLAVIC

Common Slavic denotes the Slavic branch of Indo-European following the breakup of Indo-European into daughter languages. It is the earliest reconstructed form of Slavic. Because Common Slavic is a prehistoric language, an actual date for its existence cannot be given, but the dialect probably broke away from the Indo-European parent around 2000 B.C. (Shevelov, 1956:606).

The Common Slavic period encompasses many years during which the language developed and underwent change. The unity ceased with the emergence of dialects which became the basis for West Slavic and East-South Slavic.

Common Slavic is divisible into two main periods, the period before the monophthongization of diphthongs and the period following it. The earlier period will be termed Early Common Slavic and the later period will be termed Late Common Slavic.

The vowel system of Early Common Slavic is considerably different from the system in Indo-European. ECS vowels possessed no phonemic quantitative oppositions. Indo-European quantitative distinctions were replaced by
ECS qualitative distinctions. Initially, we will treat the sound changes which have occurred since Indo-European, and then analyze the changes which have resulted in the ablaut system.

Following is a list of the vocalic correspondences between Indo-European and Early Common Slavic:

<table>
<thead>
<tr>
<th>IE</th>
<th>ECS</th>
<th>IE</th>
<th>ECS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ò</td>
<td>a</td>
<td>al</td>
<td>ol</td>
</tr>
<tr>
<td>a</td>
<td>o</td>
<td>āl</td>
<td>al</td>
</tr>
<tr>
<td>o</td>
<td>o</td>
<td>em</td>
<td>em</td>
</tr>
<tr>
<td>ā</td>
<td>a</td>
<td>ēm</td>
<td>ēm</td>
</tr>
<tr>
<td>ē</td>
<td>ē</td>
<td>om</td>
<td>om</td>
</tr>
<tr>
<td>ei</td>
<td>ei</td>
<td>am</td>
<td>om</td>
</tr>
<tr>
<td>ēi</td>
<td>ei16</td>
<td>ām</td>
<td>am</td>
</tr>
<tr>
<td>oi</td>
<td>oi</td>
<td>en</td>
<td>en</td>
</tr>
<tr>
<td>ōi</td>
<td>ai</td>
<td>ēn</td>
<td>ēn</td>
</tr>
<tr>
<td>ai</td>
<td>oi</td>
<td>on</td>
<td>on</td>
</tr>
<tr>
<td>āi</td>
<td>ai</td>
<td>ān</td>
<td>an</td>
</tr>
<tr>
<td>eu</td>
<td>eu</td>
<td>an</td>
<td>on</td>
</tr>
<tr>
<td>ōu</td>
<td>eu</td>
<td>ān</td>
<td>an</td>
</tr>
<tr>
<td>ou</td>
<td>ou</td>
<td>i</td>
<td>i17</td>
</tr>
<tr>
<td>ōu</td>
<td>au</td>
<td>ũ</td>
<td>i</td>
</tr>
<tr>
<td>au</td>
<td>ou</td>
<td>ũ</td>
<td>ũ</td>
</tr>
</tbody>
</table>

16Indo-European long *ò normally became Early Common Slavic *ě, but when combined with the sonants *i or *u, no qualitative distinction can be shown to have existed.

17The short mark over ĩ and ũ indicates the respective reflexes for Indo-European short *i and *u. This does not mean that the pronunciation remained unchanged from IE, as both are hyper-short vowels in Slavic.
*ɪ* and *u*, which were originally sonants, became very short or hyper-short. These vowels are occasionally written ɛ and ə for the Common Slavic period. The *ɪ* and *u* probably became "full-fledged" vowels in the zero grade of sonantal diphthongs. Prior to this, neither could occur under stress. Their appearance changed the system of quantitative ablaut. As the alternations *a* : *ɛ*, *o* : *ɛ*, and possibly *a* : *ɛ* were central to the system, there was a strong tendency to develop the new quantitative opposition *ɪ* : *i* and *u* : *ʊ*. The new long *ɪ* and *ʊ* are termed the lengthened zero grade. As the loss of quantitative oppositions is taken as the starting point for Early Common Slavic, the lengthened zero grade must have formed during the Indo-European period. Shevelov (1965:96) believes that this new relationship was established at the time of the disintegration.

It is fairly well agreed that Common Slavic inherited most of its ablaut system from Indo-European. In fact, few innovations were made in Slavic.

Judging by the Sl[vjic] evidence the oldest alternation must have been *a* : *#* and *o* : *#* because the *ɛ* : *o* alternation still preserved some vitality in Common Slavic, while the alternation *ɛ* : *#* and *o* : *#* according to present evidence was no longer productive. But this might be due to the fact that the old (IE) *#* grade was greatly supplanted by the later (Sl[vjic]) *#* grade and is very scantily represented in our data. (Shevelov, 1965:102)

It has been fairly well established that the phone-
Of the Indo-European vowels listed in the above table, all except the syllabic sonants regularly gave only one Early Common Slavic correspondence. The duality of the reflexes in the case of the syllabic sonants causes some difficulty in reconstruction, as will be later seen.

It has been stated that the vocalic system in Early Common Slavic had no phonemic contrast for quantity. This does not mean that the vowels were all of the same phonetic length. The vowels carried concomitant phonetic length, and probably even tone. However, these features were not phonemic, as the distinctions in quality were sufficient to maintain semantic differences.

Phonetically, Indo-European long vowels and long diphthongs gave Early Common Slavic reflexes with rising tone, and short monophthongs gave neutral pitch. Short diphthongs resulted in reflexes with falling pitch.

The Early Common Slavic reflexes for Indo-European
*i and *u, which were originally sonants, became very short or hyper-short. These vowels are occasionally written ą and ę for the Common Slavic period. The *i and *u probably became "full-fledged" vowels in the zero grade of sonantal diphthongs. Prior to this, neither could occur under stress. Their appearance changed the system of quantitative ablaut. As the alternations *e : *ę, *o : *ę, and possibly *a : *ą were central to the system, there was a strong tendency to develop the new quantitative opposition *i : *t and *i : *u. The new long *t and *u are termed the lengthened zero grade. As the loss of quantitative oppositions is taken as the starting point for Early Common Slavic, the lengthened zero grade must have formed during the Indo-European period. Shevelov (1965:96) believes that this new relationship was established at the time of the disintegration.

It is fairly well agreed that Common Slavic inherited most of its ablaut system from Indo-European. In fact, few innovations were made in Slavic.

Judging by the Slavic evidence the oldest alternation must have been e : # and o : # because the e : o alternation still preserved some vitality in Common Slavic, while the alternation e : # and o : # according to present evidence was no longer productive. But this might be due to the fact that the old (IE) # grade was greatly supplanted by the later (Slavic) # grade and is very scantily represented in our data. (Shevelov, 1965:102)

It has been fairly well established that the phone-
tic factors which created ablaut in Indo-European ceased functioning long before the Common Slavic period. The loss of the laryngeals occurred at an uncertain date in Indo-European and produced quantitative alternations. Laryngeals are not normally posited for the Common Slavic period. Long vowels could and did alternate with a "vocalized laryngeal" which gave the reflex *o in Slavic.

The new lengthened grade mentioned above probably resulted from compensatory lengthening that took place with the loss of following laryngeals. Thus, the Indo-European diphthongs must have been able to be followed by laryngeals. In a relative chronological order, Indo-European *euH became the zero grade *uH under certain conditions. The loss of H resulted in lengthening the *u to *i. This *i became *y in Early Common Slavic. Similarly, Indo-European *iH (the zero grade of *eiH, *oiH, or *aiH) became long *i and then *i in Early Common Slavic.

Apparently, Indo-European roots with and without the following laryngeal alternated, so that the zero grade alternated with the lengthened zero grade. Thus *eu : *euH giving Early Common Slavic the alternation *u : *y in the zero grade.

Following is a list of the alternations found in Early Common Slavic:

<table>
<thead>
<tr>
<th>Indo-European</th>
<th>Early Common Slavic</th>
</tr>
</thead>
<tbody>
<tr>
<td>e : ē</td>
<td>e : ē</td>
</tr>
</tbody>
</table>
Indo-European syllabic sonants, the result of the zero grade of sonantal diphthongs, could be followed by laryngeals as was mentioned above. The loss of the following laryngeals caused the preceding sonants to lengthen. In the case of the liquids, tone may also have existed as a concomitant feature. When phonemic quantity

18 See footnote on page sixty.
was lost in the Early Common Slavic period, the tonal differences could have become phonemic. Syllabic liquids not followed by a laryngeal were falling in tone.

<table>
<thead>
<tr>
<th>Indo-European</th>
<th>Early Common Slavic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal : Zero</td>
<td>Normal : Zero</td>
</tr>
<tr>
<td>er : ʈ</td>
<td>er : ʰʈ</td>
</tr>
<tr>
<td>erH : ʰʈH</td>
<td>er : ʰʈ</td>
</tr>
<tr>
<td>or : ʈ</td>
<td>or : ʰʈ</td>
</tr>
<tr>
<td>orH : ʰʈH</td>
<td>ar : ʰʈ</td>
</tr>
<tr>
<td>ar : ʈ</td>
<td>or : ʰʈ</td>
</tr>
<tr>
<td>arH : ʰʈH</td>
<td>ar : ʰʈ</td>
</tr>
</tbody>
</table>

The chart would apply in exactly the same manner for the liquid *l. The symbol H represents a laryngeal. The laryngeal may have been different in each of the three cases; Shevelov (1965:36) uses the designations H₁, H₂, and H₃.

There is a question as to whether the reflexes for *er and *erH merge in Early Common Slavic. As it is possible that the sonantal diphthongs could also occur before following vocalic affixes and cease to be diphthongs in a true sense, it is believed to be incorrect to show a merger in Early Common Slavic.

One would expect these tonal differences to become phonemic after the quantitative contrasts were lost. It would seem logical to assume some kind of relationship between the tonal differences and the choice of Slavic reflexes for the syllabic sonants. However, no evidence
supports such a relationship. The tonal distinctions still made in Serbo-Croation syllabic r can be traced, albeit with some difficulty, to Common Slavic accentual distinctions. In view of the unbroken link between the prosodic features of Common Slavic and Serbo-Croation, one is forced to conclude that such features were carried throughout the Common Slavic period. On the other hand, no link has been found between the tonal differences of the syllabic sonants in Common Slavic and the non-prosodic element of later Slavic reflexes. In the Slavic languages which lost both phonemic length and tone, any Indo-European phonemic contrast between rising and falling syllabic sonants has been lost.

One of the major developments in Early Common Slavic was the introduction of the new zero-grade set of reflexes for the syllabic sonants. In Early Common Slavic, the syllabic sonants lost their ability to carry the peak of sonority or were in the process of losing it. As a consequence, a reduced vowel became inserted immediately preceding the sonant. This inserted vowel was very weak and probably similar to a schwa, but differed in that an opposition existed between a front and back variation. These reduced vowels appear in Old Church Slavonic in the form of jers, although the articulation may not have been identical.
The major difficulty we have with the new zero grade in Slavic is the inability to state sound laws for determining which of the two reduced vowels occur. However, generalizations are possible. Two views have been advanced to explain the seeming arbitrariness of the innovation. One theory attempts to use the reconstructed full grade as the basis for predicting which reduced vowel will appear in the new zero grade reflex. Where Indo-European had the full grade in *o, the ECS reflex is supposedly *uS and where Indo-European had the full grade in *e, the ECS reflex is supposedly *iS (where S designates any sonant). However, reflexes in other Indo-European daughter languages provide reconstructions showing the Indo-European full grades which are incorrect for the operation of the theory (Shevelov, 1965:86). In order that a one-to-one relationship exist between the quality of the sonant and the quality of the ECS short high vowel, one would be required to accept the fact that the reduced vowel in Indo-European was never completely lost or that the vowel transferred some feature to the sonant which was recovered and reinterpreted in ECS. It is not impossible that the gravity of the full vowel in some manner marked the sonant before the full vowel reduced and disappeared. So, in spite of the fact the theory is workable, the objection mentioned above seems to deny the probability of its oper-
ation. Also note that such an hypothesis would contradict Kurylowicz' theory that the reduced vowel preceding the sonant merged to a reduced vowel having the quality o before fully disappearing.

The second hypothesis is that the choice was made on the basis of phonetic environment. Generally speaking, ECS žS appeared when the Indo-European environment contained a preceding velar or labio-velar consonant; otherwise the ŽS appeared. As the first progressive palatalization of velars occurred in Early Common Slavic, the tendency toward syllabic synharmonism prevented the innovation of ŽS following a palato-velar, or from another point of view, the first palatalization would not have occurred before ŽS, because at the final stage of Indo-European, velars were giving following syllabic sonants an ř quality.

Shevelov (1965:89) gives the following statistics on the distribution of ŽS based on an analysis of 86 roots:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>After labials (34 roots)</td>
<td>29%</td>
</tr>
<tr>
<td>After dental stops (13 roots)</td>
<td>23%</td>
</tr>
<tr>
<td>After ř (2 roots)</td>
<td>0%</td>
</tr>
<tr>
<td>After palato-velars (3 roots)</td>
<td>0%</td>
</tr>
<tr>
<td>After velars (33 roots)</td>
<td>58%</td>
</tr>
<tr>
<td>In initial position</td>
<td>100%</td>
</tr>
</tbody>
</table>
According to the statistics, ECS *uS occurred more than half of the time only following velars, and in all other environments, *iS occurred more than half of the time. When the environment also contained a velar consonant following the sonant, the probability of the occurrence of *uS increases. There were no instances of *iS between two velars.

Shevelov proposes to combine the two theories to achieve the greatest explanatory power. Exceptions are to be explained as being due to a generalization of the alternation series. He also proposes that both ECS variants could have existed simultaneously in the same word, one phonetically conditioned and one morphologically conditioned.

In summation, the following rules apply:

1) After palatovelars *S > *iS.
2) Between two velars (labiovelars included) *S > *uS.
3) After velars before non-velars *S > *uS.
4) After labials before velars *S > *uS.
5) After labials before non-velars, and after dentals (* included ) regardless of what follows, *S > *iS.
Although rules 3, 4, and 5 prevail statistically, they are marred by loan words and by the influence of full-grade forms of the same root.

In the above discussion it has been assumed that the syllabic sonant was in a preconsonantal position. Where the sonant was followed by a vowel, the sonant was not syllabic. Thus, IE *vl would not be expected to develop into Early Common Slavic *vul when followed by a vocalic affix. How then to explain *vulati 'to drift, float', attested by OCS vulati? The tendency to generalize forms with *iS or *uS was strong in Early Common Slavic; this tendency even carrying over to forms followed by vowels. In verbs, this was facilitated by the fact that originally suffixless verbs acquired vocalic suffixes without a reformation of the root. For example, the IE root *mn- developed into *min- in Early Common Slavic when followed by the infinitive suffix *-ti. That this verb was originally formed without a theme vowel is evidenced by Lithuanian minti. The Slavic form with the theme vowel -i- is a later innovation; this not changing the underlying zero grade reflex of the Indo-European root. Shevelov states, "In many verbs having N in their roots it is unclear whether they had zero or full grade in their infinitive stems: OCS -ćeti : -ćenq 'begin', jeti : jemq 'take'
The development of the Common Slavic zero grade reflexes can be divided into four stages:

1) All syllabic sonants became either *iS or *uS preceding a consonant.
2) The new reflexes are generalized before vocalic affixes.
3) The Slavic reduced vowels occur after the sonant in analogical formations.
4) The Slavic reduced vowels are utilized as a new zero grade in morphemes possessing no sonants.

The third and fourth stages listed above result in forms which contain a reduced vowel which is morphologically conditioned. For example, the verb *grimēti 'to thunder' is derived from the root word *gromū 'thunder' by means of producing a zero grade *grim-from *gromū.

This derivation containing the new Slavic zero grade could serve as a base for a new noun, as for example in Polish, where both grom and grzmot 'thunder' exist. In a few roots, the new Slavic zero grade was established in an environment containing no sonants at all, for example Russian večer : včera < *večer : včera.\(^\text{19}\)

\(^\text{19}\)In other words, *i was introduced into roots to form the zero grade, in spite of a lack of a sonant. The *i became identified with the zero grade function.
The zero grade in Common Slavic was used primarily in verbs having the thematic vowels *-e-/*-o- and *-je-/*-jo-. The alternation occurs between the roots of the present tense and the infinitive:

1) infinitive in e : present in zero
   a. e followed by a single consonant
   b. e followed by sonant plus consonant

2) infinitive in zero + -ati : present in full + -e/-o-

3) infinitive in zero + -ati : present in full + -je/-jo-

4) infinitive in zero + -eti : present in zero

5) present in full : aorist in zero

6) infinitive in zero + -ati : infinitive in full + -iti

7) infinitive in zero + noti : infinitive in full + -iti

Group one includes verbs of the type *mer-iti 'to die'. No theme vowel was used in the infinitive to link the root to the infinitive marker. The present tense is characterized by the new zero grade which is represented by the front reduced vowel. In as much as the present tense endings were all vocalic, no phonetic basis for the zero grade exists in Indo-European. For example, the 1st. sg. *mer-omi \( \rightarrow *_{m}r-omi \rightarrow *_{m}romi \) would be the expected devel-
opment by which the sonant would not have become syllabic. If this class of verbs were athematic, resulting in the 1st. sg. *mer−mi, and if the word stress fell on the final vowel of the desinence, the possible form *mi−mi > *er−mi could have been regularly generated, but this form would have resulted in Common Slavic *mirmi. If one is willing to accept this class of verbs as having been athematic in the present and infinitive, the solution for modern Slavic forms showing thematic desinences is to be found in a later Common Slavic transfer from the athematic class to class one, but still retaining the zero grade root in the present tense.

Other verbs in this first group are:

- per−ti "to push"   pir−om (1st. sg.)
- ner−ti "to pierce"  nir−om
- ster−ti "to extend" stir−om
- der−ti "to tear"    dir−om
- ter−ti "to rub, grind" tir−om

Athematic verbs in Slavic based on the 1st. sg. present ending *−mi are opposed to the thematic verbs which based it on *−m. Note that all of the examples found end in the sonant *m. No examples apparently exist with a root final *l. There are, however, a few verbs in group one which have a root final nasal consonant:...
The monophthongization of diphthongs in Late Common Slavic has made the task of determining the validity of reconstructed e : o alternations difficult. The problem lies in the fact that both *en and *in plus consonant resulted in a front nasal and that both *on and *un plus consonant resulted in a back nasal. Thus, for the Late Common Slavic *na-če-ti : *na-čin-č alternation, one could reconstruct either *na-čen-ti : *na-čin-om or *na-čin-ti : *na-čin-om for Early Common Slavic. The first opposition would reflect the e : zero alternation of group one, whereas the second would show no ablaut relationship.

There are a few verbs whose present stems show the zero grade and infinitive stems the full grade of the diphthong *ei:

pej-ti 'to drink'  pei-om > pij-č
bej-ti 'to beat'  bei-om > bij-č
vei-ti 'to twist'  vėi-om > vij-č

This subgroup of verbs is also ambiguous, as the alternation can be differently explained. The infinitives
could be reconstructed with *-ii- instead of *-ei-; similarly for the present tense. Clearly, the Indo-European zero grade of the *ei diphthong was *i and not *ii; however, there is no reason why the *i cannot be treated as a sonant in the same manner as the *r in *pr, in which case the Slavic zero grade would be *ii (the *i in second position > *j prevocally). The imperative of all the verbs in this subgroup clearly show the underlying *ei diphthong, e.g. *pej > *pei, *vej > *vei, etc. Modern Polish piję, bię, etc. can be explained by a vocalization of the reduced vowel under stress. If one were to view the Polish as evidence for reconstructing *-ij- as the normal grade, the problem of explaining the reflected vowel reduction in Modern Russian, as well as the imperatives in -ej- would remain.

