

Introduction to Proto-Indo-European and Balto-Slavic Accentology

Introduction to Proto-Indo-European
and Balto-Slavic Accentology

By

Roman Sukač

CAMBRIDGE
SCHOLARS

P U B L I S H I N G

Introduction to Proto-Indo-European and Balto-Slavic Accentology,
by Roman Sukač

This book first published 2013

Cambridge Scholars Publishing

12 Back Chapman Street, Newcastle upon Tyne, NE6 2XX, UK

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

Copyright © 2013 by Roman Sukač

All rights for this book reserved. No part of this book may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the copyright owner.

ISBN (10): 1-4438-5287-2, ISBN (13): 978-1-4438-5287-6

CONTENTS

Chapter One.....	1
Introduction	
Chapter Two.....	5
Accentual Patterns of Indo-European Languages	
2.1. Introduction.....	5
2.2. Accentual patterns of some Indo-European languages – overview	5
2.3. Accentual patterns of several Indo-European languages in detail	7
Excursus 1 - Lachmann's Law	
Introduction.....	52
1. History of research.....	52
2. Review of data	77
3. Proposed solution and the Bifurcation hypothesis	86
Chapter Three	88
Proto-Indo-European Accentuation	
Introduction.....	88
3.1. PIE - a tonal language?	88
3.2. Accent and ablaut relationship.....	90
3.3. Thematic vowel puzzle	111
3.4. Modern phonology description attempt	114
3.5. Accent and ablaut revised by Keydana	121
Chapter Four.....	123
Balto-Slavic Period	
4.1. Balto-Slavic mobility	123
4.2. Ebeling's Law and related problems.....	126
4.3. Alternative approaches to Balto-Slavic mobility problem.....	128
4.4. From Late-Balto-Slavic to Proto-Slavic.....	134
4.5. Alternative proposal to Balto-Slavic accentual changes.....	135

Excursus 2 - Hirt's Law	136
1. History of research	136
2. Paradigmatic reconstruction	149
3. Reflection on the data	150
4. No-strict-oxytonesis hypothesis	156
5. Lubotsky's accent shift	157
6. Proposed solution	158
 Excursus 3 - Winter's Law	 159
1. Discovery and conditions of the operation	159
2. Rejection of Winter's Law	159
3. Mechanism of Winter's Law	163
4. Winter's Law in Albanian?	169
5. Summing up	169
6. Review of data	170
7. Proposed OT solution of Winter's Law	202
8. Explanation of further counterexamples	207
 Chapter Five	 218
Proto-Slavic Accentology	
5.1. Introduction	218
5.2. Principles of Proto-Slavic accentology	219
5.3. Stang's Law	231
5.4. Accentuation of verbs	231
5.5. Acute and circumflex	234
5.6. Main accentological schools and streams	237
5.7. Fixing the stress due to the interaction of prosodic characteristics of morphemes	274
 Excursus 4 - Compensatory lengthening in West Slavic	 278
1. Introduction	278
2. Compensatory lengthening - theory and approaches	279
3. OT solution of CL	282
4. CL in Slavic - what we know about it	286
5. Proposed solution for CL	302
 Chapter Six	 307
Optimality Theory as a Solution for Some Accentual Phenomena	
 References	 322

CHAPTER ONE

INTRODUCTION

Indo-European and Balto-Slavic accentologies are complex, as Frederik Kortlandt, one of the most famous accentologists, often emphasizes. Unlike the other branches of linguistics, accentology lacks a modern and complex overview or a textbook. While each generation faces at least one compendium on Indo-European linguistics, and a new massive compendium on phonology, morphology or syntax appears every decade, accentology remains neglected. The last monograph on IE accentology is Gercenberg (1981), whose accessibility is limited to non-Russian speaking scholars. Its most valuable part is the first chapter concerning the history of IE accentology since Böhrtlingk. Modern trends are mostly omitted. So the only information which can be found about accentology is in the introductory chapters in more general compendia: Szemerényi (1996), Clackson (2007), Fortson (2010).

The situation with Balto-Slavic accentology is quite puzzling. While historical linguists and Indo-Europeanists basically have a background knowledge of the Indo-European accentology in general (but not in detail), Balto-Slavic accentology is taken as complex, difficult and hard to understand. There are several reasons for such a prejudice:

1) It might be difficult to follow the general trends and to distinguish individual schools. Such is the situation of Kuryłowicz and Stang: although both authors published their major works in the late fifties, only Stang became a founding father of a further development in Balto-Slavic accentology.

2) Different timeline research phases of scholars and schools are not distinguished. For example, the results of the Moscow accentological school can broadly be divided into three periods: before the 1990s, after the 1990s, and after 2000. The first part is dominated by the Illič-Svityč (1963/1979) monograph on nominal accentuation in Balto-Slavic and its relationship to PIE, and by Dybo's book on the accentuation of derivatives and principles of their accentuation (being itself a culmination of a number of his previous papers). The second period is characterized by the revision of some accentological themes, which are not generally accepted by other

scholars. The work culminates with the unfinished project *Osnovy slavjanskoj akcentologii* (1990, 1993) and a half-finished body by Dybo (2000). The third period in the new millennium is marked by the inactivity of Moscow group members on the one hand, and by the enormous activity of Dybo on the other. So if a scholar starts to read *Osnovy*, being persuaded by the title that the books provide the foundations of the subject, he or she will be discouraged because both of the books provide a summary of the new ideas of the Moscow groups, but those ideas have remained hanging in the air.

Accentological works must not be put into one mixed bag. So if a scholar deals with West Slavic accentuation, he or she must not put Bulachovskij, Kuryłowicz, Stang, Dybo, Garde, Kortlandt and Bethin into one paragraph and conclude that Balto-Slavic accentology is complex.

3) There is a limited accessibility of primary accentological works. For example, papers by the Moscow school are generally unknown to scholars who are unable to read Russian. Moreover, the papers were sometimes published in local journals, which were difficult to obtain for the non-Russian community. So the Western scholars were acquainted with some ideas through mediators. One example of this is Garde (1976), whose brilliant compendium, written in French, heavily supported Illič-Svityč and Dybo. Via Garde, the ideas were adopted by Halle and Kiparsky, also in a distorted view and often with "their own inventions", like the Basic Accentual Principle, and due to the scientific authority of those scholars, were further spread among non-specialists. So, for example, the situation resulted in the generally accepted fact that Kiparsky is the author of dominance and recessivity of morphemes, and a similar mechanism was developed by Garde. Dominance and recessivity found their way into various aspects of non-linear phonology as well as OT without even mentioning the works of the real inventors.

4) There is a general prejudice against some authors and schools. This is the case with respect to the Leiden school and Kortlandt. When Kortlandt published his (1975) work on Slavic accentuation, claiming that the accentual patterns of Slavic can be explained by the preservation and loss of laryngeals up to the Charlemagne time, it was rejected as impossible. Together with Kortlandt's glottalism, the works of the Leiden group started to be viewed as a curiosity. Partially, this is due to the fact that there is no general introduction to Kortlandt's theories (apart from some of Derksen's papers and his (1996) dissertation). Also, Kortlandt's papers are difficult to read and must be read in the context of his other papers. One paper is not enough.

