PHONOLOGY

REVIEW

Janina Mołczanow (2022). *Interactions of vowel quality and prosody in East Slavic.* (Advances in Optimality Theory.) Sheffield: Equinox. Pp. v + 203.

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1. Introduction

Interactions of Vowel Quality and Prosody in East Slavic, by Janina Mołczanow, examines vowel reduction across the entirety of East Slavic languages and provides a unified Optimality Theory (OT; Prince & Smolensky [1993] 2004) analysis of the complex patterns of vowel reduction. The book examines data from all of East Slavic, including standard Russian and other Russian dialects, as well as Ukrainian and Belarusian, and provides an account of the typology of the various vowel reduction systems. The data are synthesised from numerous prior sources by theoretical phonologists, dialectologists and fieldworkers.

Broadly speaking, the author distinguishes between two types of vowel reduction based on the position of the reduced vowel with respect to the main stressed syllable (the so-called tonic syllable). The two types are called *extreme reduction* (chapter 4) and *moderate reduction* (chapter 5). Extreme reduction refers to vowel reduction in atonic contexts, which include post-tonic and non-immediately pre-tonic positions. Moderate reduction, on the other hand, describes vowel reduction in immediately pre-tonic positions. The author develops novel OT analyses for each type of reduction. As will be explained below, extreme reduction is accounted for by reducing vowel sonority in unstressed positions, while moderate reduction is seen as lowering of the pre-tonic vowel to accommodate a High tone. Each analysis involves conflation of the sonority scale (Parker 2002) with another phonological scale (prosodic prominence and tonal prominence, respectively), and thus they greatly contribute to our understanding of the complexity of phonological scales and their Optimality Theoretic expression.

In addition to considering the position of the reduced vowel in a prosodic word, the author also discusses the influence of other vowels in the word (chapter 6) and preceding and following consonants (chapter 7) on the output of reduction.

Finally, the author offers an in-depth discussion of prior work on East Slavic vowel reduction throughout the book (see also Alderete 2001; Rubach 2000; Crosswhite 2001; Bethin 2006) and thus provides an invaluable resource for future studies. The book is rich in data and in the analysis.

2. Review of specific chapters

The book contains eight chapters. Chapters 1–3 lay out the background facts, the terminology and an overview of the analysis. Chapter 2 presents the data. It gives the typology of the patterns of vowel reduction analysed in the rest of the book using charts and diagrams. It also introduces terminology that will be discussed in the following chapters.

Chapter 3 lays out the assumptions about the stress pattern of Russian. The author argues for iambic stress. One key type of evidence brought up comes from transformations in various Russian language games or ludlings that are described in §3.3. Iambic stress is a key element in the analysis of vowel reduction developed in the subsequent chapters and provides a domain for the tone and prominence evaluation.

The OT analysis is laid out in chapters 4 and 5. Chapter 4 presents the analysis of extreme reduction (i.e., reduction in atonic contexts). Vowels in these positions reduce to schwa after non-palatalised consonants and to a high central vowel after palatalised consonants. Building on Crosswhite (2001) and de Lacy (2006), the author proposes that this type of reduction can be understood as reduction in sonority in prosodically non-prominent positions. That is, prosodic non-heads (atonic positions) prefer vowels of low sonority. In Optimality Theory, this is modelled by conflating the sonority scale with a prosodic prominence scale. When a constraint demanding vowels of sonority lower than [i, u] in non-heads of prosodic words ($*-\Delta_w \geq i, u$) outranks a markedness constraint against schwa, $*\partial$, extreme reduction occurs. This chapter also discusses blocking of extreme reduction in absolute phrase-initial position and in hiatus positions.