One would expect other diphthongal combinations such as *oi, *eu, and *ou to give similar results, but evidence shows that the present tense retained the full grade in these cases, for example: *poi-ti : *poi-om > *pe-ti ; *poj-ǫ, *slou-ti : *slou-om > *slu-ti : *slov-ǫ.

There are a few verbs which belong to subgroup b of group one; they are characterized by the presence of a sonant followed by a consonant in the root. Two verbs have the sonant *i followed by the dental *t:
Note that in both verbs the present tense root is in the old zero grade. If the present root had utilized the full grade, the diphthong *ei would have monophthongized to *i; however, the resultant *i would not have reduced to *i, but would have remained *i. The diphthong could not have been *oi in *cis-ti, as the word initial consonant would have shown the second palatalization of */k/ instead of the first palatalization. In the second example, *cvis-ti, Modern Russian and Polish indicate the existence of the root diphthong *oi instead of *ei, i.e. Russian cvesti, Polish kwiecię się; but Old Church Slavonic indicates *ei, i.e. cvisti. The old zero grade of either diphthong would have resulted in Common Slavic front reduced vowel, but the infinitive in *-ei- better fits into the pattern. As the a-grade is characteristic for nouns, and as we have the a-grade in the noun *kvoit- 'flower' (Russian cvet, Polish kwiat), the infinitive in *-oi- may be a regularization or levelling of nominal and infinitival stems.

A number of Common Slavic verbs of group 1a end in liquids, especially */k/.
The infinitive appears in the zero grade (plus -a-ti) and the present tense appears in the $g$-grade.20

The present tense of *zuvati has the full grade of *ou and the present tense of *zidati has the full grade *ei prior to monophthongization. The zero grade reflected in the infinitive is a directly inherited zero grade of the full grade sonantal diphthong in both cases. The full grade of *zid-om eventually gave way to a present tense with *i by analogy to the infinitive. All of the infinitives containing *r or *y could have used the true zero grade without introducing a preceding reduced vowel,

20The sonant is treated as syllabic, in spite of its prevocalic position. Also note that *zuv-a-iti is in the $g$-grade.
as consonantal clusters containing a stop plus liquid were permissible. It is, of course, possible that the reduced vowel was not the syllabic element. Also, note that a back reduced vowel (i.e. *ᵻ) was used to characterize the new zero grade for the diphthong *ou in contrast to the front reduced vowel (i.e. *ᵻ). The infinitive *gũn-a-ti also had a back reduced vowel in the zero grade to prevent the occurrence of the first palatalization; this also proves that the front vowel *e of the root had completely disappeared by the time of the first palatalization. When the new zero grade was introduced, no velar consonants existed in the environment of a following front vowel and synharmonism required a back vowel (i.e. a non-front vowel) in this position.

Group three has the zero grade in the infinitive plus the theme *-a-. It is very much like group two, but different in that the present tense theme is *-je- instead of *-e-:

slip-a-ti 'to blind' slēpl-jo 'I blind'
pliz-a-ti 'to crawl' plēž-jo 'I crawl'
črip-a-ti 'to draw črēpl-jo 'I draw water'
stil-a-ti 'to spread' stel-jo 'I spread'
jim-a-ti 'to seize' jeml-jo 'I seize'
strug-a-ti 'to guard' struž-jo 'I guard'
pliv-a-ti 'to spit' plju-jé 'I spit'
bliv-a-ti 'to vomit' blju-jé 'I vomit'

Note that in the examples of group three above, the infinitives *slip-a-ti, pliz-a-ti, crip-a-ti, and stru-ga-ti show the old zero grade of full grade diphthongs, but that the verbs *stil-a-ti, jim-a-ti, pliv-a-ti and bliv-a-ti show the new Slavic zero-grade, two from monophthongs and two from diphthongs.

Group four contains verbs whose infinitive and present tense stems are in the zero grade. The infinitives are characterized by the theme *-e- and the present tense is characterized by the theme *-i-. Due to the fact that the first palatalization of velars is seen in a few of the infinitives, the theme *-e- cannot be derived from the diphthong *-oi-, but is rather from the former long *-e-. In Late Common Slavic, this *e changed to *a in the environment of a preceding palatal, thus resulting in the theme *-a- for those verbs originally having roots ending in a velar. Following are examples:

bíd-e-ti 'to be awake' bíd-i-tú 'he is awake'
gúrm-e-ti 'to thunder' gúrm-i-tú 'it thunders'
dúrz-a-ti 'to hold' dúrz-i-tú 'he holds'
milč-a-ti 'to be silent' milč-i-tú 'he is silent'
mírz-e-ti 'to abhor' mírz-i-tú 'he abhors'
min-š-ti 'to think' min-i-tú 'he thinks'
pir-ē-ti 'to quarrel'  pir-i-tū 'he quarrels'
svit-ē-ti 'to shine'  svit-i-tū 'it shines'
smīrd-ē-ti 'to stink'  smīrd-i-tū 'it stinks'
tīrp-ē-ti 'to be patient'  tīrp-i-tū 'he is patient'

There are three verbs which have replaced the present theme *-i- with *-ē-:
blīst-a-ti 'to glitter'  blīst-ē-tū 'it glitters'
lūst-a-ti sē 'to shine'  lūst-ē-tū sē 'it shines'
tūst-a-ti sē 'to toil'  tūst-ē-tū 'he toils'

In addition, there are a few verbs in this category which have lengthened the zero grade of the root diphthongs *ou or *eu resulting in *y. This lengthening process must have taken place prior to or at the time of the breakup of Indo-European when quantitative distinctions became qualitative:
slys-a-ti 'to hear'  slys-i-tū 'he hears'
kyp-ē-ti 'to boil'  kyp-i-tū 'it boils'

Other verbs which have the infinitival theme *-ē- are denominatives carrying the root vowel of the noun over to the verb:
bol- 'pain'  bol-ē-ti 'to ache'
vid- 'view'  vid-ē-ti 'to see'
boj- 'battle'  boj-a-ti 'to fear'

The present tense root contains the same root vowel as the infinitive.
Two verbs have the characteristic infinitival ending for groups two and three, *-ati, but they have the zero grade in both the infinitive and present tense roots. The present tense theme is *-i-:

- sūp-a-ti 'to sleep'
- sūp-i-tū 'he sleeps'
- sīč-a-ti 'to urinate'
- sīč-i-tū 'he urinates'

Group five contains verbs which contrast present roots in *e with aorist roots in zero. As the aorist root is usually identical to the infinitival root, the verbs taking part in this alternation also belong to groups two and three above:

- ber-qa 'I take'
- bir-a-xū 'I took'
- der-qa 'I rip'
- dir-a-xū 'I ripped'
- per-qa 'I crush'
- pir-a-xū 'I crushed'
- ẓen-qa 'I chase'
- gūn-a-xū 'I chased'
- zov-qa 'I call'
- zuv-a-xū 'I called'
- stel-jq 'I spread'
- stīl-a-xū 'I spread'

Group six includes verbs mentioned previously in group four in alternation with verbs containing the full grade in the root and the theme vowel *-i-. Thus, the alternation zero + ěti : full + iti:

- būd-ě-ti 'to be awake'
- bud-i-ti 'to awaken'
- < būd-
- grm-ě-ti 'to thunder'
- grom-i-ti 'to thunder'
- < grm-
As was mentioned before, those infinitives using the theme *-ě- which did not reflect the zero grade in the root are derived forms, possibly before the alternation became morphologically conditioned.

One notices that many of the Class II verbs in Slavic (i.e. those verbs whose infinitives historically ended in *nɔti-) are in the zero grade in all of their paradigmatic forms. This is in accordance with the situation in Indo-European, in which the zero grade was regularly used for
verbs containing a nasal infix. Originally, the nasal infix was a feature of only the present tense. In Common Slavic, it began to be attached to the infinitive-aorist root as well, although it took hold in the infinitive in many cases where it failed in the aorist and many other verbal forms using the same root. For example, one finds many verbs in Russian which have -nut' in the infinitive but not in the past tense. In Polish, there are even alternative infinitives with and without the nasal infix, for example, biec and biegać "to run".

There appears to have been two independent developments in Common Slavic concerning these verbs. Semelfactive verbs expressing the "instantaneousness" of an action may be derivations from Class I or III verbs whose infinitives ended in *-ati. The nasal infix of the Class II derivatives regularly spread to the non-infinitival forms. Inchoative verbs, expressing the beginning of a process in general, did not extend the infix beyond the infinitive.

The full grade of the roots are very likely to have been *ɔ or a sonantal diphthong with *o, which were themselves based on o-grades. The full grades are difficult to recover, at best. During Late Common Slavic, there was a tendency to form new Class II verbs from nouns and adjectives. Verbs formed this way regularly retained the grade of the pre-derivational root. In a few verbs, the
lengthened zero grade is observed.

Following is a list of non-prefixed Class II verbs which probably reflect the zero grade in the root, or in a few, the lengthened zero grade:

- gy-ng-ti 'to perish'
- düx-ng-ti 'to breathe'
- ālq-ng-ti 'to be quiet'
- kris-ng-ti 'to strike fire'
- kys-ng-ti 'to sour'
- mīrk-ng-ti 'to grow dark'
- mīrz-ng-ti 'to freeze'
- dvig-ng-ti 'to move'
- nik-ng-ti 'to disappear'
- süx-ng-ti 'to dry'
- tīlk-ng-ti 'to knock'
- tūk-ng-ti 'to strike, wound'
- krik-ng-ti 'to shout'
- krip-ng-ti 'to strengthen'
- sty-ng-ti 'to become cold'

The classification of the above examples is based on internal reconstruction, and looks more reliable in some than in others.

The verb *kripŋtɨ may have been formed directly from the adjective *krẹnuku 'strong' and may have had the vowel *ě from the beginning.
The full grade of the hypothesized root *goub- may be reflected in Polish *gubic' się 'to lose oneself'.

The root *doux- may appear in this full grade in the noun *dux 'breath, spirit' in Modern Russian. Polish shows the zero grade in the noun *dech 'breath' < *dūxū < *dūx-os. The lengthened zero grade shows up in the Polish and Russian verbs *dychać and *dyśat 'to breathe' respectively.

The verb *kysnōti may show the full grade *u < *ou in various words relating to taste, for example Russian *vkusno 'tasty'.

The verb *mirznōti may show the full grade *morz- in Polish *mrozić and Russian *morozit' 'to freeze'.

The verb *mirknōti shows the full grade *mork- in Polish *mroki 'twilight'.

The verb *tilknōti shows the full grade *tolk- in the Polish verb *tloczyć 'to compress, force into'. The zero grade is further reflected in Polish *tluc < *tlk-ti 'to pound, crush'.

The verbs *dvignōti and *kriknōti are listed, as they may be examples of the lengthened zero grade of *i < *e or *i.

The verb *suxnōti shows the full grade *u < *ou in the adjective *suxū, Russian *suxoj, although the verbal root may be in the full grade itself, if it were formed
from the adjective directly.

There are, of course, Class II verbs which do not show the zero grade in their roots. These are secondary derivations formed primarily from adjectives. A few examples are:

\[ \text{vę-nq-ti 'to wither, fade' < *vend-nq-ti} \]
\[ \text{max-nq-ti 'to wave'} \]
\[ \text{ax-nq-ti 'to sigh'} \]

Examples containing nasal vowels give no information as to their vocalic grade, as both the full and zero grades result in nasal vowels following monophthongization in Late Common Slavic. In the verb \[ \text{vę-nq-ti} \], the root could theoretically be based on the zero grade of \[ *\text{en} \], namely \[ *\text{in} \], but this is not recoverable, as both have the Late Common Slavic reflex \[ *\dot{e} \].

We have already observed the new lengthened zero grade in several class II verbs. These verbs are intransitive in contrast with the transitivity of the verb whose root is utilized. For example, the verb \[ *\text{gub-i-ti 'to ruin'} \] probably \[ < *\text{goub-} \] which provided the root before zeroing and lengthening for the derived verb \[ *\text{gyb-nq-ti} \] (or \[ *\text{gy-nq-ti} \]). Other examples are:

\[ \text{uc-i-ti 'to teach'} \quad \text{vyk-nq-ti 'to learn'} \]
\[ < \text{ouk-i-ti} \quad < \text{uk-nq-ti} \]
\[ \text{stüd-i-ti 'to cool'} \quad \text{sty-nq-ti 'to become cool'} \]
< stoud-i-ti < stud-nq-ti
red-a-ti 'to push' ri-nq-ti së 'to rush'
< rei-ë-ti < ri-nq-ti

The verbs providing the derivational root are all Class IV, and most have the theme vowel *-i-, although a few have *-ë- (note the change *ë a in the environment of a preceding soft consonant).

The lengthened zero grade also appears to have provided for the root alternation observed between the infinitive in *y and a noun in the full grade:
kry-ti 'to cover' krovû 'roof'
< krû- kru- < krou-os
ry-ti 'to dig' rovû 'ditch'
< rû- ru < rou-os
ši-ti 'to sew' ševû 'seam'
< šu- < šeu-os

(based on Polish szyc : saw)

The lengthened zero grade was used to form nouns from underlying verbal roots:
kou-a-ti 'to forge' kyji 'hammer'
< kû-jos
zuva-ti 'to call' zy-kû 'shout'
< zou- < zû-

The lengthened zero grade was widely used to form new iterative verbs from non-iterative verbs:
u-mer-ti 'to die' u-mir-a-ti
u-bir-a-ti 'to tidy up' u-bir-a-ti
der-ti 'to tear' dir-a-ti
dux-a-ti 'to blow' dyx-a-ti
zūv-a-ti 'to call' zyv-a-ti
li-ti 'to pour' lij-a-ti
zer-ti 'to look at' zir-a-ti
su-ti 'to heap' syp-a-ti 'to strew'
(cf. Pol. suc)
rek-ti 'to say' rik-a-ti 'to bellow'
(or rek-ti)
smě-ti 'to laugh' smij-a-ti
dq-ti 'to blow' -dym-a-ti

A confusion existed between the lengthened grades of *e and *i. Due to the fact that Class I verbs often had an alternation *e : *i or *i : *e between the infinitive root and the present tense root, long *i was apparently felt to be the lengthened grade of *e as much as the expected *e; and vice versa, the lengthened grade of *i was felt to be either *e or *i. In a relative chronology, this confusion must have occurred prior to Proto-Slavic in a period when the quantitative feature of vowels was still in existence. As a result of this confusion over the lengthened grade, doublets occurred, as for example:
pogrebati 'to bury' pogribati
súplètati 'to weave' súplitati
prěr̄èkati 'to argue' prěricati
sūžagati 'to burn' sūžizati

The lengthened grade was used extensively in Indo-European. Phonetically, it probably resulted from vowel contraction or compensation. The process of yapddhi mentioned previously was also instrumental in its development. This process was one by which length was considered the addition of or the compounding of vowels. For example, diphthongs were undoubtedly longer than monophthongs, so the short : long relationship of *u : *eu carried over to the innovated relationship *e : *e̱. Similarly, *u to *ou influenced the innovation *o : *o̱. This "apophonic length" took place in certain morphological categories where the original alternation was probably between full grade diphthongs and zero grade monophthongs. In a sense, these lengthened grades are a "back formation" based on the zero grade.

Morphologically, the lengthened grade characterized the nominative singular of consonantal and athematic nominal stems as well as the aorist verbal stems. The lengthened grade can be seen in the nominative singular in Sanskrit, for example, pita 'father' in contrast to pitáram 'father' (acc. sg.).
In Slavic, this distinction has been lost with the exception of n-stems which show in the masculine nominative singular the ending *y in contrast to the oblique cases where *-en- appears. This is a result of the nominative singular *-y reflecting the pre-Slavic ending *-ON (where N designates either *m or *n).

The use of the lengthened grade is more extensive in verbs. Common Slavic Class I verbs frequently show the long grade in the sigmatic aorist:

- gre-ti 'to dig'  grē-sū 'I dug'
- nes-ti 'to carry' nē-sū 'I carried'
- ves-ti 'to transport' vē-sū 'I transported'
- teš-ti 'to hurry' tē-sū 'I hurried'
- žeš-ti 'to burn' ža-xū 'I burned'
- reš-ti 'to say' rē-xū 'I said'
- cvis-ti 'to bloom' cvi-sū 'I bloomed'

Note that all of the examples have consonantal stems in the present tense, and that this final consonant is dropped in forming the above aorists. Lengthening does not appear to occur when the old aorist or the new sigmatic aorist (with -ox-) is formed. This category of ablaut was not productive in Common Slavic to any great extent, if at all.

A few prefixes contained the alternation full grade : lengthened grade in Common Slavic. In Indo-European, the occurrence of one or the other was probably based on their
position relative to ajoining syllables and the latter's vowel quantity:

\[
\begin{array}{c|c}
  \text{po : pa} & < & \text{po : pō} \\
  \text{pro : pra} & \text{por : pōr} \\
  \text{poz : paz} & \text{poz : pōz}
\end{array}
\]

Although examples are not numerous, it is possible that the alternation full grade : lengthened grade is reflected in the roots of verbs and i-stem deverbal nouns:

- reš-ti 'to say'  
  - rěči 'speech'
- tvor-i-ti 'to create'  
  - tvarī 'creation'
- žel-e-ti 'to wish'  
  - žali 'pity' < žel-
- gor-e-ti 'to burn'  
  - garī 'char'

The lengthened grade in Common Slavic is also reflected in the qualitative alternation *ě : ě. Such an alternation is bilateral in that it is originally based on the normal grade alternation *e : o which provided roots for later lengthening. The Common Slavic reflex is *ě : *a which is observed in Class I and III verbs which contrast with Class IV:

- iz-lēs-ti 'to come out'  
  - iz-laz-i-ti
  - < -lēz-  
  - < -lōz-
- rēz-a-ti 'to cut'  
  - (po)-raz-i-ti 'to strike'
  - < -rēz-  
  - < -rōz-

The lengthened grade was used extensively to form new iterative verbs in Common Slavic from non-iteratives.
The process is similar to the forming of iteratives by means of the new lengthened zero grade mentioned earlier. The new verbs are characterized by the infinitival theme *-a-, many being formed on the Class I and IV verbal stem. If they are based on Class IV stems, they will include the latter stems' *-i- theme:

- prost-i-ti 'to forgive' prašt-a-ti
- kor-i-ti 'to reproach' (po)-kar-a-ti
- po-gre-ti 'to bury' po-grěb-a-ti
  < po-greb-ti
- leš-ti 'to lie down' lěg-a-ti
  < leg-ti
- teš-ti 'to run' těk-a-ti
  < tek-ti

This process of forming new iterative verbs remained productive in Common Slavic, especially when the infix *-va- was added to the new iterative. In many cases, the length cannot be seen, as the derivational root is already long.

The qualitative ablaut alternation e : o is said to be the oldest in the Indo-European languages. This alternation was still productive in Common Slavic.

Certain declensional paradigms show the e : o alternation, namely the direct cases of the singular in contrast to the indirect (oblique) cases of e- and ū-stems:

- neb-os 'sky' (nom. sg.) CS nebo
- neb-es-es (gen. sg) nebesë
sleu-os 'word' (nom. sg.) CS slovo
sleu-es-es (gen. sg.) slovese

čeud-os 'miracle' (nom. sg.) čudo
čeud-es-es (gen. sg.) čudese

kam-ön-es 'stone' (nom. sg.) kamy
kam-en-es (gen. sg.) kamene

It is probable that the other consonantal stems had
the alternation shown above, but that they generalized the
ə-grade at an early date. Hypothetically:
im-ont 'name' (nom. sg.) im-en-es (gen. sg.)
vertm-ont 'time'
vertm-en-es

which would have resulted in Common Slavic *imq and vermq
instead of *imq and *vermq (the *-t- is dropped in *vermq).