5) Indo-European and Balto-Slavic accentology are now characterized by groups or individuals who generally do not communicate. Indo-Europeanists do not follow the trends in Balto-Slavic accentology and vice versa; Slavists usually omit accentology as difficult and unclear, phonologists generally skip anything diachronic. If one wants to get some basic knowledge about Balto-Slavic accentology, the situation is similar to that for Indo-European. The last monumental compendium is Garde (1976). There is no general overview of Kortlandt's theories (apart from the brief ones by Derksen in his own works). Bethin (1998) is not to be taken as an overview of trends. Lehfeldt's (2001) book is a useful introduction to the principles of Moscow accentology, but the potential reader must be discouraged by the Appendix written by Vermeer. The Appendix is aimed as a sharp criticism of the Moscow *modus operandi*. Skljarenko (1998) combines MAS with his own interpretation, and remains almost inaccessible to a broader community because of the language barrier. Alternative accentological theories are dispersed in journals.

Therefore, in my book, I also try to present the general overview of Proto-Indo-European (PIE), Balto-Slavic (BS) and Proto-Slavic (PSl) accentology and to adduce the main trends. The book is aimed at an advanced student or a scholar who wants to have a general overview of current trends in accentology, and does not want to stick to a certain theory. My aim was to provide the reader with the current trends and give a general overview as a starting point for further research. In accentology, one must admit that there is no generally accepted truth, especially when historical development is taken into account; there are several parallel or conflicting theories based on explanations of data.

The structure of my book is as follows. In the first part I briefly outline the characteristics of the accentual patterns of Indo-European languages. Of course, not all of the languages are adduced, just those which are important for comparative purpose. The second part contains a description of the accentual pattern of Proto-Indo-European. Important topics, such as the relation of accent and ablaut, are discussed. The following two chapters are devoted to Balto-Slavic and Proto-Slavic accentuation, which means that the three chapters logically describe the accentual patterns historically, from the Proto-Indo-European to the separate Balto-Slavic branch.

Because a potential reader can find quite a lot of papers and books on Indo-European accentology solved by means of Optimality Theory (OT), a brief chapter explaining the principles of OT concludes the book. Other

theories are omitted, and readers are advised to follow other introductory books.

There are also four Excursus in the book. They deal with some specific accentual topics, and the aim is to present a detailed analysis starting with the summing up of all the theories, their critical assessment, a review of the data and a new proposal for the solution. Excursus 1 is devoted to Lachmann's Law in Latin, Excursus 2 and 3 to Hirt's and Winter's Law in Balto-Slavic, and Excursus 4 to the Compensatory law in West Slavic. Readers can follow my method of dealing with the theories, data and conclusions, and are welcome to challenge the results.

Finally, I would like to thank the publisher for accepting this manuscript for publication.

Opava, February 2013

CHAPTER TWO

ACCENTUAL PATTERNS OF INDO-EUROPEAN LANGUAGES

2.1. Introduction

The accentual patterns of Indo-European can be reconstructed on account of the prosody of certain Indo-European branches. Their synchronic accentuation is the result of separate innovation, but historical changes can help us to reconstruct the original state. Latin has a predictable stress system. Greek and Old Indic used to be pitch accent languages. Germanic, due to Verner's Law, witnesses the original accentual mobility. Baltic and Slavic are extremely important for post-Proto-Indo-European development in the Balto-Slavic area. Comparison of accentual patterns of those languages leads to the reconstruction of PIE prosodic patterns. Below I adduce the main characteristics of the important Indo-European languages, which are used for the reconstruction of PIE prosody. Part 2.2. contains a brief overview of basic prosodic patterns of some languages. Only basic references for general overview are adduced. Part 2.3. is devoted to the detailed description of some Indo-European languages and problems related to their prosody.

The description is not exhaustive. The aim is to provide the current state of knowledge and an overview of literature that a potential reader may come across when studying Indo-European accentology.

2.2. Accentual patterns of some Indo-European languages - overview

East Slavic languages (Russian, Ukrainian, Byelorussian) have free and mobile stress and no distinctive quantity. South Slavic languages have either stress only systems (Bulgarian - free and mobile stress, Macedonian - fixed stress on antepenultima) or pitch-accent systems (Slovene, Serbian-Croatian: tone in accented syllable only, vowel length). West Slavic languages have mostly fixed stress (Czech, Slovak: initial stress,

distinctive length, in Slovak the length is limited by the Rhythmic Law; Upper Sorbian: initial stress, non-distinctive length with some qualitative reflection of length; Lower Sorbian: initial stress; Polish: penultimate stress, non-distinctive length, Slovincian and Kashubian: free or fixed initial (depending on dialects, qualitative reflections of original length).

References: Comrie & Corbett (1993); Horálek (1962/ 1992); Sussex & Cubberley (2006).

Baltic languages are traditionally important for the reconstruction of both PIE and Proto-Slavic accentuation. Standard Lithuanian has free stress, and long syllables distinguish three intonations: acute, circumflex and gravis. Latvian has fixed stress on the first syllable and two or three intonations (depending on dialects), circumflex, gravis and a broken one (*Brechtón*). Old Prussian details of accentuation are scarcely known.

References: Eckert; Bukevičiūtė; Hinze (1994); Petit (2010).

Germanic languages have prosodically fixed stress, which does not depend on the grammatical information. Historically, Verner's Law is important for the reconstruction of the original PIE ictus. Moreover, prosodic systems of Germanic languages (especially English and German) are often touchstones of new phonological theories.

References: König & van der Auwera (1994); Harbert (2007), Woodard (2004).

From the Romance languages, Latin interaction of quantity and dynamic stress system is interesting for the knowledge of how such interaction develops across time.

References: Woodard (2004); Heine; Rubenbauer; Hoffman (1995); Allen & Greenough (1903 and newer editions); Meiser (1998); Sihler (1995); Weiss (2009).

The accentual reconstruction of PIE has been based on traditional languages, such as Greek and Old Indic. Of the Anatolian languages, Hittite may contribute to our knowledge of PIE accentual phenomena, especially the question of accent and ablaut relationship, even though the relevance of data might be disputed within the writing system used for Hittite.

References: Greek: Goodwin (1900) and newer editions; Bornemann & Risch (1978 and newer editions); Rix (1992); Sihler (1995); Old Indic: MacDonnell (1910) and newer editions; Macdonell (1916) and newer editions; Whitney (1889) and newer editions; Anatolian: Woodard (2004); Hoffner & Melchert (2008).

2.3. Accentual patterns of several Indo-European languages in detail

2.3.1. Old Indic

Old Indic had a free stress and pitch accent system, although this might have been relevant only on a phonetic level. A typical feature of Old Indic is the interaction of accent and ablaut, which can be observed in some declination types that show different stem grades.

Old Indic nouns can be mobile or immobile.¹ Mobilia are mostly monosyllabic athematic nouns: Nsg. *pāt* "foot", Gsg *padās*, D. *padē*, Asg. *pādam...*; Nsg. *pitā* "father", Gsg. *pitūr*, Dsg. *pitré*, Asg. *pitāram...* Barytona are observed among thematic nouns: Nsg. *ásvaḥ* "horse", Gsg. *ásvasya*, Dsg. *ásvāya*, Asg. *ásvam...*, and a small number of athematic nouns: Nsg *gāus* "cow", Gsg *gós*, Dsg. *gāve*, Asg. *gām*. Oxytona with fixed accent on the theme vowel are typical only for thematic flexion: Nsg *devāḥ* "god", Gsg. *devāsya*, Dsg. *devāya*, Asg. *devām...* There is also a mixed accent paradigm of a small but important group of polysyllabic nouns and heteroclitic nouns (and some numerals). Among them are for example, Nsg *púmān* "man", Gsg. *pumśas* with anomalous suffix pattern -*māms/-ms-*.

Old Indic verbs are similarly distributed. Mobilia belong to athematic verbs (here in present forms): *dvéṣmi* "hate", *dvéṣsi*, *dvéṣti*, *dviṣmāḥ*, *dviṣthā*, *dviṣānti*. Barytone accentuation can be both athematic: *āse* "sit", *āsse*, *āste*, *āsmāhe*, *āddhe*, *āsate*, and thematic: *bhāvāmi*, *bhāvasi*, *bhāvati*, *bhāvāmasi*, *bhāvatha*, *bhāvanti* (paradigm of "be"). Oxytona are also thematic verbs: *tudāmi* "hit", *tudāsi*, *tudāti*, *tudāmasi*, *tudātha*, *tudānti*.

2.3.1.1. OT description attempts

An OT description of Old Indic has been proposed by Frazier (2007) and Marston (2009 et al). Frazier followed her own steps presented in Frazier (2006) where she applied the dominant affixes² and antifaithfulness constraint theory to explain dissimilarities in the PIE athematic nouns (see the chapter on PIE accentuation). Antifaithfulness

¹ Kiparsky (1973: 806-808), MacDonnell (1916 and newer editions), MacDonnell (1910 and newer editions). Apart from the standard compendia, a handy introduction to nominal accentuation is the one by Nielsen (2004).

² Strong endings are unaccented, weak endings are accented. In a combination of strong roots, post-accenting roots and unaccented roots, the combination of dominancy and "recessivity" explains accentual mobility.

constraints create anti-optimal paradigms where stems of members of an inflectional paradigm are compared to each other, but they differ due to the antifaithfulness constraints. Frazier solved the problem of vocative in Old Indic athematic nouns in the following way: no matter whether the paradigm has columnar or mobile stress, the vocative is either unstressed or initially stressed, e.g., Nsg. *marút* "wind god", Vsg *márut/marut*, Nsg. *vāk* "voice", Vsg. *vāk/vāk*. The distribution depends on the position in a sentence: in the sentence initial position, vocative is accented, elsewhere unaccented.³ Frazier explains the problem of the vocative as the only dominant ending in Old Indic. Such a dominant ending requires accent deletion by the antifaithfulness constraint $-OP-MAX (A)$. As the vocative is similar to the nominative, the interaction of $OP-MAX (A)$ and $-OP-MAX (A)$ are involved. Frazier explains the Nsg *vāk* as a recessive unaccented form and Vsg *vāk* as a dominant form which triggers the antifaithfulness MAX Accent constraint. The result is therefore accentless vocative, unless in initial position, but in that case the accent is controlled by syntactic constraints.⁴

Marston (2009) applied Stratal OT to Old Indic nominal paradigms. She argues that classical parallel OT is unable to generate the correct surface forms without introducing exotic constraints. Marston solves the unaccentedness of the vocative by postulating a highly ranked $*CLITIC$ ACCENT which prohibits accentuation on clitics. This constraint operates on the word level and the accentless vocative can serve as an input to phrase level. Being on initial position, the $ALIGN-LEFT$ constraint shift moves the accent to the initial position. Marston thinks that at the stem and word levels, the highest ranked constraint is consistent with the head of the domain, which is $Stem=PrWd$. This higher ranked constraint interacts with faithfulness constraints $ALIGN$ and are responsible for the accent position.

³ Thus already Whitney (1889), I quote from the (2005) edition, p. 108.

⁴ I am a bit sceptical about Frazier's solution to the development of PIE to Old Indic. She proposes that the reduction of accent-ablaut classes in Old Indic is due to the morpheme reanalysis where, for example, root and suffix merge into one morpheme with the eventual loss of mobility, and the loss of dominant nominative and accusative endings also contribute to the loss of mobility. The problem is that we should observe such a pattern elsewhere where the morpheme reanalysis is connected with the loss of accentual mobility. But in Balto-Slavic, the morpheme reanalysis leads to the rise of mobility. So the solution is still hanging in the air.

2.3.2. Latin

Latin does not have distinctive intonations but has dynamic stress. Stress in Latin is distributed according to the following rules: the bisyllabics are stressed on the first syllable - *áurum* "gold", *púer* "boy". Three- and polysyllabics are stressed as follows: when the form has a long penultima, then it is stressed: *laudáre* "praise", *puélla* "girl". If the penultima is short, then antepenultima is stressed: *fémína* "woman", *ingénium* "natura".

Early Latin had strong stress on the first syllable.⁵ Therefore, vowels in the following syllables underwent various changes.⁶ Vowels in post-tonic syllables were often syncoped or weakened (first to schwa, then often replaced by some high vowel). Weakening can be observed in open nonfinal syllables (*cadō-ccidī*, change *a>i*), in closed nonfinal syllables (*factus-perfectus*, change *a>e*) as well as in final syllables (**prōdat >prōdit*). The examples of syncope can also be observed in final syllables: **partis, mortis > pars, mors*.

Concerning prosody, several phenomena can be mentioned. First, vowels can undergo shortening. According to **Dybo's Law**⁷, long vowels are shortened before liquids followed by a stressed vowel: $\bar{V} > \check{V} _ R\bar{V}$. This explains the brevity in Lat. *vir* "man" < **uiró-* < **uiRó*⁸. The counterexample to that rule is the word for "smoke" which should be short but we have *fūmus* < **d^huH-mós*.⁹ If the long vowel stands before a resonant followed by a consonant, it is also shortened: $\bar{V} > \check{V} _ RC$ - (Osthoff's rule). As an example the word for "wind" can be adduced: *ventus* < **uēnto-* < **h₂ueh₁-nt-o*¹⁰. The reason for shortening is obviously the aim of avoiding three-moraic syllables. A similar principle is observed in the **Littera rule**, where the long vowel shortens before the consonantal cluster $\bar{V} > \check{V} _ CC$ -, as in *Iuppiter* versus *Iūpiter*. This rule introduces

⁵ For a discussion about the possibility of the maintenance of PIE mobile accent in Early Italic, see Vine (2012).

⁶ See Meiser (1998: 66-74) for the complete list.

⁷ Dybo (1961). The PIE long vowels are preserved under the original stress, e.g., Lat. *brūtus* < **g^wrūtōs*. Dybo (2008) presented a comprehensive account of the correspondence of Italo-Celtic *-tu* and *-to* derivatives (oxytona) with the Balto-Slavic mobilia, e.g., Lat. *rutus* < **rūtō-*, Latv. *raūt*, PSl. **ruti*, **r₂vø*, **r₂vét₂*; and Italo-Celtic barytona *-tu-*, *-to-* with Balto-Slavic immobilia, e.g., Lat. *sūtus* < **sūtō-*, Latv. *šūt*, PSl. **š₂ŷø*, **š₂ŷet₂*.

⁸ Meiser (1998: 75). Dybo's Law has been accepted and dealt with in detail by Schrijver (1991: 334-419).

⁹ This word is an example of Hirt's Law in Balto-Slavic.

¹⁰ Meiser (1998: 75).

moraicity into the coda consonant, therefore the long bimoraic nucleus must become monomoraic so as to avoid three-moraicity of the syllable.