The ə : ə alternation in Early Common Slavic showed
*ə for the 1st. person singular, dual, and plural and for
the 3rd. person plural in the present tense of verbs in
Classes I, II, and III in contrast to *ə elsewhere:

id-om 'I am going'
id-esi 'you are going'
id-etū 'he/she/it is going'
id-ovoi 'we two are going'
id-eta 'you two are going'
id-ete 'they two are going'
id-omū 'we are going'
id-ete 'you are going'
id-ontū 'they are going'

The relationship holds only for Early Common Slavic and for the simple aorist. Later, the 1st. person dual and plural aorist generalized the e-grade. The thematic aorist, used on consonantal stems, introduced the thematic vowel *-e- in all persons except the 2nd. and 3rd. singular.

The e : o alternation is reflected in deverbal nouns based on Class I verbs. The verb has the root in the e-grade in opposition to the nominal root in the o-grade. This alternation reflects, in all probability, the oldest use of ablaut. The derived nouns, as a class, denote the action expressed by the verb or the result of its action:

res-ti 'to say' rokū 'term'
rek-
pelš-ti 'to creep' polgū 'runner of a sledge'
pelg-ti
telš-ti 'to push' tolkū 'pushing' (based on Pol. łok 'crowd')
telk-
ves-ti 'to lead' (vy)-vodū 'conclusion'
ved-
nes-ti 'to carry' (pod)-nosū 'tray'
vez-ti 'to transport' vozū 'vehicle'
gres-ti 'to dig, row' grobū 'grave'
gŭn-a-ti 'to chase' (raz)-gonu 'dispersal'

(1st. sg. źen-om)

In the last example, (raz)gonu may be reflecting the zero grade of the infinitive.

A large number of nouns exist in the o-grade for which no examples of the e-grade can be found in modern Slavic. This does not mean that the e-grade verbs did not exist, but rather that they have been supplanted by new verbs. These new verbs could be secondary derivations, using nouns for the derivational roots (which are themselves already derivations). Thus, the new verbs may appear in the zero, o-, new lengthened, or long grade.

Nouns ending in *-oj may be the a-grade of verbs which had the diphthong *ei in the infinitive root in Early Common Slavic:

bi-ti 'to strike' boj 'battle'
< bei- < boi-

vi-ti 'to twist' (po)-voj 'blindwood'
< vei- (cf. Pol. powoj)

li-ti 'to pour' loj 'tallow'
< lei- < loi-

po-či-ti 'to rest' po-koj 'peace'
< -kei- < -koi-

Nouns ending in *-ov- may be the a-grade of verbs which had the diphthong *eu in Early Common Slavic, but
which later reflect the new lengthened zero grade:

- kry-ti 'to cover' krovu 'roof'
- ry-ti 'to dig' rovu 'ditch'
- sly-ti 'to be known as' slovo 'word'

(cf. Pol. slynąć)

Old Church Slavonic has sluti 'to be known as' showing the full grade in the infinitive instead of the lengthened zero grade.

Nouns which have the ř-grade in the root and the feminine suffix *-a often reflect the ř-grade of the underlying verbs:

- pes-ti 'to bake' (o)-pok-a 'rock'
- < pek-
  (pro)-pe-ti 'to stretch' (o)-pon-a 'curtain'
  < -pen-
- ses-ti 'to cut' (o)-sok-a 'scythe'
  < sek-
- ner-ti 'to pierce' nor-a 'burrow'
- ces-a-ti 'to comb' kos-a 'curl'
  < kes-
- vel-ę-ti 'to will' vol-ja 'will'
- tresč-a-ti 'to crack' trosk-a 'thunderbolt'
  < tresk-

In the last example, Polish troska has the extended meaning 'anxiety'.
The ə-grade was used to form new Class IV verbs from ə-grade verbs. The ə-grade verbs usually indicate a causative or intensive relationship to the ə-grade counterpart. In the case of verbs of motion, the newer ə-grade verbs express frequentativeness:

- bres-ti 'to wander'
- brod-i-ti
- nes-ti 'to carry'
- nos-i-ti
- vez-ti 'to transport'
- voz-i-ti
- ves-ti 'to lead'
- vod-i-ti
- ves-ti 'to lead'
- vod-i-ti
- tres-ti 'to shake'
- tr̄s-i-ti
- tres-ti 'to run'
- toč-i-ti
- tek-ti 'to hit'
- tok-i-ti
- tep-ti 'to drink'
- poi-ti 'to make drink'
- vel-ə-ti 'to will, wish'
- vol-i-ti 'to like, wish'

Ablaut relationships are definitely reflected in Common Slavic. The relationships are not as extensive as they probably were in Indo-European, due to the fact that affixation has been largely substituted.

For the most part, it appears that the roots found to
be alternating in Common Slavic are directly inherited from the Indo-European period, especially just prior to the breakup of Indo-European unity. The ə-grade verbal root, probably the basis for all other roots in the language, have mostly disappeared in favor of new derived verbs. The loss of these roots has resulted in the loss of many ə : ə root alternations in Common Slavic.

The area of greatest innovation has occurred in the development of the zero grade in Slavic. The syllabic sonants lost their syllabicity to newly generated reduced vowels immediately preceding them. The zero grade in Slavic is also in contrast to the zero grade in Indo-European in that it appears in prevocalic positions where it would not appear according to strictly phonetic development.

Another area of great innovation has been the new lengthened zero grade. The alternation of *ou : *y shows that this ablaut relationship must have arisen somewhat before the Proto-Slavic period. The lengthened and newly lengthened grades were used primarily to form aorists and new iterative verbs.

The ə : ə alternation was used primarily to form deverbal nouns and new Class IV verbs. It was probably the longest productive ablaut series in Common Slavic.

Sound changes which occurred during the Common Slavic
period had a great effect on the actual vowel qualities undergoing alternation. As will be seen in the following chapter, Slavic has greatly changed the actual vowels alternating in Indo-European by regular sound change. The greatest vocalic change in Common Slavic was the monophthongization of diphthongs. This had a profound effect on nasal diphthongs, resulting in such mergers, that the earlier alternations are difficult to recover.

The alternations at the end of Common Slavic were:

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<th>full</th>
<th>long</th>
<th>lengthened zero</th>
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<td>e</td>
<td>ē</td>
<td>(none)</td>
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<td>ī/ij</td>
<td>ei/i</td>
<td>ēj/i</td>
<td>i</td>
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<td>i</td>
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<td>eu/ůu</td>
<td>ēv/ůu</td>
<td>y</td>
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<td>ā/i]</td>
<td>ai/ě</td>
<td>aj/ě</td>
<td>i</td>
</tr>
<tr>
<td>ū/ūv</td>
<td>au/u</td>
<td>av/u</td>
<td>y</td>
</tr>
<tr>
<td>ī/lul</td>
<td>el</td>
<td>ēl</td>
<td>il/yl</td>
</tr>
<tr>
<td>ī/lul</td>
<td>ol</td>
<td>al</td>
<td>il/yl</td>
</tr>
<tr>
<td>īr/ür</td>
<td>er</td>
<td>ēr</td>
<td>ir/yr</td>
</tr>
<tr>
<td>īr/ür</td>
<td>or</td>
<td>ar</td>
<td>ir/yr</td>
</tr>
<tr>
<td>ēim/ûm/q/q em/q</td>
<td>ēm/q</td>
<td>im/ym/q/q</td>
<td></td>
</tr>
<tr>
<td>ēim/ûm/q/q om/q</td>
<td>am/q</td>
<td>im/ym/q/q</td>
<td></td>
</tr>
</tbody>
</table>

Nasal diphthongs with *n are treated in the same
manner as those shown above with *m. Note the syncretism of the grade reflexes when monophthongization occurs.

Many of the grades show two possibilities. This is due to the fact that reflexes were different in accordance with whether they were in pre-consonantal or pre-vocalic positions. Furthermore, when the full grade was a diphthong ending with either a nasal or liquid consonant, the zero grade in Common Slavic could be either in *i or *u and the lengthened zero grade either in *i or *y.
III. ABLAUT IN OLD CHURCH SLAVONIC

Old Church Slavonic provides the clearest examples of ablaut in the Slavic languages. This is primarily due to the existence of both reduced vowels orthographically. In the modern Slavic languages, due to sound change, one is frequently uncertain whether a given full vowel owes its existence to a former reduced vowel or to a full vowel. As the reduced vowels, or jers, reflect the zero grade in most cases, Old Church Slavonic provides much information about the zero grade in Slavic.

Although closely related, Old Church Slavonic is not identical to Late Common Slavic. The following phonetic changes distinguish Old Church Slavonic from Late Common Slavic:

1) *tort > OCS trat
2) tolт > tlат
3) tерт > trет
4) telt > tlет
5) #ort > rat
6) #olt > lat
7) tirt > trет
8) tűrt > trет
9) tǐlt > tlет
where t designates any consonant and V designates any vowel

Following are examples of the phonetic changes mentioned above:

<table>
<thead>
<tr>
<th>Late Common Slavic</th>
<th>Old Church Slavonic</th>
</tr>
</thead>
<tbody>
<tr>
<td>vornu 'raven'</td>
<td>vranz</td>
</tr>
<tr>
<td>storna 'side'</td>
<td>strana</td>
</tr>
<tr>
<td>bergu 'shore'</td>
<td>bregz</td>
</tr>
<tr>
<td>merti 'to die'</td>
<td>mreti</td>
</tr>
<tr>
<td>golva 'head'</td>
<td>glava</td>
</tr>
<tr>
<td>volsu 'hair'</td>
<td>vlasz</td>
</tr>
<tr>
<td>melko 'milk'</td>
<td>mleko</td>
</tr>
<tr>
<td>velkti 'to drag'</td>
<td>viestiti</td>
</tr>
<tr>
<td>ormo 'shoulder'</td>
<td>ramo</td>
</tr>
<tr>
<td>olkati 'to hunger'</td>
<td>lakati</td>
</tr>
<tr>
<td>orst 'size'</td>
<td>rasti 'to grow'</td>
</tr>
<tr>
<td>virxu 'top, summit'</td>
<td>vrxez</td>
</tr>
<tr>
<td>grurdlo</td>
<td>grzlo</td>
</tr>
<tr>
<td>milkti 'to be quiet'</td>
<td>mlceati</td>
</tr>
<tr>
<td>krujg 'I cover'</td>
<td>kryjg</td>
</tr>
<tr>
<td>oldiji 'boat'</td>
<td>ladii</td>
</tr>
</tbody>
</table>

The qualitative ablaut alternation e : o is no longer visible in the verbal paradigm. During Early
Common Slavic, before the monophthongization of diphthongs, the personal endings exhibited an *e : *o alternation between the different persons. The *o-grade was found in the 1st. person singular of the present tense endings *-om in all thematic verbs as well as the 3rd. person plural ending *-ont of the present and imperfect of all verbal classes except Class IV. All other personal endings appeared in the *e-grade. The 1st. person dual and plural of the present, imperfect, and aorist were originally in the *e-grade, although the *e-grade replaced it in the present. Where the *e-grade occurred in a position before a nasal consonant, and where this nasal consonant was in word final position, the ablaut relationship was lost to monophthongization. Under the same conditions, the *o-grade was similarly lost.

Old Church Slavonic shows a phonological alternation of *e : *o in the first person dual and plural of the imperfect and aorist, which may be expressed *e > *o in the environment of a following labial consonant.

Present

<table>
<thead>
<tr>
<th>Person</th>
<th>Form</th>
<th>Meaning</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 sg.</td>
<td>nesq</td>
<td>'I carry'</td>
<td>*nes-o-m</td>
</tr>
<tr>
<td>2 sg.</td>
<td>neseši</td>
<td></td>
<td>*nes-e-sai</td>
</tr>
<tr>
<td>3 sg.</td>
<td>nesetæ</td>
<td></td>
<td>*nes-e-tu</td>
</tr>
<tr>
<td>1 dl.</td>
<td>nesevê</td>
<td></td>
<td>*nes-e-voi</td>
</tr>
<tr>
<td>2 dl.</td>
<td>neseta</td>
<td></td>
<td>*nes-e-ta</td>
</tr>
<tr>
<td>3 dl.</td>
<td>nesete</td>
<td></td>
<td>*nes-e-te</td>
</tr>
<tr>
<td>Case</td>
<td>Singular</td>
<td>Plural</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>------------</td>
<td>----------------</td>
<td></td>
</tr>
<tr>
<td>1 pl.</td>
<td>nesemż</td>
<td>*nes-e-mos</td>
<td></td>
</tr>
<tr>
<td>2 pl.</td>
<td>neseete</td>
<td>*nes-e-te</td>
<td></td>
</tr>
<tr>
<td>3 pl.</td>
<td>nesęte</td>
<td>*nes-o-nt</td>
<td></td>
</tr>
</tbody>
</table>

### Imperfect

<table>
<thead>
<tr>
<th>Case</th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 sg.</td>
<td>nesęaxż</td>
<td>*nes-eax-o-m</td>
</tr>
<tr>
<td>2 sg.</td>
<td>nesęaše</td>
<td>*nes-eax-e-s</td>
</tr>
<tr>
<td>3 sg.</td>
<td>nesęaše</td>
<td>*nes-eax-e-t</td>
</tr>
<tr>
<td>1 dl.</td>
<td>nesęaxove</td>
<td>*nes-eax-o-voi</td>
</tr>
<tr>
<td>2 dl.</td>
<td>nesęašeta</td>
<td>*nes-eax-e-ta</td>
</tr>
<tr>
<td>3 dl.</td>
<td>nesęašete</td>
<td>*nes-eax-e-te</td>
</tr>
<tr>
<td>1 pl.</td>
<td>nesęaxomż</td>
<td>*nes-eax-o-mos</td>
</tr>
<tr>
<td>2 pl.</td>
<td>nesęašete</td>
<td>*nes-eax-e-te</td>
</tr>
<tr>
<td>3 pl.</td>
<td>nesęaxę</td>
<td>*nes-eax-o-nt</td>
</tr>
</tbody>
</table>

### Aorist

<table>
<thead>
<tr>
<th>Case</th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 sg.</td>
<td>nęszę</td>
<td>*nęs-o-m</td>
</tr>
<tr>
<td>2 sg.</td>
<td>nęse</td>
<td>*nęs-e-s</td>
</tr>
<tr>
<td>3 sg.</td>
<td>nęse</td>
<td>*nęs-e-t</td>
</tr>
<tr>
<td>1 dl.</td>
<td>nęsovę</td>
<td>*nęs-o-voi</td>
</tr>
<tr>
<td>2 dl.</td>
<td>nęsta</td>
<td>*nęs-ta</td>
</tr>
<tr>
<td>3 dl.</td>
<td>nęste</td>
<td>*nęs-te</td>
</tr>
<tr>
<td>1 pl.</td>
<td>nęsomż</td>
<td>*nęs-o-mos</td>
</tr>
<tr>
<td>2 pl.</td>
<td>nęste</td>
<td>*nęs-te</td>
</tr>
<tr>
<td>3 pl.</td>
<td>nęsę</td>
<td>*nęs-e-nt or *nęs-nt</td>
</tr>
</tbody>
</table>

In the new sigmatic aorist, the o-grade was chosen for the additional thematic vowel in all cases where the s was added, but the a-grade was left intact where the s was not added (i.e., the 2nd. and 3rd. sg.). This pattern
was used for certain consonantal stems only, as the them-
atic vowel appearing in the infinitive was carried over
to the new sigmatic aorist, if a thematic vowel appeared
in the infinitive.

**New Sigmatic Aorist**

| 1 sg. | nesoxt | *nes-o-s-o-m |
| 2 sg. | nese   | *nes-e-s    |
| 3 sg. | nese   | *nes-e-t    |
| 1 dl. | nesoxtově | *nes-o-s-o-voi |
| 2 dl. | nesosta | *nes-o-s-ta |
| 3 dl. | nesoste | *nes-o-s-te |
| 1 pl. | nesoxtom% | *nes-o-s-o-mos |
| 2 pl. | nesoste | *nes-o-s-te |
| 3 pl. | nesosē  | *nes-o-s-e-nt (or *nes-o-s-nt) |

From Old Church Slavonic, it is not possible to reconstruct the grade of the theme vowel in the 3rd. pl. aorist with certainty. The simple aorist shows a back nasal, while the new sigmatic aorist shows a front nasal vowel and the first palatalization of x (which < s by the ruki rule or by analogy to it).

In the aorist, simple, old, and new, no theme vowel appears between the root and the endings for the 2nd. and 3rd. persons dual and plural (in the case of the new sigmatic aorist, between the sigma and the personal endings. From an historical point of view, one could term this a
vowel : zero alternation of the thematic vowel.

The present passive participle in Old Church Slavonic frequently shows the ə-grade of the thematic vowel. This is probably indicative that the ə-grade is the original grade for the thematic vowel in the 1st. person plural for verbs in classes I, II, and V. Class III verbs would have the ə-grade in any case, as a phonetic rules required that ə following j change to the front vowel a.

nesemə 'we carry'  nesomə 'being carried'
dvignemə 'we move'  dvigomə 'being moved'
damə 'we give'  dadomə 'being given'

In the case of Class III and IV verbs, a syncretism exists between the 1st. plural and the present passive participle (nom. sg. masc.). Note that in dvigomə, the nasal infix is not present, as it is in the aorist.

The ə : ə alternation is widely found in Old Church Slavonic ə-grade verbs and ə-grade nouns:

saberə 'I gather'  sabore 'gathering'
ležati 'to lie down'  lože 'bed'
plesti 'to weave'  oplotə 'fence'
< *plet-
bresti 'to drag'  brode 'ford'
< *bred-
vesti 'to transport'  vozə 'wagon'
vesti 'to lead'  vəvodə 'import'
<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>resti</td>
<td>'to say'</td>
<td>otroka</td>
<td>'denial'</td>
</tr>
<tr>
<td>&lt; *rek-</td>
<td></td>
<td>prorokz</td>
<td>'prophet'</td>
</tr>
<tr>
<td>nesti</td>
<td>'to carry'</td>
<td>prinose</td>
<td>'oblation, offering'</td>
</tr>
<tr>
<td>gresti</td>
<td>'to bury'</td>
<td>grobto</td>
<td>'grave'</td>
</tr>
<tr>
<td>&lt; *greb-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tešti</td>
<td>'to flow'</td>
<td>tokz</td>
<td>'current'</td>
</tr>
<tr>
<td>&lt; *tek-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>česati</td>
<td>'to comb'</td>
<td>kosa</td>
<td>'braid'</td>
</tr>
<tr>
<td>veleti</td>
<td>'to order'</td>
<td>volja</td>
<td>'will, freedom'</td>
</tr>
<tr>
<td>vlēšti</td>
<td>'to drag'</td>
<td>oblak</td>
<td>'cloud'</td>
</tr>
<tr>
<td>&lt; *velk-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>strēšti</td>
<td>'to guard'</td>
<td>*ob-volk-straza</td>
<td>'guard'</td>
</tr>
<tr>
<td>&lt; *sterg-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>teti</td>
<td>'to beat'</td>
<td>*storg-ja</td>
<td></td>
</tr>
<tr>
<td>&lt; *tep-</td>
<td></td>
<td>toplt</td>
<td>'warm'</td>
</tr>
<tr>
<td>žrēti</td>
<td>'to devour'</td>
<td>*top-l-</td>
<td></td>
</tr>
<tr>
<td>&lt; *ger-</td>
<td></td>
<td>gorska</td>
<td>'bitter'</td>
</tr>
<tr>
<td>črēti</td>
<td>'to draw up water'</td>
<td>kroplja</td>
<td>'droplet'</td>
</tr>
<tr>
<td>&lt; *kerp-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vrēšti</td>
<td>'to throw'</td>
<td>vraga</td>
<td>'enemy'</td>
</tr>
<tr>
<td>&lt; *verg-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>žlēšti</td>
<td>'to reward'</td>
<td>zlato</td>
<td>'gold'</td>
</tr>
<tr>
<td>&lt; *gelt-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt; *golt-o-</td>
<td></td>
</tr>
</tbody>
</table>
lěsti 'to climb'  
loza 'vine'

< *lez-

This alternation also operated for roots containing nasal diphthongs. In Old Church Slavonic, the result is a new alternation of ɐː ɐ (before consonants). It is not possible to attribute the front nasal ɐ to a former ɐ-grade nor the back nasal ɐ to an ɐ-grade with certainty, as a merger of front and back vowels occurred prior to monophthongization. In certain instances, the former vowel can be seen in forms in which the nasal consonant is followed by a vowel, in which case the preceding vowel was retained. Even then, however, one must deal with the possibility that the vowel thus observed might be in a different grade.

blěsti 'to err'  
blůdz' 'sin, fornication'

< *blend-

zvěšti 'to ring out'  
zvůka 'sound'

< *zvenk-

trěšti 'to shake'  
trůža 'earthquake'

< *trans-

sěšti 'to sit'  
sůža 'court'

< *send-

měšti 'to trouble'  
můža 'torture'

< *ment-

prěšti 'to span'  
průža 'grasshopper'
In a few of the above examples, the infinitive contains a Ž instead of the expected ė. This is not a regular phonological development, and must be considered exceptional. In sĕsti, the nasal vowel appears in the present tense, for example sĕd̑o 'I sit down'. The same phenomenon occurs with a few other verbs in Old Church Slavonic, for example byti 'to be' : bōd̑o 'I will be', leštì 'to lie down' : lēg̑o 'I lie down', and obrĕsti 'to find' : (ob)rĕst̑o. The zero grade was a feature of such infixed stems in Indo-European (Shevelov, 1965:115). The nasal ė appears in the Class II verb, sĕkn̑o 'to flow', which provides evidence that the root *senk- did exist.