Generally, vowels in the final syllable are shortened: *victor* "winner" but *victōris*, *animal* "animal" but *animālis*.

Vowels can also be lengthened, e.g., before nasal+spirant/obstruent cluster: $\check{V} > \bar{V} _ nS-$, as in *quīntus* "fifth" < **quīnctus* < **k^wink^w-to*¹¹. The moraicity of the nasal is lost and transferred to the previous vowel. Compensatory lengthening in consonant clusters containing spirant "s" also leads to the introducing of another mora into the previous vowel: **kosmi-* > *cōmis*. One of the most controversial quantitative changes in Latin is Lachmann's Law. According to that law, the root vowel in past passive participles (and also in nomina agentis ending in *-tor*, nomina actionis ending in *-tiō* and *-tāre* intensiva) lengthens before the original voiced unaspirated consonant, e.g., *agō* "drive" x *actus* < **agtos*, *edō* "eat" x *ēsus* < **edtos*. There are many counterexamples, like *findō* "split", *fissus* < **b^hejd-* or *scindō* "tear", *scissus* < **skejd-*. Throughout the history of the interpretation of Lachmann's Law, various explanations have been proposed (see Excursus 1).

2.3.2.1. OT description attempt

Latin stress from an OT point of view was studied for example by Jacobs (2003).¹² Jacobs pointed out the Early Classical Latin exception to the Classical stress rule when a four-syllable word, with the first three being short syllables, receives stress on ante-ante penultima or on the first syllable: *fācilius* "easy", *bāsilius* "royal".

The development from Pre-classical Latin to Early Classical Latin is described as the re-ranking of constraints which are responsible for a rightmost/leftmost head of the foot in a prosodic word (quadrissyllabic initially stressed words). The change to Classical Latin, where no pre-antepenultimate stress is possible, is seen as a result of the re-ranking of a constraint responsible for aligning a prosodic word. The key constraint in Jacobs' analysis is the NON-FINALITY constraint: a foot is never final. This constraint causes the parsing of syllables in feet to stop two light syllables from the word end. Footing in Latin is leftward.

Jacobs' analysis is quite complex, so I refer to her original paper for further discussions about her OT solution.

¹¹ Meiser (1998: 78).

¹² Metrical theory to Latin stress was applied by e.g., Hayes (1995), Halle (1997) or Mester (1994).

2.3.3. Greek

Classical Greek is a tonal language distinguishing intonations.¹³ Although the tonal marks were introduced by Byzantine grammarians, the marks are projected to the Attic variant too. Attic dialect is also the main source of information on the Greek accentual system. The acute was probably a rising tone, and circumflex a rising-falling tone. Gravis marks no distinctive intonation, but is used for an accented final syllable where it replaces acute. The distribution of intonation partially reflects the original PIE state (Gr. *patér*, OInd. *pitá* < **ph₂tér*; Gr. *frátēr*, OInd. *bhrātā* < **b^hréh₂tēr*), Greek developed its own innovation. First, the distribution of accent in Greek follows the **Dreisilbengesetz** which permits the occurrence of acute and circumflex within the last three syllables only. No matter how many syllables a word may have, the accent can appear only over one of the last three syllables. Acute can be on the last syllable (*theā* "goddess"), on the penultima (*chōrā*) or on the antepenultima (*mélitta*). *Acute* can appear both on short and long syllables, but if the ultima is short, acute must be on the penultima: Nsg *mélitta* but Gsg. *melittēs*. Generally, acute can be on ultima only when a pause follows. Over the penultima can be acute if penultima is accented and if the ultima is long. *Circumflex* can only be on the ultima (*Athēnā*) or penultima (*Mou̓sa*), not over the antepenultima. Circumflex can only be on the long syllable and on the penultima if the ultima is short. Should the ultima be long, circumflex changes to acute (Gsg. *Mou̓sēs*). Finite verbal forms have *recessive accent*. This means that the accent of a word goes back from the end of the word within the limits of *Dreisilbengesetz*. So for example, the forms of "throw" can be accented as follows: aorist active *ébalon* has acute on the antepenultima because the ultima is short, but aorist medium *ebálou* has acute on the penultima because the ultima is short. Nomina have mostly *persistent accent*, which means that the accent in a paradigm has the tendency to stay on the same syllable as in the Nominative singular. The distribution of accent in the paradigm also follows *Dreisilbengesetz*.¹⁴ So for example, Nsg of *ánthrōpos* has acute on the antepenultima. Gsg *anthrópou* must have acute on the penultima because the ultima is long, and acute cannot stay on the antepenultima (though only if it is short). Change of accent can also be explained by **Wheeler's Law**. This law

¹³ Bornemann & Risch (1978: 4-9), Rix (1992: 41-43).

¹⁴ The law has been reformulated by Jakobson (1937/1962) as the "limitation rule": the vocalic morae between the accented vocalic mora and the final one cannot belong to different syllables. Or, the span between the accented and the final mora cannot exceed one syllable.

causes the retraction of accent from the ultima to penultima if the word form is dactyl: **poik'elós* > Gr. *poikilos* "many-coloured", cf. OInd. *peśalá* "decorated". The law explains the anomaly in morphology, e.g., *plēsios* "close" but *skoliós* "curved"¹⁵ While Wheeler's Law applies to other Greek dialects, **Vendryes' law** operates only in Attic. According to that law, circumflex from penultima retracts to the short antepenultima and changes to acute, like common Greek *etoĩmos* "ready" > Attic *étoimos* or *geloĩos* "laughable" > *géloios*.¹⁶ Greek accent can also distinguish meanings of the same words, like *oĩkoi* "at home", *oĩkoi* "houses". The **sōtēra** law causes the change of the acute of a penultimate long syllable to become circumflex if the final syllable is short, e.g., **titheĩsa* > *titheĩsa* "putting".¹⁷

The relative chronology of the accentual laws in Greek was established by Meier-Brügger (1987): Dreisilbengesetz, Wheeler's Law, sōtēra law, Barytonesis, Vendrye's Law.¹⁸

Apart from those Greek innovations¹⁹, the rest of the PIE prosodic system in Greek is limited but still important, e.g., we still observe the relationship between accent and ablaut, e.g., *leípō* "leave" (full accented grade), *léloipa* (unaccented full o-grade), *élipon* (unaccented zero grade).

Basically, Greek nouns and adjectives can be accentually distributed in two types: barytona (accent is placed as far to the left as possible according to Dreisilbengesetz). Oxytona do not only place accent according to the recessive rule but also reflect morphological constituency (e.g., thematic oxytona are theme-accented).²⁰

The tonal distinction of Greek final syllables has taken an important role in the debate of PIE accentology. Greek has prosodic distinction in the final syllables, e.g., in final syllables of polysyllabic words: Nsg. *fygḗ* "flight" x Dsg. *fygḗ*; in monosyllables: *poús* "foot" x *boūs* "bull"; in the

¹⁵ Further discussions in Collinge (1985: 221-223). Briefly also Sihler (1995:237).

¹⁶ Various opinions about this law in Collinge (1985: 199-201).

¹⁷ Sihler (1995: 237), Olander (2009: 63).

¹⁸ Meier-Brügger (1987: 289).

¹⁹ Interesting is for example, the "*metathesis quantitatum*", where a group of vowels change quantity and accent. The metathesis operates only in Attic: *basilēos* "king" > *basilēos* (Bornemann & Risch 1978: 12). Hock (1986: 443) considers it not a metathesis but a compensatory lengthening where a long vowel is shortened in prevocalic position with the subsequent lengthening of the following vowel. The metathesis would therefore be only apparent.