As in Common Slavic, Old Church Slavonic reflects alternations between the infinitive roots of different but related verbs. The ė : Ž alternation which underlies many of the alternations is usually no longer visible as such, but is manifest by a new series which is a result of phonetic changes. One alternation of this type is between Ž and Ž. The Ž is historically from the diphthong *ei (ė-grade) and the Ž is from the diphthong *ei (ė-grade). As elsewhere, it is often difficult to prove that the vowel in Old Church Slavonic is a reflex of a former
diphthong, because the vowel could have resulted from other possibilities. However, where the examples fit the general pattern, and where no evidence to the contrary exists, such paired verbs will be considered to reflect earlier ablaut alternations. Following are a few examples of the Old Church Slavonic $i : ě$ alternation:

- biti 'to strike' bojati sę 'to fear'
  $< *bei-$ $< *boi-$
- piti 'to drink' poiti 'to make drink'
  $< *pei-$ $< *poi-$
- visěti 'to be hanging' věšati 'to hang'
  $< *veis-$ $< *vois-ja-$
- gniti 'to rot' gnoiti 'to fester'
  $< *gnei-$ $< *gnoi-$
- liti 'to pour' lějati 'to pour'
  $< *lei-$ $< *loi-$

In the case of the verbs adding the theme vowel -a-, the underlying diphthong did not monophthongize. This leaves verbs of the poiti type, which would have normally become *pěti due to the pre-consonantal position of *oi. By reconstructing a theme vowel *i for these verbs, the diphthong can remain intact during monophthongization and the two *i's can assimilate in a later period. In the case of lějati or lijati (alternate form), the Class I verb *lei-ți
could have directly provided the root without ablaut. According to an early phonological rule, *e > *i before a *j plus vowel; thus, *lei-a-ti could have become *lij-a-ti directly; then to lijati. However, the present tense shows a ḗ throughout, for example lejgta 'they are pouring', which points to the underlying diphthong *oi. Furthermore, it is not impossible that lijati reflects the lengthened zero grade. It is apparent that no explanation is unproblematical.

The zero grade is the grade most widely seen in Old Church Slavonic. It appears in the orthographical form of either a front or back jer. True zero grades, whereby the syllable completely loses a vowel, are rare. Due to the law of synharmonism, which requires soft consonants to be followed by front vowels or a, and to the law of open syllables, which requires that every syllable end with a vowel, the zero grade in Old Church Slavonic is unlike its predecessor in Indo-European. Permissible consonant clusters in Old Church Slavonic were: (1) s or z, plus (2) stop or affricate, plus (3) r or y, plus (4) l, m, or n, plus (5) j.

Following is a chart of zero grade reflexes in Old Church Slavonic and their relationship to the zero grade in Indo-European:

<p>| Preceding Consonants |</p>
<table>
<thead>
<tr>
<th>Indo-European</th>
<th>Old Church Slavonic</th>
</tr>
</thead>
<tbody>
<tr>
<td>e  : zero</td>
<td>e : zero / ē</td>
</tr>
<tr>
<td>ei  : i</td>
<td>i : ē</td>
</tr>
<tr>
<td>eu  : u</td>
<td>'u : ć</td>
</tr>
<tr>
<td>er  : r</td>
<td>rě : re / r%</td>
</tr>
<tr>
<td>el  : l</td>
<td>lě : lě / l%</td>
</tr>
<tr>
<td>em  : m</td>
<td>č : ľ / ľ</td>
</tr>
<tr>
<td>en  : n</td>
<td>Ċ : ĉ / ĉ</td>
</tr>
<tr>
<td>o  : zero</td>
<td>a : zero / ā</td>
</tr>
<tr>
<td>oi  : i</td>
<td>ē : ē</td>
</tr>
<tr>
<td>ou  : u</td>
<td>u : ć</td>
</tr>
<tr>
<td>or  : r</td>
<td>ra : re / r%</td>
</tr>
<tr>
<td>ol  : l</td>
<td>la : lě / l%</td>
</tr>
<tr>
<td>om  : m</td>
<td>Ľ : ľ / ľ</td>
</tr>
<tr>
<td>on  : n</td>
<td>Ľ : ľ / ľ</td>
</tr>
</tbody>
</table>

**Preceding Vowels**

<table>
<thead>
<tr>
<th>ei  : (did not occur)</th>
<th>ij : Ėj</th>
</tr>
</thead>
<tbody>
<tr>
<td>eu  :</td>
<td>ov : ćv</td>
</tr>
<tr>
<td>er  :</td>
<td>er : Ėr / Ėr</td>
</tr>
<tr>
<td>el  :</td>
<td>el : Ėl / Ėl</td>
</tr>
<tr>
<td>em  :</td>
<td>em : Ėm / Ėm</td>
</tr>
<tr>
<td>en  :</td>
<td>en : Ėn / Ėn</td>
</tr>
<tr>
<td>oi  :</td>
<td>oj : Ėj</td>
</tr>
</tbody>
</table>
The alternation **full grade : zero grade** is a Slavic innovation preceding vowels, and did not occur in Indo-European. On phonetic grounds, the zero grade should not have occurred in such an environment, as the sonant which stood in intervocalic position should have provided the syllabification V-CV, in which case the zero grade of the first vowel would have resulted in merely CV. However, possibly due to the law of open syllables, a jer was introduced preceding CV. In most cases, it appears that a front jer was inserted rather than a back jer.

The ablaut relationships of Old Church Slavonic were further complicated by the appearance of one grade preconsonantly and by a different grade prevocally. This fact doubled the number of alternations possible, in most cases, with respect to the underlying alternation. For example, the alternation e : zero resulted in the following possible alternations in Old Church Slavonic:

<table>
<thead>
<tr>
<th>full grade</th>
<th>zero grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>*ei</td>
<td>i</td>
</tr>
<tr>
<td>i</td>
<td>e</td>
</tr>
<tr>
<td>an</td>
<td>an</td>
</tr>
<tr>
<td>al</td>
<td>al</td>
</tr>
<tr>
<td>ar</td>
<td>ar</td>
</tr>
<tr>
<td>av</td>
<td>av</td>
</tr>
</tbody>
</table>

ou : av / av
or : ar / ar
ol : al / al
om : am / am
on : an / an
<table>
<thead>
<tr>
<th>*eu</th>
<th>ju</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>ju</td>
<td>%v</td>
<td></td>
</tr>
<tr>
<td>ov</td>
<td>%v</td>
<td></td>
</tr>
</tbody>
</table>
| *er  | rē  | rė /
| rē   | %r / rē |    |
| er   | rē / rē |    |
| *el  | lē  | lē /
| lē   | %l / lē |    |
| el   | %l / lē |    |
| *em  | ė   | ė /
| ė    | %m / ėm |    |
| em   | ė / ṝ |    |
| *en  | ė   | ė /
| ė    | %n / ėn |    |
| en   | ė / ṝ |    |

and for the underlying alternation o : zero (o):

| *oi  | ē   | ē /
<p>| ē    | %j  |    |</p>
<table>
<thead>
<tr>
<th>Reflex</th>
<th>*ou</th>
<th>u</th>
<th>ə</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>*or</td>
<td>ra</td>
<td>rə / rə</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ra</td>
<td>rə / rə</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ar</td>
<td>rə / rə</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ar</td>
<td>rə / rə</td>
</tr>
<tr>
<td></td>
<td>*ol</td>
<td>la</td>
<td>əl / əl</td>
</tr>
<tr>
<td></td>
<td></td>
<td>la</td>
<td>əl / əl</td>
</tr>
<tr>
<td></td>
<td></td>
<td>al</td>
<td>əl / əl</td>
</tr>
<tr>
<td></td>
<td></td>
<td>al</td>
<td>əl / əl</td>
</tr>
<tr>
<td></td>
<td>*on</td>
<td>ɤ</td>
<td>ə / ə</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ɤ</td>
<td>ən / ən</td>
</tr>
<tr>
<td></td>
<td></td>
<td>an</td>
<td>ə / ə</td>
</tr>
<tr>
<td></td>
<td></td>
<td>an</td>
<td>ən / ən</td>
</tr>
<tr>
<td></td>
<td>*om</td>
<td>ɤ</td>
<td>ə / ə</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ɤ</td>
<td>əm / əm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>am</td>
<td>ə / ə</td>
</tr>
<tr>
<td></td>
<td></td>
<td>am</td>
<td>əm / əm</td>
</tr>
</tbody>
</table>

Some of the zero grade reflexes listed in the above table are only theoretical possibilities. In prevocalic position, one cannot predict with certainty whether the
jer will be front or back. In preconsonantal position, the ambiguity can result in either a front or back nasal vowel. It appears that the gravity of the jer is closely allied with the quality of the full grade vowel preceding the sonant in the diphthong. In the majority of cases, full grade diphthongs containing an *e as the initial element have front jer plus sonant (or glide) in Old Church Slavonic, and vice versa for full grade diphthongs containing *e. Thus, where monophthongization has occurred, the front nasal e appears for the zero grade of *em and *en, and the back nasal o appears for the zero grade of *om and *on.

As in Common Slavic, the alternation of full grade : zero grade occurs between the present tense stem and the infinitive stem of verbs. This alternation operates in both directions, so that in certain verbs the full grade is found in the infinitive stem and in other verbs is found in the present stem.

Except where otherwise indicated, the grade found in the infinitive stem is the same as the grade in the supine, aorist, imperfect, and the past participles. The grade of the present stem is the same as the grade found in the imperative and the present participles.

The following Old Church Slavonic verbs have the zero grade (mostly the new Slavic zero grade) in the infinitive
and the full grade (usually e) in the present:

- berq (1st. sg.)
- derq
- perq
- pljuq
- slpljg
- jemljq
- borq
- steljg
- piq
- lejq
- løjg
- zëjq
- zëjq
- smëjq
- zovq
- ženq
- židq
In the last example, a doublet apparently existed for the present tense, i.e., both židq and židq. Meillet (1965:219) implies that the form židq is older.

It appears that all of the verbs ending in -jati have been found also with the form -ijati. If the ă of the present stem is historically from an *oi, the zero grade would be front jer. Perhaps the i of the infinitive is an example of the new lengthened zero grade. The verbs with i in the present stem representing the full grade are difficult to reconstruct with certainty. The possibility of i being an original full grade is remote, as it would have had to be long ĭ in pre-Slavic; it is generally believed that neither *i nor *u were full vocalic phonemes at that time, and thus, did not participate in qualitative ablaut. In this case, the i of pišq and židq may be from either monophthongized *ei, or less likely, from the new lengthened grade of an original *i. The acceptance of *ei as the underlying full grade results in both verbs fitting the pattern.

The following Old Church Slavonic verbs have the full grade in the infinitive stem and the zero grade in the present stem:

1) re : rb črěti 'to draw water' črěpq
črěsti 'to cut' črětq
vrěsti 'to tie' vrězq
<table>
<thead>
<tr>
<th>Root</th>
<th>Verb</th>
<th>Meaning</th>
<th>Root</th>
<th>Verb</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>2)</td>
<td>re</td>
<td>mreți 'to die'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>trēti 'to scrape'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>żrēti 'to devour'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3)</td>
<td>le</td>
<td>tlēšti 'to pull'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1z</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4)</td>
<td>g</td>
<td>dōti 'to blow'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>am</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5)</td>
<td>g</td>
<td>klęti 'to curse'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bn</td>
<td>żęti 'to reap'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>pęti 'to hang'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>načęti 'to begin'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6)</td>
<td>g</td>
<td>jęti 'to take'</td>
<td></td>
<td></td>
<td>(vaz)ęmq</td>
</tr>
<tr>
<td></td>
<td>bm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7)</td>
<td>g</td>
<td>jęti 'to take'</td>
<td></td>
<td></td>
<td>imq</td>
</tr>
<tr>
<td></td>
<td>i</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8)</td>
<td>i</td>
<td>čisti 'to count'</td>
<td></td>
<td></td>
<td>čętq</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9)</td>
<td>e</td>
<td>żęsti 'to burn'</td>
<td></td>
<td></td>
<td>żęgq</td>
</tr>
<tr>
<td>10)</td>
<td>u</td>
<td>sut̄i 'to spread'</td>
<td></td>
<td></td>
<td>sēpq</td>
</tr>
</tbody>
</table>

A process of levelling the difference between the roots of the infinitive and present stems was evident in some of the examples listed above. Group two verbs in the table above were sometimes written with a front jer preceding the liquid, even though it was not etymological, for example, mbrēti to the present tense mbrq and tbrēti to the present tense tbrq. In addition, the infinitive was sometimes reformed so that it also reflected the zero grade of the present stem, for example trēti instead of trēti and -merti instead of mreți.
Two originally different verbs, *žerti* 'to devour' and *žirti* 'to sacrifice' became confused, as the present stem for both was *žir-.*

As was mentioned above, the infinitive stem was normally used for the aorist, imperfect, and past participles. The verb žesti 'to burn', however, used the zero grade for the aorist and past participles, for example, zažbże 'he burned'.

The zero grade of jěti 'to take' shows up in two different phonetic forms depending on the prefixation or non-prefixation of the present stem. Initial jb of *jbm-* changed to i when the stem was unprefixed. When prefixed, the j dropped out (historically speaking, the prothetic j failed to appear).

The verbs nebrěšti 'to neglect' and vlešti 'to pull' show the zero grade in the past passive participles, but have reformed the present stem to the full grade by analogy to the infinitive.

The alternation full grade : zero grade is seen between related infinitives in Old Church Slavonic. It appears that infinitives formed with the theme vowel -ě- occur in the zero grade in contrast to verbs formed with the theme vowels -a- or -i- which occur in the full grade:

svit-a-ti 'to shine'    sv t-ě-ti 'to shine'
< *sveit-             < *svit-
vrat-i-ti 'to turn' vrat-ě-ti 'to revolve'
< *vort-
vel-ě-ti 'to will, wish' do-vel-ě-ti 'to satisfy'
*vel-

The i of svitati is possibly the lengthened zero grade of the former diphthong *oi instead of the full grade of *ei. The verb dovelěti is identical to the unprefixed velěti, except the root is in the zero grade. The prefixation may have caused a stress shift which then resulted in the appearance of the reduced vowel.

The lengthened zero grade appears as i or y in Old Church Slavonic. The lengthening process must have occurred during the pre-Slavic period when the zero grade of diphthongs was the reduced vowels ů and ų. The fact that the lengthened zero grade of diphthongs whose final element was a sonant also appears as jS or yS (or Sj and Sy) indicates that the lengthened zero grade was productive at a time slightly before the transformation of quantitative distinctions of vowels into qualitative distinctions. Moreover, a relationship must have existed between the new Slavic zero grade and the vowels i and u. It is too coincidental for the relationship jS : jS and yS : yS to have occurred accidently. This relationship of the lengthened zero grade to the zero grade leads one to the conclusion that a period existed before the quantitative to qualita-
tive change during which the new Slavic zero grade reduced vowels were of an i and u quality.

The lengthened zero grade is seen in verbal formations primarily. Many new verbs were formed with the suffix -ati which expressed inchoativeness (dлительność) or frequentativeness. They could be formed from the roots of verbs from any verbal class. For example:

<table>
<thead>
<tr>
<th>New Verb</th>
<th>Zero Grade Root</th>
</tr>
</thead>
<tbody>
<tr>
<td>стбирати 'to gather'</td>
<td>бр-</td>
</tr>
<tr>
<td>умирати 'to be dying'</td>
<td>мр-</td>
</tr>
<tr>
<td>засыхати 'to begin to dry'</td>
<td>сх-</td>
</tr>
<tr>
<td>дышати 'to breathe'</td>
<td>дх-</td>
</tr>
<tr>
<td>слышати 'to hear'</td>
<td>слух- &lt;о&lt;br&gt;слух-</td>
</tr>
<tr>
<td>призывати 'to summon'</td>
<td>зыв-</td>
</tr>
<tr>
<td>простирати 'to spread'</td>
<td>стр-</td>
</tr>
<tr>
<td>зирати 'to look at'</td>
<td>зр-</td>
</tr>
</tbody>
</table>

In addition, a few verbs from other classes were formed by lengthening the zero grade of the root:

| Kysноти 'to turn sour' | квас- <о<br>квас- |
| Ryти 'to dig'         | рв- <о<br>рв- |
| Byти 'to be'          | бд- <о<br>бд- |
| Сноти 'to turn cold'  | студ- <о<br>студ- |
| Visети 'to be hanging' | вс- <о<br>вс- |

In the last example, visети could also be considered as
reflecting the ź-grade, for the zero grade is unattested.

A few nouns were formed by lengthening the zero grade of the root, but they are likely to be truncated deverbal nouns. For example, rylo 'spade' was likely formed from the verb ryti 'to dig'.

The lengthened grade served many of the same functions as the newly lengthened zero grade (and vice versa). Many verbs were formed in the third class by adding the suffix -ati and lengthening the root vowel. Interestingly, only the root vowels *e and *o seem to have undergone lengthening. This process for forming new Class III verbs is still productive in Slavic. Following are a few examples:

<table>
<thead>
<tr>
<th>Verbal Root</th>
<th>New Verb</th>
</tr>
</thead>
<tbody>
<tr>
<td>mog- 'to be able'</td>
<td>po-mag-ati</td>
</tr>
<tr>
<td>plov- 'to float, sail'</td>
<td>plav-ati</td>
</tr>
<tr>
<td>plet- 'to braid'</td>
<td>st-plět-ati</td>
</tr>
</tbody>
</table>

When the verbal root was taken from a Class IV verb, the theme -i- was included in the derivational base:

<table>
<thead>
<tr>
<th>Verbal Root</th>
<th>New Verb</th>
</tr>
</thead>
<tbody>
<tr>
<td>prosti- 'to forgive'</td>
<td>prašt-ati</td>
</tr>
<tr>
<td>na-seli- 'to settle'</td>
<td>na-sělj-ati</td>
</tr>
</tbody>
</table>

But this rule is not exceptionless:

<table>
<thead>
<tr>
<th>Verbal Root</th>
<th>New Verb</th>
</tr>
</thead>
<tbody>
<tr>
<td>skoči- 'to skip'</td>
<td>skak-ati</td>
</tr>
<tr>
<td>loži- 'to lie'</td>
<td>po-lag-ati</td>
</tr>
</tbody>
</table>

In which case, it is possible that the Class III verbs pre-
ceded the Class IV verbs.

Another common occurrence of the lengthened grade in Old Church Slavonic was in the sigmatic aorist of Class I verbs (occasionally Class II). Again, only the root vowels ə and ə were affected. Apparently, the lengthening did not take place with verbs in the new sigmatic aorist.

<table>
<thead>
<tr>
<th>infinitive</th>
<th>aorist</th>
</tr>
</thead>
<tbody>
<tr>
<td>greti 'to warm'</td>
<td>gręse 'they warmed'</td>
</tr>
<tr>
<td>bosti 'to pierce'</td>
<td>bast 'I pierced'</td>
</tr>
<tr>
<td>vesti 'to lead'</td>
<td>vędą 'I led'</td>
</tr>
<tr>
<td>jasti 'to eat'</td>
<td>-ęsą 'I ate'</td>
</tr>
<tr>
<td>&lt; *jesti</td>
<td>nęsą 'I carried'</td>
</tr>
</tbody>
</table>

nesti 'to carry'

Ablaut is reflected in Old Church Slavonic, but due to the many phonetic changes in both Old Church Slavonic and Common Slavic, the exact relationships are often not directly apparent. In certain former ablaut relationships, phonetic mergers have even rendered internal reconstruction impossible. The ə : ə qualitative ablaut was, in all probability, still alive, and there is little doubt that the process of vowel lengthening (morphologically) was still productive in verbal derivation, but the process was no longer on a phonetically quantitative level.
Old Russian is defined as the language represented by manuscripts dating after 1100 A.D. which are not Old Church Slavonic and which show Eastern Slavic features. This definition is somewhat artificial, as are all non-relative dates concerning the beginning of a language. The Ostromir Gospels which appears to have been copied by Deacon Gregorio from a Bulgarian original in 1056-57 contains many features indicative of the speech of the Eastern Slavs. The features mentioned are "substitutions" of certain letters for the letter-values expected. For example, it contains many examples of the 3rd. sg. present tense verb ending in a front jer in place of a back jer, of the use of ja instead of the front nasal ŗ, of the syncope of both jers in certain environments, and of the metathesis of jers following liquids to jers preceding liquids.

The nasal vowels which came into existence following the monophthongization in Late Common Slavic and which existed throughout the ninth and into the tenth centuries—as reflected in Old Church Slavonic—evolved into non-nasal vowels in the dialect of the Eastern Slavs. The two sym-
bols, so-called \textit{jusy}, which denoted nasal vowels in Old Church Slavonic, were utilized to denote different qualitative values. The front \textit{jus}, \textit{q} in transcription, symbolized the vowel \textit{a} following a palatalized consonant or \textit{j}. The back \textit{jus} (also called the major \textit{jus}), \textit{q} in transcription, was discarded in the twelfth century in favor of the digraph \textit{ou}; this digraph denotes the vowel \textit{u} (Matthews, 1960:76-77). The Old Russian alphabet in its eleventh century form survived almost in its entirety until the sixteenth century, when the ligatured cursive script ("skoropis'") replaced the former uncials and semi-uncials.

Another phenomenon, which was to considerably change the morphemic shape of Old Russian, was the further reduction and loss of \textit{jers} in certain environments and their clarification ("projasnenie") in others. Probably no later than the middle of the twelfth century, the \textit{jers} in "weak" positions (\textit{i.e.} before a full vowel in the following syllable or in word final position) were no longer pronounced. The \textit{jers} in "strong" positions (\textit{i.e.} in a syllable preceding a weak \textit{jer}) were fully vocalized in most of the Eastern Slavic world by the same time. The former back \textit{jer} became \textit{o} and the former front \textit{jer} became \textit{e} (Kiparsky, 1963:153).

The phonetic development by which the vowel \textit{e} changed
to \( o \) when under stress and when preceding a hard consonant or word boundary occurred prior to the middle of the twelfth century in most of the Eastern Slavic world.

In the southern and western dialects of East Slavic, the vowel \( ë \) merged with \( e \) by the beginning of the twelfth century. In the Ukraine and in Northern Russian, this merger was delayed for a considerable period of time. The written language, being more conservative than the spoken language, retained the symbols for the jers in strong position up to the fourteenth century. Similarly, the merger of \( ë \) and \( e \) was not reflected orthographically until the spelling reform of 1918 (Matthews, 1960:79-80).

Further mergers occurred among the unstressed vowels. The most widespread merger was that of \( o \) and \( a \). This phenomenon is termed "akan'e" and also frequently includes the merger of \( a \) and \( e \) to \( i \) after soft consonants. In Modern Standard Russian, this phonetic merger is seldom reflected in the orthography. The falling together of unstressed \( a \) and \( o \) was reflected in manuscripts as early as the fourteenth century:

S XVI i osobeno s XVII stoletija upotreblenie v neudarennom polozenii \( a \) vmesto \( o \), a takze \( e \) vmesto \( ja ili i \) vmesto \( e \) v rukopisnyx pamjatnikax (oso- beno v pamjatnikax delovogo jazyka, v castnoj pere­­ piske i t.p.) srednerusskogo, juznorussskogo, i belo­­ russkogo proisxozenija vstrecaetsja vse casce i casce. (Cernyx, 1962:141)

The vowel mergers mentioned in addition to the vowel
changes which have occurred in Common East Slavic and in Old Russian have introduced several new vocalic alterations within roots. In some alternations, the position of word stress is the catalyst; in others it is the phonetic environment.

The vowel alternations between roots which existed in Early Common Slavic are reflected in Old Russian and Modern Russian, but due to phonetic changes, they often appear to be unrelated.

One of the greatest changes has occurred in the zero grade: full grade alternation. Wherever the zero grade contained a sonant in Proto-Slavic, the picture has become quite complex.

1) Proto-Slavic zero grade of *r: Preconsonantally, Proto-Slavic *r > or or, usually the former, which developed into or in Old Russian. The later change of o > o before hard consonants in Russian was more restrictive when the o preceded r, as in this case; The change of o to o occurred only when r was followed by a hard dental consonant (Černyx, 1962:133). In the Moscow Standard, in addition, the change only took place when the vowel o carried the ictus. Until Karamzin suggested the use of in 1797, there was no symbol to indicate the vowel o following a palatalized consonant, in which case, most scribes continued to use the traditional o (Kiparsky, 1963:108). As
a result of phonetic changes, the ablaut alternations
full grade: zero grade of the sonantal diphthong whose
second element was *r in Proto-Slavic acquired a new shape:

<table>
<thead>
<tr>
<th>Proto-Slavic</th>
<th>Russian</th>
</tr>
</thead>
<tbody>
<tr>
<td>er : ĭr</td>
<td>ere : er/ǝ/r</td>
</tr>
<tr>
<td>or : ūr</td>
<td>oro : or/r</td>
</tr>
</tbody>
</table>

The Proto-Slavic zero grade of *er could also, but much
less frequently, be *ūr. Similarly, the zero grade of *or
could be *îr. The zero grade of *er and *or could result
in Russian r alone, without a preceding vowel, if the jer
preceding r in Old Russian found itself in weak position.

Modern Polish is useful in the reconstruction of the
syllabic liquids. Polish has three reflexes for syllabic
*ɛː (1) ar < *ūr, (2) erz < *îr when followed by a soft
labial or velar or by a hard labial or velar, and (3) er <
*îr when followed by a soft dental or palatal. In the
event the following dental is hard, the reflex is ar.

Following are examples of the zero grade syllabic
r in Modern Russian and cognates from Polish in preconso-
nantal position:

<table>
<thead>
<tr>
<th>Modern Russian</th>
<th>Polish</th>
</tr>
</thead>
<tbody>
<tr>
<td>červ' 'worm'</td>
<td>czerw 'grub, maggot'</td>
</tr>
<tr>
<td>&lt; *krv-</td>
<td></td>
</tr>
<tr>
<td>čūrnyj 'black'</td>
<td>czarny</td>
</tr>
<tr>
<td>&lt; *krn-</td>
<td></td>
</tr>
</tbody>
</table>
verba 'willow'  wierzba
  < *vrb-
verx 'top'  wierzch
  < *vrx-
četvěrtýj 'fourth'  czwarty
  < *ketvřt-/*kitvřt-
pěrst 'finger'  pierscień 'ring'
  < *prst-
zerno 'grain'  ziarno
  < *zrn/*grn-
persi 'breast'  piers'
  < *prs-
šeršen' 'hornet'  szerszen'
  < *xrx-/*xrs-
běrdø 'weaver's comb'  bardo
  < *brd-
měrtvyj 'dead'  martwy
  < *mrt-
žěrnov 'millstone'  żarna 'handmill'
  < *grn- (note *grn- above)
gorb 'hump'  garb
  < *grb-
smorkat' 'blow one's nose'  smarkać się
  < *smrk-
borzoj 'swift'  bardzo 'very'
  < *brz-
gorst' 'handful'  garsć
  < *grst-
2) Prevocally, the Russian reflex for Indo-European sonantal diphthongs containing *ᵣ in the zero grade was dependent on the position of word stress and on the quality of the vowel in the following syllable. When the stress fell on the vowel of the new zero grade, i.e. ɐ or ə, or when either preceded a syllable containing a weak jer, they were transformed into full vowels. The front jer became Russian ɐ and the back jer became Russian ə. On the other hand, if the following syllable contained a strong jer or a full vowel, the vowel of the new zero grade further reduced until it completely disappeared. When this occurred, the liquid ḟ no longer belonged to its original syllable (that is, after the reduced vowel was inserted before it), but rather became a member of the preceding syllable. In this case, the zero grade, which formerly signified the complete absence of a vowel before *ᵣ, but which was represented by vowel plus *ᵣ in Early Common Slavic, again returned to a truly zero state. For example, *kr-V > *čir-V > *čʰr-V > *ćr-V. One must remember, however, that such weak jers did not always dis-
appear in accordance with the above rules, and that they became full vowels in spite of their weak positions.

In words which Slavic inherited from Indo-European and which already were of the structure CVSV or VSV, the liquid would not be a member of a sonantal diphthong, but rather would be the first member of an independent syllable. The loss of the first vowel would not cause the sonant to become syllabic, as would be the case in the structure CVSC or VSC. The question immediately arises as to how one can speak of a new zero grade when the liquid is prevocalic. On phonetic grounds, the answer must be that the root was inherited as CVS- or VS- and that the vocalic element was added in a period when the root structure was already solidified, or that the root containing a sonant operated under different phonetic rules. From the standpoint of Russian alone, the absence of a vowel between a consonant and a liquid appears to be a direct manifestation of the zero grade, as Russian usually gives no evidence whatever of the existence of the inserted vowel of the new zero grade. On the other hand, the presence of a full vowel before a liquid in prevocalic position gives no evidence that the vowel is a Slavic innovation and that it represents the first member of a zero grade reflex.

The zero grade of sonantal diphthongs having *r as the sonant in prevocalic position is observed mainly in
the alternation between the infinitive root and the present tense root. The following verbs in Russian show the prevocalic zero grade in the infinitive and the full grade in the present:

- drat' "to tear up"  deru 'I tear up'
- brat' "to take"  beru 'I take'

Two verbs which should have been in this category changed the shape of their infinitives. The verb barati (also found as brati) "to fight" in Old Church Slavonic is either the full grade of *bor-ti or the zero grade thereof. As both grades appeared in Old Church Slavonic for the infinitive, it is not possible to state with certainty the grade of the infinitive in Common Slavic. However, according to the ablaut series, the presence of the full grade in the present tense is indicative of the zero grade in the infinitive. The zero grade infinitive, barati, would have regularly developed into Russian brat', which, however, is the infinitive 'to take' from barati. The infinitive which does occur in Russian is borot'sja which is the form of the full grade. According to the ablaut series, one is led to expect the zero grade in the present tense, i.e. *brus', *brëš'sja, etc.. In the latter case, it would be analogous to peret' 'to press, push' which has the present tense (reflexive) prus', prëš'sja, etc.. The explanation is probably to be found in the syncretism that
would have resulted between the two different infinitives *barati and b r a t i , if they both would have continued the zero grade.

On the basis of Old Church Slavonic evidence, the Russian verb porot' 'to hit, whip' should be prat' and fit into the same pattern as drat'. For this verb, we also have Polish evidence that the infinitive was in the zero grade in Common Slavic. Polish prac' 'to wash' cannot reflect the full grade *por-ti as this would have resulted in the infinitive *próć, which does not exist. The Polish infinitive agrees with Old Church Slavonic on the reconstructed zero grade infinitive *par-a-ti. Furthermore, both borot'sja and porot' are presently Class III verbs in Modern Russian, which show the effects of a jod following r (e.g. borjus' instead of *borus'). Because no infinitive exists in Russian which could have resulted in syncretism if the zero grade had been continued, the innovative infinitive probably resulted from a levelling of the root based on the present tense, but even then, one would not expect the "theme" q in the infinitive. Furthermore, both Polish and Old Church Slavonic show the full grade to have been e rather than o (cf. the Polish present tense piore 'I wash' with a palatalized p).

Around 900 A.D., the sonantal diphthongs containing *e or *o followed by a liquid underwent a process by which
the liquid became the initial element of a new syllable. The new syllable was formed by the insertion of an additional vowel between the liquid and the following consonant. This vowel's quality was the same as the vowel's preceding the liquid in all cases except where the vowel was *e and the liquid was *l. The change is usually put in the formula *tort > torot, *tert > teret, *tolt > tolot, and *telt > tolot and is termed "polnoglasie" or "pleophony" (Kiparsky, 1963:153).

This change in the structure of the root nucleus had the effect of making a sonantal diphthong containing a liquid disyllabic. Thus, between consonants, Proto-Slavic *or > oro, *er > ere, and *ol and *el > olo. These new full grades contrasted with the monosyllabic zero grades which did not, except rarely, become disyllabic. In many cases, the zero grade of diphthongs containing liquids was reflected as the liquid alone, without any preceding vowel. In Modern Russian, an alternation exists for a few verbs which show the full grade and pleophony in the infinitive in contrast to the zero grade in the present tense:

u-meret' 'to die' u-mru 'I will die'
teret' 'to rub, scrape' tru 'I rub'
peret' 'to push, press' pru 'I push'

From the Proto-Slavic *zer-ti 'to devour', one would expect *zeret' in Russian which would alternate with the
present tense ŵru, ŵrës', etc. However, the Russian in-
finite is ŵrat'. Polish ŵrec (1st. sg. ŵrë) shows that
the Common Slavic infinitive was probably *ţer-ti and that
the present tense root was probably *ţir-. A different
verb, which was very close in form in Common Slavic, was
*ţir-a-ti 'to sacrifice' which had the full grade in the
present tense, e.g. *ţerg 'I sacrifice'. These verbs evi-
dently became confused, resulting in the zero grade being
employed for both the infinitive and the present tense in
Russian with the meaning 'to devour'. The original meaning
of the zero grade infinitive, 'to sacrifice', was lost to
that form and transferred to the new verbal formation
ţert-v-o vat', which undoubtedly was formed as a denominal
from the derived noun ţert-va 'victim'.

3) Russian reflexes of syllabic *l preconsonantly
As mentioned above, the full grades *el and *ol merged to
*ol prior to the operation of pleophony in Common East
Slavic (Possibly, *ele did exist for a period of time be-
fore merging with olol). Thus, the full grades of both
became olol preconsonantly in Russian. An exception to
this rule is the existence of elo (or êlo) following the
consonants ç, ë, or ù. Historically, this is due to the
fact that *el palatalized a preceding velar consonant (the
first regressive palatalization of velars), and for a long
period thereafter, only front vowels were permitted to fol-
low soft sibilants. Examples in Russian are: šelom 'helmet' < *xelm- and želob 'gutter' < *gelb- (the ź represents o resulting from the change e o in Russian under certain environmental conditions; see above) (Ivanov, 1961:42).

Similarly, Common Slavic *iI and *UI in preconsonantal position always resulted in the reflex oI in Russian, regardless of the position of the Old Russian jers in relation to the other vowels in the word and regardless of the frontness and backness of the jers. Again, however, when the velars ź, ź, or ź preceded the reflex of *iI, the merger in favor of oI was not permitted, but was forced to remain oI by the law of synharmonism. Later, this o > ă when under stress and when followed by a hard consonant (naturally, after the law of synharmonism was no longer in effect). For example, Russian želtyj 'yellow' < *gît (Ivanov, 1961:48).

Following are examples of the historical zero grade of sonantal diphthongs with *I in preconsonantal position. The are identified in Modern Russian by the absence of polnoglasie:

solnce 'sun' < *sln-
stolp 'pillar' < *stlp-
tolstyj 'fat' < *tłst-
želtyj 'yellow' < *gît-
želč 'bile' < *gît-
čeln 'boat' < *kln-
volna 'wave' < *vln-
polnyj 'full' < *pln-

4) Zero grade of sonantal diphthongs containing *ɨ prevocally: There are not a large number of Russian words reflecting the zero grade of sonantal diphthongs with *ɨ. If the reflexes of syllabic *ɨ behaved similarly to those of syllabic *r, one would expect a true zero vowel in Russian. The zero grade before a following vowel generally appears as el or ol and is indistinguishable from historical full vowels followed by ɨ, except where an alternation to the full grade is apparent or where comparative evidence is used. Indeed, the question arises as to whether an o-grade alternated with its zero grade.

The Russian iterative, posylat' 'to send', indicates the lengthened zero grade of *sl-. However, in the verb slet' 'to send' (1st. sg. šľju), there is no synchronic evidence of the ɬ having come from the zero grade.

The Russian verb strlet' 'to spread' has the vowel ə preceding the ɨ in the present tense (stelju, stelesť, etc.). Old Church Slavonic showed the prevocalic zero grade in the infinitive, stəleti, in contrast with the full grade in the present tense, steljə.

Russian has levelled most of the full grade : zero grade alternations which existed between the infinitive
and present tense in this category. Old Church Slavonic shows тлешти : тлкъ < *телк-ти : тлк-ом ‘to pound ; I pound’, влешти : влкъ < *велк-ти : влк-ом ‘to pull ; I pull’, and млешти : млзъ < *мел-ти : млз-ом ‘to milk ; I milk’. Of these verbs, Modern Russian shows an alteration only in толоцъ : толку ‘to pound ; I pound’. The present tense of волоцъ has been reformed from волку to волоку ‘I pull, drag’ and a new infinitive, волоцитъ ‘to drag, pull’ has been formed (presumably, the 1st. sg. волоцю is replacing волоку). Modern Russian has lost entirely the Old Church Slavonic verb млешти.

If the й of Russian колъ ‘I pierce’ and полъ ‘I weed’ is considered to be a consonant, one could view the alternation between the present tense stems and the infinitive stems, колотъ and полотъ, as an alternation between the zero grade and the full grade. However, it is more likely that both roots are in the full grade and that polnoglasie did not operate in the present tense. Note, nevertheless, that the vowel ū in мель ‘I grind’ and the infinitive молотъ. Here is a new alternation due to sound change. The underlying root is *мёл- in both the infinitive and the present tense. A sound change in Old Russian has resulted in a new alternation, ел : оло, both reflecting the full grade.