²⁰ The columnarity of Greek nouns is typical for vowel stems and consonantal stems. Mobility was limited to monosyllabic stems and some *i*-stems.

penultimate syllable of words ending in *-oi* or *-ai*, Npl. *oĩkoi* "houses" x adv. *oikoi* "at home".²¹

Greek intonations used to be taken as having PIE origin because striking similarities of final intonation have been found between Greek and Lithuanian, e.g., Gr. *alfē* "salary", Lith. *algà*, Gr. *alfēs*, Lith. *algõs*.²²

Kuryłowicz (1932, 1935) refused the continuation of Greek tonal opposition with the PIE state, claiming that Greek intonation is a properly Greek phenomenon. He argued first that the correspondence between Lithuanian and Greek is illusory, because the comparison had been done between different intonations in different languages with the usage of the same symbols for intonations. Although Greek *tēs alfēs* correspond to Lithuanian *tõs algõs*, there is no correspondence of Lithuanian *tā aĩgq* to Greek **tēn alfēn*. Also, the Greek endings with circumflex intonations which would correspond a bisyllabic Vedic endings are limited (circumflex as a result of contractions), e.g., Gpl. *-ām ~ -ōn*.

Kuryłowicz considers acute intonation as nothing other than a lack of circumflex intonation, i.e. it indicates the normally accented vowel not subjected to special phonetic or morphological conditions.²³ So for Kuryłowicz, the important role in Greek intonation is circumflex which is autonomous in monosyllabic words and final accented syllables. Three forms of circumflex can be distinguished: 1. circumflex originating from contractions: *fāos > fōs*; 2. morphological circumflex, e.g., in aorist forms: *bainō-bē*, in monosyllables: *kēr* "heart"; 3. circumflex originating from prehistoric phonetic reasons: *timēs*, *boūs*.²⁴ Kuryłowicz argues that group 3 is also morphologically conditioned, for example the accent recessivity in u-stems *boūs* < **bó-u-s*. The general relationship between recessive accentuation and circumflex intonation is generalized: "whenever, in a grammatical category, forms accented on the final syllable coexist with forms accented on the penultima, the former obtain the circumflex

²¹ Modified according to Olander (2009: 64). Various interpretations of Npl *oĩkoi* x Adv. < Lsg. *oikoi*: Hirt (1929: 38): the ending in *oĩkoi* was originally acute (short), the ending in *oikoi* originally circumflex (long); Kuryłowicz: *oikoi*: original circumflex was analogically introduced from the consonantal stems, Olander (2009: 68-69) prevocalic (short) and pre-consonantal alternants **oj/oi*.)

²² The classical neo-grammarians simply assumed that the Greek and Lithuanian acute (here shortened at the end of the word) continue PIE acute, and Greek and Lithuanian circumflex is the same as PIE circumflex syllables (Hirt 1929: 199-208).

²³ Kuryłowicz (1932: 202-203).

²⁴ *ibid.* p. 203.

intonation, if the final syllable contains a long vowel or a diphthong and if it may be conceived as a contracted syllable.²⁵ For example, third declination oxytona have suffix *-i* or a complex accented suffix + unaccented *-i*: *-éni*, *-ídi* and contraction syllable *-eĩ* < *-é-i*. So circumflex in Dsg of the type *eugeneĩ* is conceived as resulting from contraction (or phonetic, because *-eĩ* < *-é-i*) and circumflex of Dsg second declination *-ō̃*, as in *kalō̃* has a morphological circumflex, because it also obtained *-i-* and is modelled on the pattern of the type *eugeneĩ*.²⁶ Kuryłowicz also claims that there is a rule which applies to Greek oxytone paradigms: forms with marginal accentuation have the circumflex if there exist corresponding forms with columnal accentuation.²⁷ Thus *timē̃* has circumflex because there exists a corresponding paradigmatic form *poiméni* etc.

The correspondence of Greek and Balto-Slavic morpho-phonological patterns has been studied by Nikolaev & Starostin (1982), Nikolaev (1983) and Nikolaev (1984). It was shown that Greek CVCV roots correspond to Balto-Slavic mobilia.

Olander (2009) analysed Greek tones form a laryngealistic conception and assumed that PIE tones were remade by a distinction between long and hiatal final structures. PIE long vowels (of any origin) gave Greek final syllable acute, e.g., **dh₃tér* > *dotér*, **b^hugáh₂* > *fygḗ*. PIE hiatal structures gave Greek circumflex, e.g., Dsg **b^hugáh₂ai* > *fygē̃*.²⁸

2.3.3.1. Modern phonology description

The modern phonological approach to Greek accentuation has been done for example, by Steriade (1988). She applied metrical phonology to the analysis of Ancient Greek prosody and tried to show that the position of accented syllables is determined by a metrical procedure which is sensitive to syllable weight rather than number of moras. Steriade takes circumflex as HL and acute as LH melodic contour, and the gravis as the single H. She also posits a recessive class of words where the accent recedes as far to the left as allowed. The foot formation of recessive accent is formalized as follows: a) a final consonant is extrametrical, b) a final light syllable is extrametrical, c) construct left-dominant binary feet right

²⁵ Kuryłowicz (1932: 207).

²⁶ *ibid* p. 207-208.

²⁷ p. 208. Oxytona have columnal accentuation if the accent remains on the same syllable, counting from the beginning of the word, e.g. *patér*, *patéra*. Oxytona with marginal accentuation have the accentuation of the last syllables, e.g. *timé*, *timēs*.

²⁸ Olander (2006: 65-66).

to left. The main stress rule is formulated by a construction of a word-level right-dominant foot and elimination of secondary stresses.²⁹ Surface stress is then computed and formalized by grids. Steriade devotes a lot of space to the accentuation of clitics, which is not the topic of this work. Steriade does not bother with the historical explanation of Greek prosody, her description is only synchronic (she even does not use the traditional accentual laws).

2.3.3.2. OT description attempt

An OT solution to Greek accentuation was proposed for example, by Noyer (1997), who suggests that the surface placement of accent is derived from the abstract syllabification. Noyer reanalysed the moraic trochee analysis of Greek proposed by Sauzet (1983, 1989) and Golston (1989)³⁰. Noyer concluded that the accent placement depends on the syllabification and surface-level syllable contraction.³¹ Constraints which interact in that analysis belong to the Alignment family:³²

OXYTONE: Align (H-σ, Right, Base, Right)

- the right edge of the syllable containing the H-tone must be aligned with the right edge of the base.

BARYTONE: Align (Head Foot, Left, H-Tone, Right)

- align left edge of the head Foot with the right edge of the H-tone domain.

Complex forms show cyclic effects combining contraction and re-footing.

Another OT solution has been proposed by Kiparsky (2003) in the frame of Stratal OT. Kiparsky proposed an interaction of the accentual constraints with other phonological constraints.

²⁹ p.276.

³⁰ Sauzet, P. (1983): *Essai de traitement métrique de l'accent grec (ancien)*. MS, École Normale Supérieure, Paris.; Sauzet, P. (1989): *L'accent du grec ancien et les relations entre structure métrique et représentation autosegmentale.*, *Langages* 24, 81-111.; Goldston, C.: *Floating H (and *L) tones in Ancient Greek.*, *Proceedings of the Arizona Phonology Conference 3*, Coyote Papers, University of Arizona.

³¹ Noyer (1997: 524).

³² *ibid* p. 518.

2.3.4. Hittite

Hittite as an Anatolian language can now be considered an accentologically relevant language, even if not accepted by every scholar.³³ The information on Hittite accent is scarce but it can contribute to our reconstruction of PIE prosody, especially accent-ablaut paradigms. Hittite accent can be deduced from *scriptio plena* which is "merfache Notierung eines Vokals in der Keilschrift" (Caruba 1981: 232:235).³⁴ Plene writing was observed to reflect length: *la-a-ma-an* "name", Lat. *nōmen*. Plene writing can be observable for example, in the root of N, Asg *te-e-kan*, Gr. *chthōn* < **d^hég'hōm* and in indirect cases also in endings: Gpl *pa-ta-a-an*, Gr. *padōn*. A reduplicative syllable can also be written with plene writing and in that case it corresponds to accented reduplicative syllables in other IE languages: *me-e-ma-*, *le-e-la-mi-ja*, Got. *lailōt*, OInd. *dādihāti*, Gr. *gégona*.³⁵ Denominatives and deverbatives with **-iē-/iō-* or **-éje-/éjo-* accented suffixes also have plene writing: *hudlija* "fight" > *hu-ulli-e-ez-zi*, *karpija* "pick up" > *ka-ar-pi-e-ez-zi*. Athematic verbs can also reflect the original accent *e-it-mi* (*édmi*) "I eat", OInd. *ádmi* < **h₁éd-mi* present participle *a-da-a-an-* (*adánt*), OInd. *adánt* < **h₁sónt-*.³⁶ The position of accent could also be marked by doubling of consonants if the accent preceded or followed: Hitt. *lammar* "hour", Lat. *numerus*, PIE **nóm̥r-* or Hitt. *gimmant-* "winter", Gr. *cheimón*, PIE **g^hejmónt-*.³⁷ The accent is also reflected in substantives having collective meaning: Nsg **uód̥r-* "water" > *ua-a-tar*, Dsg. **uedéni* > *u-i-te-e-ni*, Npl **uedōr* "waters" > *ud-da-a-ar*.³⁸ Length is interpreted in monosyllables which regularly have plene writing: *e-et* "eat!", *i-it* "go!".³⁹

A different view on plene writing is found in Hoffner & Melchert (2008: 25, 49) who point to its problematicity. It is far from being consistent, and although in some positions it can reflect accent or length, we cannot be sure that it always indicates length. The consensus on the

³³ From other Anatolian languages, Lydian accentuation has been thoroughly described by Eichner (1986, 1987). Lydian had probably free stress system which also colored certain vowels.

³⁴ Here also the history of attempts to explain *scriptio plena*, similar overview in Kimball (1999: 57-58).

³⁵ Carruba (1981: 238).

³⁶ Oettinger (1992: 207), Hoffner & Melchert (2008: 50).

³⁷ Oettinger (1992: 209).

³⁸ *ibid.* 211., also Kimball (1999: 60).

³⁹ *ibid.*

distribution of plene writing is only in certain positions and certain examples.

Some other phenomena can hint at the position of Hittite accent, e.g., verbal endings in 1st and 2nd plural. Endings *-wani/-tani* are not accented but *-weni/-teni-* are stressed.⁴⁰

A summary of recent views is also in Kloekhorst (2008), who attributes several functions to plene writing. First, it is the denotation of length, e.g., *ne-e-pí-iš* meaning /nébis/. Plene writing is here used for an accented vowel in the open syllable. In the word initial position a plene vowel reflects glottal stop: *a-ar-aš-zi* = /ʔártsi/. Nevertheless, not all instances of plene writing can be described in phonetic sense (Kloekhorst 2008: 32-33). Some phonological changes can also hint at the position of accent. For example, **é > ē*; PA **méhwr* > Hitt. *mēhur* "time" while **ē > ē*, PA **-ēr* > 3pl. preterite *-er*. Short "o" was prolonged in accented closed syllable, like PA **móld-* > 1sg. *māld-* "speak solemnly" while long accented "ō" was lowered to "ā", like PA **wedór* > *ūidār* "waters". Also, short "e" was prolonged in the accented syllable: PA **pédom* > *pēdan* "place" while unaccented "e" was raised to "i": ProtoA **nēbes* > *nepiš* "sky".⁴¹ Accented vowels did not lengthen before some consonant clusters, e.g., containing labiovelars or laryngeals: **nég^wts* > *nekuz* "night" (ne-ku-uz); **még^h₂-i-* > *me-ek-ki* "numerous". Long vowels deduced from plene writing could also be created by compensatory lengthening: **h₁ós-uh₂-* > *a-as-su-u* "goods".⁴²

The analysis of plene writing with respect of the position of PIE accent was done (on limited examples) by Kassian (2002). Kassian showed that on the Hittite lexemes with direct Indo-European parallels, the plene writing corresponds to the reconstructed PIE accent, e.g., *a-a-ra* "right", OInd. *áram*, *ne-e-pí-iš* "heaven", Gr. *néfos*. Although the data is scarce, I would conclude that Hittite can contribute to the reconstruction of PIE accent.

2.3.5 Lithuanian and Latvian

These two Baltic languages are important for the reconstruction of Balto-Slavic and PIE accent.

⁴⁰ Hoffner & Melchert (2008:31).

⁴¹ For details of all changes see Melchert (1994:101-107).

⁴² Kimball (1999: 61-62).

2.3.5.1. Lithuanian

Lithuanian stress is free and mobile.⁴³ Gravis indicates the ictus on the short syllable - *rankà* "hand". Ictus on the long vowels and diphthongs is indicated either by acute or circumflex: *výras* "man", *nāmas* "house". Acute diphthongs which end in a resonant have gravis on the first part: *pilnas* "full", *žiurkė* "rat".

Standard Lithuanian is based on Aukštaitian dialects in which acute is a falling tone and circumflex is rising. The opposition of acute and circumflex exists only in stressed syllables but previously the opposition existed also in unstressed position. The proof for this is Saussure's Law (saying that stress shifted from non-acute syllable to the following acute one).

Žemaitian dialects, on the other hand, have different accentual characteristics. In some parts we observe Brechton which corresponds to acute (*ôṁžos* "century, age" ~ standard *ámžius*) and circumflex (falling) corresponds to standard rising circumflex (*maišos* "bag" ~ standard *maišas*). There is also a middle tone (ˆ) and rising acute (´) which was created due to the stress retraction from non-acute vowels. If the target syllable was originally circumflex, the new intonation became middle, if the target syllable was originally acute then the acute (rising) appeared - *rôṅka* (standard *rankà*), *árklīs* (standard *arklỹs*) "horse".

Žemaitian also distinguishes Brechton and circumflex in unstressed syllables: Dsg *sûṅou* "son", standard *súnui*; *gâidīs* "rooster", standard *gaidỹs*.

Lithuanian nomina can be divided into four accentual paradigms (APs) according to the stress and intonation distribution in cases.⁴⁴

AP1

The position of stress is constant. If the ictus is on the penultima (or first syllable in bisyllabic nouns), the intonation is acute: *výras*, *výro*, *výrui*... "man." If the ictus falls on the antepenultima or ante-antepenultima, the intonation can be either acute: *gýdytojas*, *gýdytojo*, *gýdytojui*... "doctor", circumflex: *pavāsarīs*, *pavāsarīo*, *pavāsarīui*... "spring", or gravis: *televīzoriūs*, *televīzoriāus*, *televīzoriūi*... "television". There are also derivatives that have accented suffixes or prefixes and belong to AP1 paradigm, e.g., *gimináitis* "relative" (suffix - *áitis*), *valdýba* "government"

⁴³ Stang (1966: 125-144); Derksen (1991).