5) The zero grade of sonantal diphthongs containing
nasal consonants: The zero grade of nasal diphthongs in Early Common Slavic resulted in *ǐn, *ǔn, *ǐm, and *ǔm. Following the monophthongization in preconsonantal position, they became indistinguishable from the full grade reflexes. Thus, preconsonantally, it is not possible to recover the grade. Following is a comparison between Early Common Slavic and Modern Russian in regard to the full grade: zero grade alternation:

<table>
<thead>
<tr>
<th>Early Common Slavic</th>
<th>Modern Russian</th>
</tr>
</thead>
<tbody>
<tr>
<td>en : īn / ūn</td>
<td>'a : 'a / u</td>
</tr>
<tr>
<td>on : ūn / īn</td>
<td>u : u / 'a</td>
</tr>
<tr>
<td>em : ľm / ūm</td>
<td>'a : 'a / u</td>
</tr>
<tr>
<td>om : ūm / ľm</td>
<td>u : u / 'a</td>
</tr>
</tbody>
</table>

Note that the reflex listed first in the zero grade is the reflex which occurs. The second reflex listed is a theoretical possibility due to the "mixing" of the zero grade (i.e., the zero grade of *en being *ǔn rather than *ǐn). No actual examples of this phenomenon have been found for the zero grade of nasal diphthongs.

Prevocally, the full grade of the nasal diphthongs remained intact in Russian. The zero grade of the nasal diphthongs prevocally is normally reflected in Modern Russian as the nasal consonant alone without a preceding vowel. The only exception to this occurs when the reduced vowel (or jer in Old Russian) preceding the nasal
is in the so-called "strong position." In this case, the zero grade has the same form as the full grade in Modern Russian. Other paradigmatic forms of the same word can often be used to identify the fact that the root reflects an historical zero grade (i.e., in forms of the same word in which the reduced vowel is in "weak" position).

In Modern Russian, one finds infinitives in which the root vowel is ja or a and present tense stems in which the root vowel is zero plus ň or m:

\begin{itemize}
  \item načat' 'to begin' načnu 'I will begin'
  \item mjat' 'to crush' mnu 'I crush'
  \item žat' 'to reap' žnu 'I reap'
  \item žat' 'to press' Žmu 'I press'
\end{itemize}

If one reconstructs the infinitives listed above as: \*na-ken-ti, \*men-ti, \*gen-ti, and \*gem-ti and the present tense forms as: \*na-kn-om, \*mn-om, \*gн-om, and \*gm-om, one can say that the full grade : zero grade alternation is reflected. In addition, there are two verbs in Modern Russian which show vowel + ň in the present tense which do not historically reflect an ablaut alternation. The ň is an infix in the present tense and did not appear in the infinitive:

\begin{itemize}
  \item stat' 'to become' stanu 'I will become'
  \item det' 'to put, place' denu 'I will put'
\end{itemize}

Both of these verbs can be prefixed. They provide the only
examples of the alternation in the root of a : an and e : en.

A number of verbs in Russian show the alternation a in the infinitive : im in the present tense. Following a prefix which ends in a vowel, im > jm.

zanjat' 'to occupy' zajmu 'I will occupy'
< *za-n-jem-ti < *za-jim-om
obnjat' 'to embrace' obnimu 'I will embrace'
< *ob-n-jem-ti < *ob-n-jim-om

Additional Russian verbs in this category are: nanjat' 'to hire', prinjat' 'to accept', ponjat' 'to understand', snjat' 'to remove', otnjat' 'to take away', podnjat' 'to lift', unjat' 'to restrain', raznjat' 'to take to pieces', donjat' 'to collect', and vnjat' 'to pay heed'.

The physical shape of the alternants has been considerably changed by the addition of prothetic elements. Old Church Slavonic shows that the underlying alternation was *jem : *jim, e.g. zaći : zaimq 'to borrow : they borrow'. All of the prefixed verbs are based on *jem-ti : *jim-om (OCS ěti : imq). There is no reason for reconstructing the infinitive in the full grade, except for the fact that previously seen alternations usually follow the pattern of full grade in the infinitive when the zero grade is in the present tense. Either the full grade or zero grade in the infinitive will result in the correct
reflex after monophthongization. Both the j and the n are prothetic elements. Polish cognates show that the j was clearly present before prefixation, for example, objać 'to embrace' (1st. sg. obejmę) and odjać 'to remove' (1st. sg. odejmę). The prothetic n was not generalized in Polish as in Russian, and the e following the prefix in Polish, due to the full vocalization of *u in strong position, was dropped in Russian.

The *ji of *jim- was treated differently in Russian than in Old Church Slavonic. In Russian, *ji became i when n preceded and j otherwise. In Old Church Slavonic, *ji always became front jer when preceded by a prefix ending with a consonant. Whereas we expect the Russian cognate *sonmut for Old Church Slavonic Sanomotj 'they depose' and *obmut for obomotj 'they embrace', we have snimut 'they remove' and obnimut 'they will embrace'.

The epenthetic a appears in only two Old Church Slavonic verbs, saneti 'to depose' and vaneti 'to receive, notice'. In Russian n occurs in all of the infinitives of this group of verbs and in all of the present tense forms having a prefix ending in a consonant.

The imperfective correspondents to the perfective verbs ending in -njat' contain the zero grade or the lengthened zero grade root im preceded by epenthetic n. In all probability, these imperfectives were derived from the
present tense root of the *-njat* verbs. That this was not a development during the Common Slavic period is shown by the formations in Polish in which the present tense root is used plus *-owac*, e.g. *odjac* : *odejmowac*, *zajac* : *zajmowac*, etc.

6) The zero grade of sonantal diphthongs containing the sonant *i*. Here there are two Indo-European possibilities, *ei* : *i* and *oi* : *i* (*ai* is treated as *oi*). The zero grade *i* became *ij* preconsonantally and *ij* prevocally in Proto-Slavic. Following the monophthongization of diphthongs, the following alternations were possible:

<table>
<thead>
<tr>
<th>full grade</th>
<th>zero grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>i</td>
</tr>
<tr>
<td>i</td>
<td>ij</td>
</tr>
<tr>
<td>ej</td>
<td>i</td>
</tr>
<tr>
<td>ej</td>
<td>ij</td>
</tr>
<tr>
<td>e</td>
<td>i</td>
</tr>
<tr>
<td>e</td>
<td>ij</td>
</tr>
<tr>
<td>oj</td>
<td>i</td>
</tr>
<tr>
<td>oj</td>
<td>ij</td>
</tr>
</tbody>
</table>

In most cases, the zero grade of *ei* or *oi* prevocally was *ij*, although *ij* was also possible.

Following the loss of the reduced vowels in Old Russian in weak position and their "clarification" in strong or tense position, the picture further complicates:
<table>
<thead>
<tr>
<th>Full grade</th>
<th>Zero grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>e/zero</td>
</tr>
<tr>
<td>i</td>
<td>ej/ij/j</td>
</tr>
<tr>
<td>ej</td>
<td>e/zero</td>
</tr>
<tr>
<td>ej</td>
<td>ej/ij/j</td>
</tr>
<tr>
<td>e</td>
<td>e/zero</td>
</tr>
<tr>
<td>e</td>
<td>ej/ij/j</td>
</tr>
<tr>
<td>oj</td>
<td>e/zero</td>
</tr>
<tr>
<td>oj</td>
<td>ej/ij/j</td>
</tr>
</tbody>
</table>

The zero grade of *ei and *oj was usually ej or ij in prevocalic position. However, the inserted vowel before *j in Common Slavic could also on occasion be *u which resulted in oj or yj following "clarification" in strong position. If the reduced vowel was in weak position, only j remained. A phonetic rule has yet to be discovered which will enable the gravity of the reduced vowel to be discovered or predicted. We will now attempt to find examples of the alternations in Modern Russian.

**i : e/zero** - No examples have been found for the historical alternation *ei : *i when both were in preconsonantal position.

**i : ej/ij/j** - This alternation is found in monosyllabic infinitives ending in -it* versus the present tense. In the present tense, the zero grade appears as j throughout the paradigm, and the imperative appears as ej:
vit' 'to twist' v'ju 'I twist'
bit' 'to strike' b'ju 'I strike'
pit' 'to drink' p'ju 'I drink'
lit' 'to pour' l'ju 'I pour'
šit' 'to sew' š'ju 'I sew'

The imperatives are respectively: vej, bej, pej, lej
and šej.

It is possible that this alternation is due to a phonological rule which required that *e before *i change to *i plus *i in prevocalic position (Arumma, 1964:83). Old Church Slavonic had this alternation in the verb zadati 'to build': zizdg 'I build'. Russian has lost this verb, and shows only the deverbal noun zdanie 'building'. Russian šeja 'neck' may be related to šit' as a prevocalic full grade, although the meanings seem divergent. The verb vejat' 'to blow' is undoubtedly a derivative of the full grade vit'.

ej : e/zero - This alternation would require, historically, the full grade in an open base and a zero grade in a closed base. This would not have been possible in Indo-European, as this would have resulted in two different roots. It is theoretically possible that Slavic could inherit an open base and then close it by the addition of suffixes. This process is probably reflected in the Russian noun vejalka 'winnowing machine' from *vei-
alka which shows the full grade prevocally in contrast to v'ju 'I twist'.

Synchronically, the alternation is observed in Russian wherever the *ei occurred both prevocally and preconsonantally; the latter monophthongizing to *a which later merged with e. This is, for example, probably the explanation for the ej : e alternation in dejanie 'deed, act' : delo 'work'.

ej : ej/ij/i - This alternation shows the possibility of the merging of the full and zero grades in prevocalic position, where the zero grade ej results from a former ej in tense position. From internal reconstruction alone, this alternation would not be recoverable in Modern Russian. An alternation could similarly exist between ej and ij and not be a reflection of a full grade : zero grade alternation, but rather be the difference in the vowel chosen to "clarify" the former jer before j. For example, in Old Church Slavonic, ej and ij in prevocalic position were in free variation (Lunt, 1955:29). In Old Russian, until the thirteenth century, ej in prevocalic or final position was always represented by ej. The norm of the literary language, however, changed thereafter, such that ej could exist only under the word stress; lacking the stress, the quantity of e was reduced, and the orthography reflected this reduced vowel by i, thus resulting in ij
(Ivanov, 1960:63). No examples of the full grade : zero grade alternation for *ei have been found in which both forms are open bases.

*e : e/zero - This alternation would result from *oi : *ɨ when both grades occurred preconsonantally. The choice between e and zero would be made wholly on phonological grounds, as mentioned above. Where the zero grade would be e, the full and zero grades would merge.

Russian pest 'pestle': pšeno 'millet' probably reflects the e : zero alternation. The ɨ of the zero grade is probably due to the operation of the "ruki" rule followed by the first palatalization of x. As the "ruki" rule operated early in Indo-European, its reflection in Russian pšeno indicates that the zero grade of e also resulted in a following ɨ changing to x. The only alternative explanation is the possibility of the suffix -eno being preceded by a j. Russian also has pšenica 'wheat' and pšennyj 'millet, adj.'. Old Church Slavonic has pšenica.

Russian vety' 'branch' and vetla 'willow' is an example of the erasure of grade differences due to sound change. The noun vety' contains an e which was formerly a ɨ, as is attested by Old Church Slavonic věty'. This is the full grade of either *oi or *ɨ. The noun vetla appeared in the Old Church Slavonic cognate větla. The reduced vowel of the root was in strong position and was
"clarified" to ø resulting in a merger of the roots which formerly were in two different grades. As has been mentioned above, it is not possible on the basis of Russian alone to reconstruct with certainty the Early Common Slavic precursor for Old Russian or Old Church Slavonic ė. However, the appearance of the zero grade in ė enables one to state with relative certainty that the full grade was *oi rather than long *a (the latter would have the zero grade a and would give o in Slavic).

ё / ej/ij/j - This alternation would result from *oi before a consonant and its zero grade before a vowel.

Russian shows this alternation between the noun смех 'laughter' and the infinitive смежат'sja 'to laugh'. The full grade *oi is evidenced by the Old Church Slavonic cognate смеха. The zero grade is reflected in the Old Church Slavonic verb смийати се. Of course, it is not possible to state the full grade which provided the zero grade, as both *oi and *ei could result in ej (however, it seems that *ei was the full grade in the majority of cases). The present tense form смěжате се 'they laugh' in Old Church Slavonic indicates, furthermore, that the full grade of the present tense was either *oi or *ei.

The Old Church Slavonic verb, лькати 'to pour' which similarly has a present in льж- causes us to expect a verb
*lejat* in Modern Russian; however, this verb does not seem to exist. Neither does a full grade noun similar in structure to *smex* exist for this verb. The full grade noun *lejka* 'watering can' does exist, however.

An alternation *e* : *ej* could be said to exist in Class III verbs between the infinitive and the present tense, for example, *gret* 'to warm': *grej-et* 'he warms'. These verbs do not have the *j* in the root, and it is merely the result of incorrectly dividing the root from the stem. Interestingly, the verb *grējati* does show up in Old Church Slavonic, which implies a full grade root *groi*- or *grēi-*, and *grijati* occurs in Serbo-Croatian implying the root *grij*-. The ablaut series *gor*-, *gōr*-, *gēr*-(Russian *goret* 'to burn', *požar* 'fire', and *u-gar* 'coal gas') indicates that the existence of an *e*-grade root *ger*- at some time in this past is certain. The verb *ger-ti* would have been reflected in Old Church Slavonic as *žreti* and in Russian as *žeret*. The verb *žrēti* does show up in Old Church Slavonic, but with the meaning 'to devour, swallow'. It is possible that *žrēti* and *grējati* were originally related. The verb *žeret* fails to appear in Russian. It is possible, or even probable, that Russian formed *gret* from a zero grade *gūr*- and that the *e* of the present tense stem is an innovation by analogy to the infinitival thematic vowel.
oj : e/zero - This alternation would occur when the full grade was prevocalic and the zero grade was preconsonantal. No examples of this alternation have been found in Russian. Numerous examples of the full grade in *oi can be found, for example boj 'battle', gnoj 'pus', poit 'to cause to drink', sloj 'layer', etc.; however, no examples have been found of the zero grade preconsonataly.

oj : ej/ij/j - This alternation would result from the full grade and the zero grade of *oi if both were in a prevocalic environment. However, Russian does not apparently reflect any zero grades of *oi prevocally, when the full grade is also prevocalic.

7) The zero grade of sonantal diphthongs containing *u: As for the diphthongs containing the nonsyllabic element *i, the diphthongs containing *u have undergone considerable modifications through monophthongization and other sound changes. The zero grade is dependent on its environment, above all depending on whether it is followed by a consonant or vowel. After the monophthongization of diphthongs, the alternations below were theoretically possible:

<table>
<thead>
<tr>
<th>full grade</th>
<th>zero grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>*u</td>
<td>Ĺ</td>
</tr>
<tr>
<td>*u</td>
<td>ūv</td>
</tr>
<tr>
<td>ov</td>
<td>ū</td>
</tr>
</tbody>
</table>
Already by this period, former *eu and *ou had merged in prevocalic position in favor of *ou, when a back vowel followed, although the *e of *eu remained when the following vowel was *i or *e.

The vowels *u and *'u which resulted from the monophthongization of *eu and *ou were identical with the exception that *'u always followed a soft or jotized consonant. If this merger is taken into consideration, the number of potential alternations reduces to:

<table>
<thead>
<tr>
<th>Full grade</th>
<th>Zero grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>u</td>
<td>o/zero (after the fall of the jers)</td>
</tr>
<tr>
<td>u</td>
<td>ov/v/(ev)</td>
</tr>
<tr>
<td>ov/(ev)</td>
<td>o/zero</td>
</tr>
<tr>
<td>ov/(ev)</td>
<td>ov/v/(ev)</td>
</tr>
</tbody>
</table>

As can be seen, the "clarification" of the reduced vowel a in Old Russian to o before y plus vowel (which can occur even though the reduced vowel is in a normally weak position, for example, in the initial word syllable, under stress, or to facilitate pronunciation) could result in the merger of the shape of the full grade and the zero grade. Thus, a Russian root with the shape CovV is ambiguous as to grade. Furthermore, the Russian root CovV, where V is a
back vowel, is ambiguous as to the antecedent of o.

When the root itself is closed by a consonant, the potential alternations are still further reduced. *CeuC- alternating with *CuC- would be reflected in Russian as C'uC- : CoC or CC- (where ' signifies historical softness or palatalization). *CouC- : *CuC- would be reflected in Russian as CuC- : CoC- or CC-. Here again, the zero grades merge.

u : o/zero - This alternation would occur when both grades were preconsonantal. The following are examples in Modern Russian, some being more likely to reflect historical ablaut than others. Due to the numerous sound changes and semantic extensions, one cannot be certain in all cases:

<table>
<thead>
<tr>
<th>Full grade</th>
<th>Zero grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>luč 'ray'</td>
<td>losk 'gloss'</td>
</tr>
<tr>
<td>suxoj 'dry'</td>
<td>soxnut 'to dry out'</td>
</tr>
<tr>
<td>mučit' to torture'</td>
<td>mščenie 'vengeance'</td>
</tr>
<tr>
<td>rupor 'mouthpiece'</td>
<td>ropot 'murmer'</td>
</tr>
<tr>
<td>tusklyj 'dim, dead'</td>
<td>tščedušnyj 'sickly'</td>
</tr>
<tr>
<td>čuma 'plague'</td>
<td>t'ma 'darkness'</td>
</tr>
<tr>
<td>lubok 'splint'</td>
<td>lob 'forehead'</td>
</tr>
<tr>
<td>budit' 'to waken'</td>
<td>bdenie 'wakefulness'</td>
</tr>
<tr>
<td>dušit' 'to breathe'</td>
<td>doxnut' 'to breathe' (also 'to die of animals')</td>
</tr>
</tbody>
</table>
the appearance of the monophthongs or ь in the same root
and ь, ь. Long ā can historically result from only a former long ā,
and ā. The situation with ā is much clearer. The Russian
that an ā from any other source would not alternate with
that ā is the lenited zero grade. Thus, ā due to the fact
that the lenited zero grade in the full grade alternates with ā
in the same root is ā. On the other hand, ā is ā as a lenited zero grade. Thus, ā as a lenited zero grade in the root
enables one to posit ā in the root. ā is ā in the root.
In Russian, the lenited zero grade may reflect an historica-
lengthened zero grade, but neither a velar or a sibilant.
The Russian root ētā may reflect ē in the historical root
细细 ī in the full grade. ā may reflect ī in the historical root
or diphthongs. ā may reflect ī in the historical root as the ā can be the result of many antecedent vowels.
It is very difficult to relate ā to the lenited zero grade
who reflects this in Russian which shows the vowel ā in the same root.
unless a word has ā or ī. ā is ā in the form ā and ā.
In Russian, the lenited zero grade was used ex-

stan has lost ā,

kruizhe, blacksmith, in Kazar, cart, art, cart, skit, but ā-

In addition, Old Church Slavonic has the zero grade of
pee, tree, and ā. ā to become ā.
limits the full grade to *ou or *eu and y to the lengthened zero grade. Where the actual zero grade is found in the same root, the appearance of i or y is clearly the lengthened zero grade.