⁴⁴ The following examples are from Eckert et al (1994: 117-125).

(suffix *-ýba*), *šeimýna* "family" (suffix *-ýna*), *ãtbalsis* "echo" (prefix *ãt-*), *iĩtakas* "estuary" (prefix *iĩ-*), *prókalbė* "protolanguage" (prefix *pró-*).

AP2

Stress is mobile in this paradigm. Most cases are stem-stressed. Only Apl is end-stressed. Several other cases can be end-stressed depending on the word structure. Nsg is end-stressed if the noun ends in *-a*, like *mokyklà* "school", Lsg and Isg are also end-stressed if the number of syllables in those cases is the same as in Nsg, so Nsg *rãštas* "scribe", Lsg. *raštė*, Isg. *raštù*. Stressed syllables have circumflex or gravis: Nsg *vaĩsius* "fruit", Gsg. *vaĩsiaus*, Apl *vaisùs*. Also derivatives with stress suffixes belong here: *medėlis* "little tree" (suffix *-ėlis*), *taisỹklė* "rule" (suffix *-ỹklė*), *švarùmas* "purity" (suffix *-ùmas*).

AP3

Stress is mobile in this paradigm. Most cases are end-stressed. Only Dsg, Asg and Apl are stem-stressed. Several other cases can be stem-stressed depending on the word structure. Nsg can be stem-stressed if the noun ends in *-as*, like *kálnas* "mountain". If the Gsg ends in a vowel (like in the masculine), the form is also stem-stressed: *árkliu* "horse" contra *pavardėš* "surname". Forms having a monosyllable ending *-u* in Isg are also stem-stressed: *árkliu*. The same accentuation counts for n- and r-stems: *ãkmeniù* "stone", *sėseria* "sister". Npl is stem-stressed for feminine forms ending in *-os* and *-ės*: *gálvos* "head", *áikštės* "squares". The intonation can be either acute or circumflex: *rándas* "scar", *rãšalas* "ink". Also derivatives with accented suffix belong to that class, e.g., *elgesỹs* "behaviour" (suffix *-esỹs*), *staigmenà* "surprise" (suffix *-menà*).

AP4

Stress is mobile and most cases are end-stressed. Only Dsg and Asg are stem-stressed. Other cases can also be stem-stressed depending on the structure. Nsg is stem-stressed for masculine endings in *-as* (*nãmas* "house") and for Gsg ending in a vowel (*daĩna* "song"). Also Npl for feminine endings in *-os* and *-ės* is stem-stressed (*daĩnos* "songs", *gėlės* "flowers"). Stem-stressed forms have circumflex, end-stressed forms have either circumflex (Gpl *laukũ* "field") or acute (Dpl *namáms* "houses").⁴⁵

⁴⁵ Some standard grammars like Ambrasas et al. (1997) take Dpl and Apl as a criterion for a noun to belong to an accentual paradigm. However, this does not explain the minor deviation in Nsg, Gsg, Lsg and Isg.

Verbs

Lithuanian verbs have basically two paradigms at present. If the penultima is stressed with acute tone or any other non-final syllable is stressed, the ictus and intonation remain the same in other present forms: *šókti* "dance", *šóku*, *šóki*, *šókame* etc. If the ictus is on the penultima with *-i-* or *-u-* (short vowel), the accent moves to the ending in the 1st and 2nd persons singular. The tone is gravis: *sùpti* "swing", *supù*, *supì*, *sùpa*, *sùpame*....

Present and preterite indicative forms can also undergo de Saussure's Law. Stress shifts to the ending in the 1st and 2nd sg if the 3rd sg has a circumflex or short syllable: *metù*, *metì*, *mēta.*; *mečiaũ*, *meteĩ*, *mēte.*⁴⁶ Some verbs retract the ictus into a prefix: *vėsti* "lead", *vedù*, *vėda* > *nėveda*, *priveda*. According to Kortlandt (1977: 326-327) those verbs were mobile and ictus was retracted from stressed inner syllables.⁴⁷

2.3.5.1.1. Modern phonology descriptions

The modern description of Lithuanian accentuation by non-linear phonology has been done by Blevins (1993) who applied autosegmental phonology, combined with rule ordering, in order to account for the accentuation of Lithuanian nominals both in Aukštaitian and in Žemaitian dialects. Her description is useful from the synchronic point of view. Influenced by Halle, Blevins adopted the Basic Accentual Principle (BAP) to explain the accented prefixes as in *pėreiti* "to cross" by a default tone insertion. Tonal representations of Aukštaitian are expressed by the H-tone associated with either the first mora (acute), second mora (circumflex) or only mora (gravis). Žemaitian dialects are curiously described without Brechton, which makes the description irrelevant.

A metrical phonology description of Lithuanian (and Latvian) was provided by Dogil (1999: 877-896) who considers Lithuanian a lexical accent system not bound by any metrical rule to a syllable but rather the

⁴⁶ Diphthongs *ái*, *áu*, *éi* under stress changed metatonically to circumflexed intonation. The original intonation is preserved in Žemaitian (Stang 1966: 115).

⁴⁷ Kortlandt calls this retraction Pedersen's Law because it is similar to the Pedersen's Law in Balto-Slavic. However, Pedersen's Law 2 is specifically Lithuanian because it was preceded by Aukštaitian lengthening of short **e* and **o* under stress: *vėda*, *sāko*. Those new long vowels did not coalesce with Baltic **ē*, **ā* which became *ė* and *o*. East Baltic **ē* and **ō* were diphthongized to *ie* and *uo* in Aukštaitian (and therefore also standard): *diēvas*, *dúoti*. Mobility of *vedù*, *vėda* is due to the Ebeling's Law: stress was retracted from the open final syllables unless the preceding syllable was closed by an obstruent. This law belongs to Balto-Slavic period (Kortlandt 1977: 322).

morphemes are inherently accented. Apart from Blevins, Dogil thinks that moraic structure can be applied only to acute, while circumflex and grave have syllabic representations, so Lithuanian should distinguish moraic and syllable morphemes. I do not see any advantage of such a distinction, especially in bracketed-grid metrical phonology that Dogil uses to analyse Lithuanian examples, apart from the fact that it fits to de Saussure's Law conception because ogil considers de Saussure's Law as a stress attraction by heavy syllables.⁴⁸ But since he posits moras only to acute, it logically follows that circumflex must be monomoraic, which cannot be true. It is unclear to me how such a mechanism can work, especially if Leskien's Law makes the final acute deprived of mora and the "apparent weight contrast" is lost.

2.3.5.1.2. de Saussure's Law

De Saussure (1896) stated that Lithuanian accentual paradigms AP2 and AP4 originated from the paradigms AP1 and AP3. Those paradigms originated from a stress shift from a circumflex or short syllable to the following acute syllable. It means that Lithuanian still distinguished intonations in unstressed syllables. The law can be illustrated as a difference between Nsg *lėpa*, (AP1) x *rankà* (AP2), Apl *lėpas* x *rankàs* or *gálvas* (AP3) x *žiemàs* (AP4).

The opposition between acute and circumflex in final syllables was lost according to Leskien's Law which caused shortening of acute vowels: **galvá* > *galvà*.⁴⁹ The opposition was restored after the loss of post-tonic short vowels when penultimas became final syllables: **galvámus* > *galvóms*.⁵⁰

Apart from the fact that de Saussure's Law has been used and misused in classical accentology for explaining all the progressive shifts in Slavic, it is clear now that the law is limited to Lithuanian.⁵¹ Since the 1970s,

⁴⁸ p.889.

⁴⁹ Olander (2009) incorporated de Saussure's Law into his conception of the phonological difference of PIE endings. The accentual differences of Lithuanian *nešù* and *akmuõ* can be explained as the acute reflex *-oH and the circumflex from the long vowel. Olander thinks that PIE plain long vowels are reflected as non-acute vowels in PBS, (Olander, 2009: 115).

⁵⁰ Derksen (1991: 49).

⁵¹ On the rehabilitation of de Saussure's Law by Moscow accentological school, see the section on Stang's Law in the chapter on Proto-Slavic accentuation.

several works dealing with the law from the position of modern phonology have appeared.⁵²

Modern phonology approach to de Saussure's Law

a) De Saussure's Law as an H-tone involvement

Zeps & Halle (1971) made the assumption that each Lithuanian word has an underlying pitch contour $-H$ and $+H$. So for example, *marti* "bride" would have the following contour $mar_{-H}t_i^{+H}$ with $-H$ starting on the second syllable. On the other hand, *liepa* "linden" would also have a $-H$ $+H$ contour but the $+H$ level would begin at the first syllable: $_{-H}lie.pa^{+H}$. Circumflexed words would have the break level in the mid syllable: $auk\check{s}ta_{-H}.\check{i}tis^{+H}$ "a speaker of High Lithuanian"

The rule which distributes high pitch is the H-distribution rule. The rule assigns H pitch to all segments that follow the segment originally specified as $+H$.⁵³ The Metatony rule, on the other hand, is a phonetic rule which removes the H pitch from the stem final mora so that the low-pitch domain is extended.⁵⁴ So for example, *mokykla*^H is a result of the metatony rule from *moky^Hkla^H*.

The Metatony rule is a phonetic rule but morphologically restricted, it applies only if a desinence has a single mora. It would explain the differences between AP1 and AP2 and between AP3 and AP4 and would be the synchronic counterpart of de Saussure's Law.

The H-removal rule, that removes the lexically supplied $+H$ pitch applies only to certain lexically marked stems in certain environments or, as both authors say, in labile stems, all plural desinences, N, G, Lsg and Ipl *-mi*. Lithuanian accentual paradigms are therefore the results of the interaction of abovementioned rules.

Kiparsky & Halle (1977) interpreted de Saussure's Law in their own conception of inherently accented and unaccented morphemes. Accentual

⁵² I do not deal with authors who doubt the existence of the law, as Darden (1984) who proposed that Slavic oxytona kept the original accentuation. Thus Dybo's Law is false. Instead, Darden proposed the leftward stress retraction from short or circumflex vowels. The motivation is unknown. Darden (1979, 1980) also rejected Illič-Svityč's proof of the accentual connection of PIE short vowel barytona and oxytona and stuck to Kuryłowicz's (1968) claim of the Balto-Slavic unmotivation. Since neither Kuryłowicz nor Darden's works have had any impact on the accentology, I do not deal with them in detail. Just to note that Darden does not quote any works by Dybo or Kortlandt.

⁵³ Zeps & Halle (1971:143).

⁵⁴ *ibid* p.144.

paradigms AP1 (*várna*) and AP2 (*rankà*) have originally inherently accented stems:

	H	H
Nsg	varna	ranka
	H	H
Gsg	varnos	rankos
	H	H
Dsg	varnai	rankai

Accentual paradigms AP3 (*galvà*) and AP4 (*barzdà*) have inherently unaccented stems and have initial accent in D sg:

	H	H
Nsg	galva	barzda
	H	H
Gsg	galvos	barzdos
	H	H
Dsg	galvai	barzdai

Kiparsky & Halle claim that there are dominant and recessive morphemes. Dominant morphemes are those that have the +H feature on inherently accented syllables.⁵⁵ This concerns Lithuanian AP1 and AP2 stems which are dominant. AP3 and AP4 stems are recessive. Kiparsky & Halle also propose that each morpheme has underlying H mora and the important point is whether the accent falls on the first or second mora (in case of bisyllabics). This should explain the differences between paradigms. Therefore, the first three cases of the above members of paradigms can be constructed as the combination of dominant *H or recessive H morphemes.

	*H	*H	*H	*H	H	*H	H	*H
Nsg	varn+a	rank+a	galv+a	barzd+a				
	*H	*H	*H	*H	H	*H	H	*H
Gsg	varn+oos	rank+oos	galv+oos	barzd+oos				
	*H	*H	*H	H	H	H	H	H
Dsg	varn+ai	rank+ai	galv+ai	barzd+ai				

In Nsg AP2 and AP4, the +H is on *-a*, which is monomoraic. In Gsg and Dsg +H is on the second mora. De Saussure's Law is therefore

⁵⁵ Kiparsky & Halle (1977: 215).

interpreted as de-accentuation of the first of two consecutive vowels:
 $V > [-H] / _ C_0 [+H]$ ⁵⁶

b) De Saussure's Law as a rule ordering

Kiparsky (1973: 825-830) also mentioned de Saussure's Law. According to his conception, stress shifted from the last stem mora to the first mora of the thematic vowel, e.g., *blus-+aa-+n > *blus-aa+ n > blusà. De Saussure's Law is incorporated in the rule ordering:

- alg-+aa+an
- alg-+aa+n (strong cases have pre-suffixal accent)
- alg+aa+n (strong cases have word-initial accent)
- alg+aa-+n (de Saussure's Law)
- algà (Leskien's Law + loss of final -n)

Rule ordering was also applied by Robinson (1970) who proposed 14 rules to explain the accentual behaviour of the four Lithuanian paradigms. As the rule insertion concept is unmotivated, I leave Robinson's account without further commentary.

Becker (1981) divided de Saussure's Law into two separate changes. First, accent was forwarded in all accented short vowels and then was retracted in certain cases.⁵⁷ Rising circumflex occurred due to such retraction, e.g., Isg. **pirštois* > **pirštois* > **pirštois* > *pirštais*. Falling acute is the result of polarization, so Apl. **pirštūs* > **pirštūs* > *pirštūs*.⁵⁸ Becker claims that almost every circumflex (also from *métatonie douce*) is derived from the retraction. Curiously, Becker compares this retraction to Stang's Law in Slavic which produces rising intonation.⁵⁹ The final change in the sequence of changes is Leskien's Law, which shortens the final syllable.

As far as I know, this proposal did not have any impact on accentology because the development is highly improbable. There is no motivation for such changes. Becker's proposal is basically nothing else than metatony. It is not clear to me if Becker counts the original intonations or not, because he speaks only about the original accent.

Autosegmental analysis by Blevins (1993) is applied to de Saussure's Law as the following rule: "if H tones are associated to adjacent moras

⁵⁶ Kiparsky & Halle (1977: 216).

⁵⁷ Becker (1981: 9, 12).

⁵⁸ Becker (1981: 13).

⁵⁹ p.16.