Following is a list of examples found in Russian to exhibit the lengthened zero grade. In many cases, the correlations are based on internal reconstruction, and, of course, error is possible in relation to the actual historical facts:

<table>
<thead>
<tr>
<th>zero grade</th>
<th>lengthened zero grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>(none found; full grade - budu 'I will be')</td>
<td>byt' 'to be'</td>
</tr>
<tr>
<td>b'ju 'I strike'</td>
<td>byt 'way of life'</td>
</tr>
<tr>
<td>brat' 'to take'</td>
<td>bylina 'Russian epic'</td>
</tr>
<tr>
<td>drat' 'to tear'</td>
<td>bit' 'to strike, beat'</td>
</tr>
<tr>
<td>doznut' 'to breathe'</td>
<td>ot-birat' 'to remove'</td>
</tr>
<tr>
<td>žmu 'I press'</td>
<td>vy-dirat' 'to tear out'</td>
</tr>
<tr>
<td>za-žmu 'I clamp'</td>
<td>dyšat' 'to breathe'</td>
</tr>
<tr>
<td>źnu 'I reap'</td>
<td>dyxanie 'breathing'</td>
</tr>
<tr>
<td>żgu 'I burn'</td>
<td>na-žimat' 'to press down'</td>
</tr>
<tr>
<td>ob-žgu 'I scorch'</td>
<td>za-žim 'clamp'</td>
</tr>
<tr>
<td>źdat' 'to wait'</td>
<td>u-źin 'supper, dinner'</td>
</tr>
<tr>
<td>podo-źdat' 'to wait for'</td>
<td>-źigat'</td>
</tr>
<tr>
<td></td>
<td>ob-źigat' 'to scorch'</td>
</tr>
<tr>
<td></td>
<td>ob-źig 'kilning'</td>
</tr>
<tr>
<td></td>
<td>-źidat'</td>
</tr>
<tr>
<td></td>
<td>pod-źidat' 'to wait for'</td>
</tr>
</tbody>
</table>
žrat' 'to devour'
po-žrat' 'to devour'
žir 'fat, grease'
po-žirat' 'to devour'

zvat' 'to call'
-zyvat'
voz-zyvat' 'to appeal'
voz-zvat' 'to appeal'

oto-zvat' 'to recall'
ot-zyv 'recall'

-zdat'
-so-zdat' 'to create'
so-zidat' 'to create'

zdanie 'building'
ziždit'sja (obs.) 'to be based on'

kvas 'quass'
kislot'a 'acid'

< *kuos-
< *kūs-

zret' 'to look at'
zirat'
pre-zreat' 'to despise'
pre-zirat' 'to despise'

(knone found; full
grade - kljunut'/
klevat' 'to peck, bite')
klyk 'tusk, fang'

kro-ju 'I cover'
kryt' to cover'

< *krū-
< *krū-
kryša 'roof'
krylo 'wing'

lgat' 'to lie'
-lygat'
pri-lygat' (obs.) 'to
lie occasionally'

mg-novenie 'moment'
mig 'instant'

moju 'I wash'
myt' 'to wash'

o-movenie 'ablution'
mylo 'soap'
o-myvat' 'to wash'
raz-myv 'erosion'
pru 'I push' -pirat'
vo-pru 'I push in' v-pirat' 'to push in'
prnut' (obs.) 'to kick' pinok 'kick'
ras-prnu 'I crucify' ras-pinat' 'to crucify'
(pnone found; full
 grade puška 'cannon',
 puxnut' 'to swell'

rvat' 'to tear'
vzo-rvat' 'to blow up'

(pnone found; full
 grade - plovec 'swim-
mer')

(slat' 'to send'
vy-slat' 'to send out'
po-sol 'ambassador'

(pnone found; full
 grade - slušat' 'to
 listen')

soxnut' 'to dry'
v-y-soxnut' 'to dry out'

spat' 'to sleep'
do-spat' 'to sleep
 enough'
za-smut' 'to fall asleep' < *-supn-
son 'sleep'

snit'sja 'to dream'
The verb *byt* causes difficulties. Comparing the full grade *bud* *boud* to the lengthened zero grade *bud* *byd*, one finds budit* 'to waken', budka 'sentry hut', byvat* 'to be frequently', byloj 'former', etc.
The situation seems clear. However, Old Church Slavonic shows a back nasal in the present tense (perfective future) of byti, and Polish likewise has a nasal vowel, bgd§ 'I will be'. Because the u is also a possible reflex of a former back nasal, and because Old Church Slavonic shows the nasal ə in bgdə 'I will be', it is probable that the u in Russian budu 'I will be' is not the direct reflex of the full grade diphthong *ou*. Thus, we are faced with the ablaut relationship u : y where the u is probably from a former back nasal. The only explanation that seems rea-
sonable is to assume the presence of a nasal infix in the present tense stem in the same manner as Russian ljagu 'I will lie down' and leč' 'to lie down'. Furthermore, it is possible that the zero grade preceded the nasal infix, resulting in a nasal diphthong.

As was mentioned earlier, the i in Russian has many historical antecedents. The i of bit' 'to strike, hit' is possibly the full grade instead of the lengthened zero grade.

The use of the lengthened zero grade is very common in deriving imperfectives from prefixed perfectives. This is shown in many of the preceding examples. Roots which have the form CSV- or CVS- would have the zero grade CS- in preconsonantal position. In Slavic, CS- became CVS- in both preconsonantal and prevocalic positions. The lengthened grade was of the form CVS-. From a synchronic viewpoint, the Russian rootsCiS- or CyS- would be ambiguous as to grade, were it not for the existence of the same root in the form Cς-. Where the sonant is a nasal consonant, the presence of the preceding i is ambiguous as to grade. It may be the lengthened zero grade or the full grade. This is even true when the zero grade is found in the roots of other forms. For example, na-činat' 'to begin' fits into the pattern of a derived imperfective in the lengthened zero grade, and it probably is, but we
cannot say this with certainty, because we do not know the underlying grade in na-čat' 'to begin'.

Note the use of the lengthened grade root for derived nouns. In most instances the noun is a prefixed root with no suffix other than gender or case. When suffixes were added, they were usually -lo, -k/-ok, or -ka. Note that such deverbal nouns tended to be derived from the lengthened zero grade root. One exception is the verb slat' 'to send' which produced po-sol 'ambassador'.

When the root is of the form CoC or CeC-, we are again faced with uncertainty concerning the grade of the root vowel. This is especially true when the root is followed by a consonant, as for example in doxnut' 'to breathe'. Whenever we find the alternation CoC : CyC, it is highly improbable that the o is a full grade. Old Church Slavonic verifies that the o in doxnut' is from a former back jer. The alternation CoC : CyC implies the existence of a full grade in *ou or *eu. We find proof of this in the nouns duša 'soul' and duxota 'sultry air'.

Only one example of the lengthened zero grade of a samprasarana root has been found. The zero grade of *CSoC or *CSeC was the same as for *CoSC or CeSC, namely, *CSC. The lengthened zero grade would have been *CSC. In Slavic, when the sonant was *u or *i, the lengthened zero grade appeared as CiC or CyC. This is the case for Russian kis-
lotas 'acid' which reflects the former *kys- < *kus-. The full grade was *kuos- and is evidenced by Russian kvas 'quass'.

Verbs in Russian which have the root vowel  in the infinitive and  in the present tense probably are the result of the alternation zero grade : lengthened zero grade. The full grade, if found at all, is usually located in a noun ending in -ov. The  of the present tense root is due to the full vocalization of the zero grade back . In other Slavic languages, this back before the of the following suffix changed to , for example Old Church Slavonic kryj 'I hide' and Polish kryje 'I hide, conceal'. Imperfectives formed from these verbs normally reflect the lengthened zero grade -yv- plus -at', for example umyvat' 'to wash' and pokryvat' 'to cover'. Such formations may in fact have been the impetus for the frequentative suffix -yvat'.

Several verbs exist in the lengthened zero grade for which no zero grade exists in Modern Russian. In the case of  the existence of a full grade is sufficient evidence to label the root. Hence, the form plovek 'swimmer' from *plou- is sufficient to prove the  of plyt' 'to swim, sail' is a lengthened zero grade. A full grade in ej or i, however, is inconclusive, because the full grade and lengthened grade would both be i preconsonantly.
Following the period in Old Russian in which the reduced vowels became either vocalized fully or disappeared, a new full grade : zero grade alternation was generated. This innovated ablaut was wholly determinable by phonetic environment, however, and did not become morphologized. The birth of the new zero grade by this process may be very imitative of the situation in Indo-European which resulted in the original Indo-European zero grade, in that the zero grade occurred originally in unstressed syllables because of vowel reduction. Wherever the reduced vowels already represented the zero grade (e.g. < *oi, *ei, *ou, *eu), the new phonetic conditions brought about a phonetic split, that is, the zero grade could be represented by a truly zero vowel or a full vowel: (postconsonantly)

<table>
<thead>
<tr>
<th>Common Slavic</th>
<th>Modern Russian</th>
</tr>
</thead>
<tbody>
<tr>
<td>oSV / eSV</td>
<td>oSV / eSV</td>
</tr>
<tr>
<td>iSC / uSC</td>
<td>eSC / oSC</td>
</tr>
<tr>
<td>oRC / eRC</td>
<td>oRoC / eReC</td>
</tr>
<tr>
<td>iSV / uSV</td>
<td>SV / eS / oS</td>
</tr>
</tbody>
</table>

(where S = any sonant, R = any liquid, V = any vowel, and C = any consonant)

Modern Russian has a number of roots which exhibit the e : o alternation. In addition to preserving the actual phonetic alternation in some roots, Russian has introduced a new phonetic e : o alternation which is, for the most
part, phonetically predictable. Where the former alternation occurred between e- and o-grade sonantal diphthongs, phonetic shapes have undergone considerable modifications:

<table>
<thead>
<tr>
<th>Early Common Slavic</th>
<th>Modern Russian</th>
</tr>
</thead>
<tbody>
<tr>
<td>e : o</td>
<td>e : o</td>
</tr>
<tr>
<td>ě : ā</td>
<td>e : ā</td>
</tr>
<tr>
<td>ei : oi</td>
<td>i : e</td>
</tr>
<tr>
<td>eu : ou</td>
<td>'u : u 21</td>
</tr>
<tr>
<td>er : or</td>
<td>ere : oro</td>
</tr>
<tr>
<td>el : ol</td>
<td>olo</td>
</tr>
<tr>
<td>en : on</td>
<td>'a : u</td>
</tr>
<tr>
<td>em : om</td>
<td>'a : u</td>
</tr>
</tbody>
</table>

Prevocally, the sonants of the diphthongs became full consonants and monophthongization did not occur.

Following are examples of the e : o alternation still visible in Modern Russian:

<table>
<thead>
<tr>
<th>e-grade</th>
<th>o-grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>velet 'to order'</td>
<td>volja 'will'</td>
</tr>
<tr>
<td>bred 'frenzy'</td>
<td>u-volit 'to dismiss'</td>
</tr>
<tr>
<td>bredit 'to rave'</td>
<td>do-vol'stovat 'to supply'</td>
</tr>
<tr>
<td>brod 'ford'</td>
<td>brodit 'to wander'</td>
</tr>
</tbody>
</table>

21 The symbols 'u and 'a signify that u and a follow palatal or palatalized consonants.
<table>
<thead>
<tr>
<th>Cyrillic</th>
<th>Meaning</th>
<th>Cyrillic</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>bresti 'to wander'</td>
<td></td>
<td>brodjažit' 'to tramp about'</td>
<td></td>
</tr>
<tr>
<td>bej 'beat!'</td>
<td></td>
<td>brodjaga 'tramp'</td>
<td></td>
</tr>
<tr>
<td>na-bekren 'on one side'</td>
<td></td>
<td>bok 'side'</td>
<td></td>
</tr>
<tr>
<td>beru 'I take'</td>
<td></td>
<td>vy-bor 'choice'</td>
<td></td>
</tr>
<tr>
<td>vy-beru 'I will choose'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>verx 'top'</td>
<td></td>
<td>vorox 'heap, pile'</td>
<td></td>
</tr>
<tr>
<td>vedu 'I lead'</td>
<td></td>
<td>vodit' 'to lead'</td>
<td></td>
</tr>
<tr>
<td>pere-vedu 'I will translate'</td>
<td></td>
<td>pere-vod 'translation'</td>
<td></td>
</tr>
<tr>
<td>vezu 'I transport'</td>
<td></td>
<td>vozit' 'to transport'</td>
<td></td>
</tr>
<tr>
<td>vleku 'I drag'</td>
<td></td>
<td>voz 'wagon'</td>
<td></td>
</tr>
<tr>
<td>OCS vlěkŋ</td>
<td></td>
<td>voločit' 'to drag'</td>
<td></td>
</tr>
<tr>
<td>vjazat' 'to tie'</td>
<td></td>
<td>uzel 'knot'</td>
<td></td>
</tr>
<tr>
<td>ob-jazeno 'obligatory'</td>
<td></td>
<td>uzy 'bonds'</td>
<td></td>
</tr>
<tr>
<td>so-juz 'union'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>žerlo 'crater'</td>
<td></td>
<td>gorlo 'throat'</td>
<td></td>
</tr>
<tr>
<td>gresti 'to row'</td>
<td></td>
<td>grob 'coffin'</td>
<td></td>
</tr>
<tr>
<td>grebu 'I row'</td>
<td></td>
<td>(cf. grabli 'rake')</td>
<td></td>
</tr>
<tr>
<td>grebec 'oarsman'</td>
<td></td>
<td>(cf. grabar 'digger')</td>
<td></td>
</tr>
<tr>
<td>greben' 'comb'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>gremet' 'to thunder'</td>
<td></td>
<td>gromit' 'to destroy'</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>grom 'thunder'</td>
<td></td>
</tr>
<tr>
<td>Russian Word</td>
<td>English Translation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>dver'</td>
<td>door'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>delit'</td>
<td>to divide'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>derus'</td>
<td>'I fight'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>žeč'</td>
<td>'to burn'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>zvenet'</td>
<td>'to ring, tinkle'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>zveno</td>
<td>'link'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>zerkalo</td>
<td>'mirror'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>so-zerčat'</td>
<td>'to contemplate'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>česat'</td>
<td>'to comb'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>krepkij</td>
<td>'strong'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ležat'</td>
<td>'to lie down'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>leć'</td>
<td>'to lie down'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>za-legat'</td>
<td>'to hide'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>na-legat'</td>
<td>'to press down'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>leztr'</td>
<td>'to climb'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>v-lezat'</td>
<td>'to climb in'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lestnica</td>
<td>'stairs'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lesenka</td>
<td>'ladder'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>meret'</td>
<td>'to die'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>dvor'</td>
<td>'courtyard'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>dolja</td>
<td>'part, piece'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>vz-dorit'</td>
<td>'to argue'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>vz-dor</td>
<td>'nonsense'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o-žog</td>
<td>'burning'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>iz-žoga</td>
<td>'heartburn'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>zvon</td>
<td>'sound, ring'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>zvonit'</td>
<td>'to ring'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>zvuk</td>
<td>'sound'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>zvučat'</td>
<td>'to sound'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>po-zvonok</td>
<td>'vertebra'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ob-zor</td>
<td>'overview'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>zorkij</td>
<td>'sharp-sighted'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>kosa</td>
<td>'braid'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>kropotlivyj</td>
<td>'laborious'</td>
<td></td>
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<tr>
<td>ložit'sja</td>
<td>'to lie down'</td>
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<tr>
<td>na-log</td>
<td>'deposit'</td>
<td></td>
<td></td>
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<tr>
<td>za-log</td>
<td>'tax'</td>
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<tr>
<td>lože</td>
<td>'bed, couch'</td>
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<tr>
<td>loza</td>
<td>'vine'</td>
<td></td>
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<tr>
<td>mor</td>
<td>'pestilence'</td>
<td></td>
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<tr>
<td>morit'</td>
<td>'to exterminate'</td>
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</tbody>
</table>
metat' 'to throw, cast'  motat' 'to wind, reel'
mex 'fur' mox 'moss'
melkij 'small, fine' moxatyj 'hairy'
mel'nik 'miller' molot' 'to grind'
mel'čat' 'to make molot'ba 'threshing'
smaller
meloč' 'change, trifle'
mjakina 'chaff' muka 'flour'
mjakiš 'crumb'

mjatež 'rebellion' mutit' 'to stir up'
s-mjatenie 'disturbance'
nesti 'to carry' nosit' 'to carry'
pod-nesti 'to present' pod-nos 'tray'

njuxat' 'to smell' blago-uxat' 'to give
off a fragrance'

peret' 'to push, press' za-por 'bolt'
za-peret' 'to lock' u-por 'rest'
u-peret' 'to rest'

pej 'drink!' poj 'sing!'
pit' 'to drink' pet' 'to sing'

plesti 'to braid, weave' s-plotit' 'to join'
pletu 'I braid, weave' plot 'raft'
v-pletat' 'to interwine' plotnyj 'compact'

počivat' 'to rest'  pokoj 'peace'
pretit' 'to be forbidding'
pretiv 'against'

o-protivet' 'to become repulsive'

so-prjagat' 'to join in matrimony'
so-prug 'spouse'

rubit' 'to chop, hash'

so-pruga 'spouse'

rjaboj 'pockmarked'

rubit' 'to chop, hash'

rjaboj 'pockmarked'

rjabo 'pockmarked'

sito 'sieve'

set' 'net'

storožit' 'to guard'

storož 'guard'

so-pruga 'spouse'

storož 'guard'

storožit' 'to guard'

storož 'guard'

set* 'net'

setka 'small net'

storož 'guard'

storic' 'to guard'

storozit' 'to guard'

storoz 'guard'

storic 'to guard'

storoz 'guard'

so-prug 'spouse'

so-pruga 'spouse'

The following examples have an historically predictable e : o alternation. The o appears under stress and when followed by an historically hard consonant. Generally, this o is spelled ö (or ø without the dieresis):
From a synchronic standpoint and without a knowledge of the history of a root, it is not always possible to predict the appearance of o (ę). One must know whether the unstressed o is from a former e or ę. With a few exceptions, the e which reflects a former ę does not become o (ę) under stress, e.g. sovremennyj 'contemporary', gnev 'anger', smex 'laughter', etc..

The lengthened full grade is most widely seen in Russian in the formation of derived imperfectives and monosyllabic nouns.

The vowel o of prefixed verbal roots was lengthened
to a in the formation of a new prefixed imperfective by the addition of the suffix -yva- (-iva- after vowels and soft consonants). This process can be observed in verbs of classes II, III, and IV:

Class II  vzdrognut' 'to shudder'
  vzdragivat'

Class III  zarabotat' 'to earn'
  zarabatyvat'

Class IV  sprosit' 'to ask'
  sprašivat'

Note that for fourth class verbs, the consonant preceding the suffix will show the effect of jotation. The consonant will be the same as in the first person singular. There seems to be no easy explanation for the jotated consonant. One possible explanation is the addition of the suffix -iva- to stems of the fourth class ending in -i. In such an environment, the i of the stem becomes i. Thus, sprosi + iva- becomes sprasj + iva- and then to spraš-iva-. The difficulty with this explanation is the relative chronology. The jotation process occurred in Common Slavic, and this process of forming new iterative verbs became productive only after the fourteenth century (Kiparsky, 1967: 215). A second explanation is the use of a derived stem in -a- which itself is based on the fourth class verb. These derived stems were formed by adding -a- to the stem already
ending in -i- which resulted in the jotation of the preceding consonant. In Russian we have imperfectives formed in this manner, e.g. javljat' 'to be, appear' from javit'. The new iterative verbs could then be formed by adding -iva-/-yva- to the truncated stem. Of the two explanations the latter is better, as it does not have to face the problem of relative chronology. Morphological analogy undoubtedly also played a role in the formation of the numerous -iva-/-yva- verbs in Modern Russian.

Where the root vowel was q, no change is reflected by the suffixal process, as long as long and short *e merged in Russian. The process must have taken place following the loss of quantitative distinctions for short and long *u for no examples of *u lengthening to y have been found in the formation of new iterative verbs. The u of the root remains u in the derivative, e.g. vydumat' 'to invent': vydumyvat'.

In a number of verbs, e > o ( winger) in accordance with the rules mentioned above, e.g. zavoevat' 'to conquer': zavoevyvat'. Certain verbs resisted this change, especially if the underlying e is from a former ė, e.g. peredelat' 'to alter': peredelyvat'. Similarly, a few verbs have resisted the changing of o to a, e.g. prioxotit' 'to give a taste for': prioxočivat'.

The following are examples of the lengthened full
<table>
<thead>
<tr>
<th>Full Grade</th>
<th>Lengthened Grade</th>
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<tr>
<td>volna 'wave'</td>
<td>valit' 'to fall heavily'</td>
</tr>
<tr>
<td>bronja 'armor'</td>
<td>bran 'scolding'</td>
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<tr>
<td>bronirovat' 'to cover with armor'</td>
<td>branit' 'to scold'</td>
</tr>
<tr>
<td>goret' 'to burn'</td>
<td>gar' 'smell of burning'</td>
</tr>
<tr>
<td>godit'sja 'to suit'</td>
<td>vy-gadat' 'to profit'</td>
</tr>
<tr>
<td>dolgii 'distant'</td>
<td>dal' 'distance'</td>
</tr>
<tr>
<td>dolevoj 'lengthwise'</td>
<td>ot-dalit' to postpone'</td>
</tr>
<tr>
<td>v-dol' 'lengthwise'</td>
<td></td>
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<tr>
<td>grob 'grave'</td>
<td>grabar' 'digger'</td>
</tr>
<tr>
<td>vz-dorit' 'to quarrel'</td>
<td>u-dar 'blow'</td>
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<tr>
<td>želat' 'to wish'</td>
<td>žalet' 'to be sorry'</td>
</tr>
<tr>
<td>žal 'pity'</td>
<td></td>
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<tr>
<td>ob-zor 'overview'</td>
<td>zarja 'dawn'</td>
</tr>
<tr>
<td>zori 'dawns'</td>
<td>o-zarit' 'to illuminate'</td>
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<tr>
<td>zarnica 'summer lightning'</td>
<td></td>
</tr>
<tr>
<td>klonit' 'to bend'</td>
<td>klanjat'sja 'to bow'</td>
</tr>
<tr>
<td>s-klon 'slope'</td>
<td></td>
</tr>
<tr>
<td>konec 'end'</td>
<td>do-kanat' 'to finish'</td>
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</table>
voz-ložit' 'to lay on' voz-lagat' 'to lay on'
pola 'tail'
poleno 'log'
počva 'soil'
plovec 'swimmer'
ploskij 'flat'
robkij 'timid, shy'
rovnyj 'straight, flat'
rost 'growth'
rożča 'grove'
rozn' 'difference'
v-skočit' 'to leap up'
slovo 'word'
tvorit' 'to create'
točit' 'to turn, sharpen'

The only pattern that emerges is the tendency for monosyllabic root nouns to be in the lengthened grade. Note that the nouns listed above all end with a sonant.
When soft, they are feminine in gender.

The examples listed above which begin with ḥ may not be truly alternating in an historical sense, as the distinction between o and a could be based solely on early intonational differences or on the influence of Old Church Slavonic.

Note that the verbs which contain a in the root have the infinitive theme vowel -a- in most cases. These verbs are imperfective. Those having the theme vowel -i- are perfective when prefixed and tend to be imperfective when unprefixed.

In Indo-European, it was possible for the full grade to be long. In the o-grade of *ǭ, we obtain the reflex a in Slavic. This brings about the potential ablaut of o : a in Russian. Synchronically, we cannot determine from Russian alone, whether the o of such an alternation reflects the long grade or the short full grade. It is insufficient to know whether the o was formerly *ǭ, as *ǭ itself had two different sources; however, the ablaut *oi : *ǭ should have not occurred in Indo-European. Therefore, the existence of ģ (or its reflex) must be taken for evidence of the historical reflection of the potential Russian ablaut o : a.

Where the full grade was long for sonantal diphthongs, it sometimes resulted in a different reflex in Russian. Before a consonant, the long diphthongs merged with
the short diphthongs. Before vowels, however, sonantal diphthongs with *œs would appear in Russian as âs. Where the full grade was with a long *œs, no difference would now appear in Russian, although ês would have occurred in Old Russian or Old Church Slavonic.

The zero grades of full grade long sonantal diphthongs resulted in long syllabic sonants. Prevocally, such long syllabic sonants split into the short vocalic combinations *-ii- or *-uu-. Unless the history of the root is fairly well known, the zero grade preconsonantally would be indistinguishable from the lengthened zero grade of a short sonantal diphthong, and the zero grade prevocally would be indistinguishable from the normal zero grade of a short sonantal diphthong.

In monosyllabic open bases the zero grade of a long sonantal diphthong could also apparently be âs, which gave ôs in Slavic. This ablaut may underlie slit 'to fuse': sloj 'layer' < *slej: *slai, lit 'to pour': loj 'tallow', gnit 'to rot': gnoj 'pus', etc. The verbs stat 'to become, to stand' and stojat 'to be standing' are probably related as full long grade to zero grade based on *stha- (Arumaa, 1964:81).

Only a few Russian examples have been found which may reflect the long full grade ó : ô alternation:
lezt' 'to climb' lazit' 'to climb'
There are a few root alternations in Russian which are not directly linked historically. The zero grade has no direct relationship with the long full grade when the full grade is no longer in existence, for example. It often happens that certain grades fail to appear in the Modern Russian lexicon for certain roots. The explanation is that some root grades have been lost or replaced. If the root fails to appear in any of the recorded Slavic languages, no way exists to determine whether it ever existed in Slavic. Certainly, the full grade (or normal grade) is the hub of all the other grades, so that the zero grade, for example, implies the existence of the full grade at some point in time. But it is not always possible to confirm the existence or absence of the full grade in Slavic. Moreover, one should not discount the possibility that certain grades of certain roots were generated by morphological analogy, without other grades of the same series ever having existed.

Following is a list of examples found in Russian which lack an expected grade form:

- *blesk* 'glitter'
- *blistat'* 'to shine'
deržit' 'to talk impertinently'
draznit' 'to mock'
gibnut' 'to perish'
gubit' 'to ruin'
zev 'pharynx'
ziyat' 'to gape'
zevat' 'to yawn'
roto-zej 'rubber-neck'
kolebat' 'to shake'
kolyxat' 'to sway, swing'
kolybel' 'cradle'

pleskat' 'to splash'
poloskat' 'to rinse'
(possibly OCS influence)

rušit' 'to break down'
ryxlet' 'to soften'
ruxnut' 'to crash, fall'
sadi't 'to seat, plant'
sidet' 'to sit'
sad 'garden'

slušat' 'to listen to'
slysat' 'to hear'
slyxat' 'to hear, collog.'

stepen' 'degree'
stupat' 'to step'
stopa 'footstep'
stupit' 'to step'

stupen' 'step'

stupnja 'foot, sole'

stydit' 'to cool'
styt' 'to become cool'

stynut' 'to become cool'

tkat' 'to weave'
tačat' 'to stitch'
tknut' 'to weave'
thručat' 'through'

In summation, it is possible to find examples for all the ablaut series in Modern Russian, although certain
series are very sparsely represented. Due to the many phonetic changes and phonetic mergers that have occurred in Russian, one has a difficult task in internally reconstructing the grades on the basis of Russian alone. Russian doesn't approach Old Church Slavonic in its ability to reflect zero grades and lengthened grades.

New ablaut series were introduced into Old Russian with the fall of the jers. For the most part, this resulted in new vowel : zero alternations, but except where levelling has occurred, the alternations are predictable by the phonetic environment. A new e : o alternation was also introduced from the split of e, but it is partially predictable from the e-grade root on the basis of word stress. It has not become grammatically categorized such that o occurs in certain parts of speech or in certain derivations or inflexions.

The only alternation apparently still alive is the occurrence of the lengthened grade a in derived imperfective verbs through -yva- suffixation. Certainly, Russian speakers make this change concurrently with the addition of the suffix, so that one cannot show that the alternation is phonemic.

Undoubtedly, Russian speakers "feel" the relationship between roots exhibiting an e : o alternation, and probably between u and y and between zero and i.
V. SUMMARY AND CONCLUSIONS

The study of ablaut began during the nineteenth century during a period in which mainly Germanic scholars attempted to formulate the Ursprache as reflected in the classical and Germanic languages. They observed that roots containing different vowels were semantically related. Much of the terminology utilized in the study of ablaut is based on the discoveries made on the structure of Sanskrit. The early scholars often considered Sanskrit to reflect Indo-European very closely.

August Schleicher (1876:11-14) incorrectly posited only three basic vowels for Indo-European, each of which functioned as the kernel for alternation series which expressed "the relationship of the root." Each series had two progressions or steps which resulted from the compounding of a single or double *a. He was uncertain of the relative chronology of the second progression, but believed that it probably occurred during Indo-European unity. Schleicher made no hypotheses concerning the meaning conveyed by the different alternating roots.

Ferdinand de Saussure, three years later, refuted
this tri-vocalic system in favor of a one vowel kernel upon which laryngeals operated to produce vowels possessing both quantitative and qualitative differences. In his system, *i and *u were sonants, unlike for Schleicher, who believed that *i and *u were basic Indo-European vowels in addition to *a. By analyzing the examples given by Saussure, one concludes that the existence of either *i or *u in the capacity of the syllabic element of an Indo-European root is due to the root's being in the zero grade (1967:222). The vowels *a and *o were generated by the existence of following laryngeal sonant coefficients as were the lengthened vowels *ẽ, *ẽ, and *o. The exact manner in which these permutations operated is not clear from Saussure's writing, and he himself stated that the conditions under which *e became *o were not well known (1967:224). However, it is clear that he believed all roots originally were in the e-grade, that all syllabic sonants and apparently *i and *u were the result of the reduction or loss of the e-grade, that the vowels *a and *o were generated by the existence of laryngeals following *a, and finally that all long vowels were due to the influence of laryngeals.

Karl Brugmann (1886:20) put forth a five vowel system for Indo-European including a sixth vowel, schwa, for the short vowel series. Except for schwa, each of the five vowels could be long or short. In addition, he posited
long and short syllabic sonants *r, *l, *m, and *n (also *n and *n). The schwa and syllabic sonants were in the zero grade and were caused by normal phonetic reduction in non-stressed syllables. The long vowels were caused, possibly, by their post-tonic positions. Brugmann's theories were based on the use of the comparative method applied to the Indo-European daughter languages. He makes no attempt to explain the origin of qualitative ablaut, other than to state that it may be conditioned by word stress. Brugmann was pessimistic that a coherent system explaining morphological differences in grades would ever be formulated.

Hermann Güntert (1916) continued in the same vein as Brugmann to explain ablaut relationships by reference to the accentual system of Indo-European. Both qualitative and quantitative relationships were caused by either the position of a syllable with reference to the ictus or by the movement of the ictus within the word. For the first time, however, concise rules were composed to explain the origin of Indo-European ablaut (1916:124-31).

Jerzy Kuryłowicz broke with the previous theories to some extent by concentrating his attention on morphological conditioning. He believed that *e was the central Indo-European vowel and that the verb was the central part of speech. The qualitative alternation e : o was due to the merger of *e and *o in favor of *o when (1) *e was in pre-
sonant position, and (2) when *q was not under stress. The noun and perfect verb were primary derivations from q-grade roots. The accentual conditions in these derivatives were such that, paradigmatically, the merger occurred frequently in them. The preponderance of reduced *q roots first led to the change of stressed *q roots to stressed *q and eventually to the reinstitution of fully vocalized *q in the unstressed syllables by paradigmatic leveling. Thus the alternation q : q was born between the derived and non-derived roots (i.e., derived in the sense that the new root was used in a derivation). The qualitative ablaut was thus formed along morphological lines. In derived verbs, the zero grade which resulted from the complete loss of reduced *q could also be generalized for the entire paradigm. Where leveling of the root did not occur, one finds the alternations q : zero and q : zero. Secondary derivations, based on the q-grade root, continued the q-grade. Kurylowicz believes that this long grade was not used in Indo-European, but that it was an independent development in the daughter languages.

Whereas Saussure thought the Indo-European root could be light, heavy, monosyllabic, or disyllabic, Kurylowicz believes that all original Indo-European roots were monosyllabic and belonged to one of the following four types: (1) -ERT, (2) -RET, (3) -ER, or (4) -ET (where R = any so-
nant, and T = any stop or ș).

Where Kurylowicz stands on the question of the status of Indo-European *i and *u is not clear. He does, however, believe that Indo-European had a five vowel system.

It is probable that the majority of alternating roots found in Early Common Slavic were directly inherited from Indo-European. It is not possible to state with certainty whether i and u are full grades or zero grades of Indo-European roots. As both can be generated from the full grade sonantal diphthongs ending with non-syllabic *i or *u, it is always possible to reconstruct the Indo-European root with such a diphthong, if one utilizes only the Slavic languages in reconstruction. A counter-argument to the belief that both reflect zero grades would require proof that in some roots they cannot exist; this evidence has yet to be introduced convincingly.

Common Slavic was found to exhibit the following alternations:

1) e : o
2) e : zero
3) o : zero
4) eu / ou : y (lengthened zero)
5) e : i (lengthened zero)
6) e : ē
7) o : a
8) e: a
9) mixed

1) The e : o alternation is found in Common Slavic between nouns and verbs and between determinate and indeterminate verbs. The nouns appear in the o-grade and the indeterminate verbs appear in the e-grade.

2) The e : zero alternation is found in Common Slavic between the infinitive and present tense roots of Class I verbs. When the infinitive was formed without a thematic vowel, the zero grade appeared in the present tense. When the infinitive was formed with the thematic vowel *-a-, the zero grade appeared in the infinitive.

3) The o : zero alternation is rarely found in Common Slavic. It is usually reflected in the alternation *ou : *ū / *ūu (*ūv prevocally) or by *oi : *i / *ii (*ii prevocally). In a few cases, it can be found in the cluster *ort : *ūrt or *olt : *ūlt. The o : zero alternation could not be recovered with certainty when followed by a nasal sonant. Both the e : zero and o : zero alternations were found between transitive and intransitive verbs appearing in the zero grade and being members of verb Classes II and IV (infinitives ending with *noti and *sti respectively).

4) The eu / ou : y (lengthened zero grade) alternation was used in the formation of infinitives of mono-
syllabic Class III verbs without a thematic vowel or Class I verbs without a thematic vowel. It is possible that the Class III verbs were originally in Class I. The full grade frequently shows up in monosyllabic root nouns and the zero grade in the present tense root of the verbs mentioned. The lengthened zero grade also was used to form prefixed iteratives, especially when the zero grade was used in the non-iterative prefixed verb.

It would seem to logically follow that the diphthongs *ei and *oi would produce lengthened zero *i, and the symmetry of the ablaut system indicates that this is probably the case. The lengthened zero grade *i operates in the same manner as lengthened zero grade *y, especially in the formation of prefixed iterative verbs in Class IV. The zero grade providing the base for lengthening occurs in Class I verbs (infinitive with zero grade root plus *-ati) and is particularly common with zero grade roots ending in a sonant. However, the reflexes of *ei and *i merge in the Slavic languages, resulting in uncertainty in the reconstruction of underlying grades.

5) The alternation e : i is also believed to be a result of the lengthened zero grade. Originally, it seems to have occurred when the full grade *e was followed by a sonant, especially *x. The zero grade basis for lengthening appeared in the present tense root. This alternation
was not widespread prior to the monophthongization of diphthongs.

6) The alternation e : ё in Common Slavic was historically the **full grade : long grade** alternation of *e*. The use of the long grade of *e* is seen in the sigmatic aorist of monosyllabic Class I verbs and in monosyllabic deverbal nouns. In addition, confusion over the value for the lengthened zero grade of *e* resulted in the existence of doublets having either *i* or *ї* in alternation with *e*.

7) The alternation o : a is also a reflection of the **full grade : long grade**. It functioned in the same categories as 6 above. The long grade a is commonly found concurrently with the derived imperfective suffix -yva-.

8) The alternation ё : a reflects the e : o alternation when the normal full grade was *є*. The number of examples is small. The same alternation resulted when both vowels of e : o were secondarily lengthened.

9) The reconstructions made for Common Slavic often show alternations which do not fit into the above list. In that event, the alternating roots are most likely to be related historically, and an explanation can be found in the fact that the roots containing the linking grades in an ablaut series have been lost in Slavic. To give an example, the alternation of у and y is not a direct ablaut link, at least originally. Historically, they must reflect the zero
grade and the lengthened zero grade respectively. According to the ablaut theory, a zero grade is not possible unless the full grade provided it. The loss of the full grade, in this case *ou or *eu, means that the kernel of the series is lost. Similarly, alternations can be found in which the full grade alternates with the lengthened zero grade, but where the zero grade itself has been lost. Such mixed alternations could become morphologized in Slavic, without the linking grade ever having existed historically.

The appearance of y as the lengthened zero grade of *ou or *eu indicates that the lengthening process took place prior to the period in which all quantitative differences became qualitative. If one establishes a relative chronology whereby the beginning of the Slavic period is initiated by this vocalic change, one is forced to the conclusion that the lengthened zero grade was a pre-Slavic phenomenon. The extensive use of the lengthened zero grade in Slavic suggests that it was one of the most productive alternations and that the process continued along morphological lines even after *u was no longer in the vocalic inventory.

Old Church Slavonic provides the greatest amount of information on the ablaut relationships of the other Slavic languages. This is particularly true for the reflexes of the zero grade. The zero grade in Slavic was seldom a pho-
netic zero, but was rather a reduced vowel. These reduced vowels were inserted pre-sonantally in the zero grade reflexes of syllabic sonants, in spite of the fact that in many cases their absence would not hinder pronunciation (of course, it is not possible to state how they were actually pronounced). And furthermore, the zero grades of sonantal diphthongs were reflected in this manner independent of the environment (i.e., either preconsonantally or prevocalically).

The long grade of *e was still visible in Old Church Slavonic, but the monophthongization of *oi to *e in Late Common Slavic resulted in a merger of the reflexes for the full grade *oi and the long grade *e.

Consonantal changes which occurred mainly in the Common Slavic period rendered several of the roots different in shape in regard to their consonantal composition, but the vocalic alternations were retained, none the less. It would seem logical to theorize that the use of vowel alternation as a viable process in Slavic was in part due to the proliferation of consonants and the change in the consonantal structure of once related roots. The loss of ablaut as a productive morphological or derivational function must also be ascribed to the large number of vowels developed during Common Slavic. It is possible that the only series still productive in Old Church Slavonic were e : o and the
lengthened zero grades. The \( o : a \) alternation was still alive, but only a concomitant feature of suffixation. Undoubtedly, one of the greatest blows to the use of zero grades was the loss of full grade diphthongs during Common Slavic.

Old Russian further changed the vocalic system by replacement, merger, and split. The original ablaut series were now so diverse and unsymmetrical in their reflexes, that it would be remarkable if the speakers realized any relationships among many of the historically related roots. During the history of Russian, the nasal vowels disappeared in favor of a merger with existing \( a \) or \( u \); the jers either completely disappeared or merged with \( a \) or \( o \); \( å \) eventually merged with \( a \); polnoglasie distorted the original root structure of several full grades; and paradigmatic leveling took its toll.

Nevertheless, ablaut relationships can still be found in Modern Russian. It is very probable that the native speaker of Modern Russian still senses the \( e : o \) alternation. The use of the lengthened grade \( å \) is still productive in the formation of new iterative imperfectives,
REFERENCES