The analysis of moderate reduction is introduced in chapter 5. Moderate reduction refers to vowel lowering to [a] in pre-tonic positions and is described by the author as tone-driven. Following prior work on East Slavic, the author proposes that High tone is present in East Slavic dialects that show pre-tonic reduction. The main proposal is that the pre-tonic vowel lowers to be able to carry a High tone. As described, low vowels (which are more sonorous and longer) are better carriers of High tone than mid vowels, and mid vowels are better carriers than high vowels. In OT, this is accounted for by conflating the tonal prominence scale with sonority. Formally, the author develops a family of markedness constraints, $*H \leq V$, that require vowels associated with High tone to increase in sonority and thus lower (see also Mołczanow 2015).

The analysis also includes other constraints. Among them is a constraint that requires the High tone to be in the head foot of the word, a constraint that requires the High tone to be aligned with the left edge of the head foot, and foot form constraints. Together, when ranked above faithfulness to vowel features and a constraint that requires the High tone to fall on the head syllable, they result in vowel lowering in the weak position of the disyllabic iambic foot, which is the pre-tonic position. To prevent stressed vowels from lowering in monosyllabic words, the author uses positional faithfulness constraints. Likewise, to prevent high vowels and mid front vowels from undergoing lowering, the author ranks faithfulness to [+high] and [−back] features above avoiding lower-sonority vowels as carriers of High tone.

In the remainder of chapter 5, the author addresses the typological predictions of the proposed analysis. The author shows that constraint reranking generates all attested dissimilative reduction patterns in East Slavic. In dissimilative reduction, the quality of the vowel in the pre-tonic position depends on the quality (sonority) of the vowel in the stressed syllable. The author observes that while high stressed vowels trigger reduction to [a] in pre-tonic positions, low vowels trigger reduction to [ə] instead. The author further proposes that in dialects with [a]-reduction the High tone docks onto the pre-tonic vowel, inducing lowering, while in dialects with [ə]-reduction the High tone stays on the stressed syllable, and the pre-tonic vowel does not lower to [a]. Crucially, the stressed syllable cannot host a High tone in [a]-reduction dialects because it is a high vowel. Dialects with mid vowels in stressed syllables show variation in the output of dissimilative reduction in pre-tonic position. The author attributes these patterns to various rankings of the markedness constraint that requires the head syllable to carry a High tone with respect to the tonal sonority scale developed in the chapter.

The author also considers the effect of the palatalisation of the preceding consonant on the following vowel: schwa occurs after non-palatalised consonants, while [i] or [e] occurs after palatalised consonants. The author uses a contextual markedness constraint PAL and a harmony constraint AGREE[+high] to account for this pattern.

The chapter concludes with the analysis of dialects where the pre-tonic vowel lengthens. This occurs in South-Eastern Belarusian and North-Eastern Ukrainian. The author builds on Bethin (2006), who proposes that the pre-tonic syllable lengthens to accommodate a contour tone, and compares it to the

tonal explanation for [a]-lowering developed earlier in the chapter. Interestingly, in some dialects, both lowering and lengthening occur in pre-tonic syllables.

After the model of sonority and tone interaction is laid out in chapter 5, further aspects of vowel reduction are discussed in chapters 6 and 7. Chapter 6 discusses the so-called 'harmonic' systems, where, in addition to dissimilation, the quality of the pre-tonic vowel displays feature harmony with the following stressed vowel, called assimilative–dissimilative and compound-dissimilative systems. The analysis builds on the proposal developed in chapter 5 (tone-driven neutralisation) with added harmony in backness and/or height. The domain for harmony remains an iambic foot. In this proposal, the constraints responsible for harmony are alignment constraints, and, combined with the constraint-based analysis developed in chapter 5, they derive the typology of harmonic systems. §6.2 accounts for systems with backness harmony, while §6.3 examines systems with height harmony. A typology and interim summary of the analysis are presented at the end of chapter 6.

Chapter 7 explores vowel reduction in the context of palatalised consonants. It shows that the quality (palatalisation) of both the preceding and the following consonant may affect the outcome of reduction. In general, palatalised consonants induce fronting and raising of the immediately following unstressed vowel. Specifically, palatalised consonants are described as [+high] and [−back] and are shown to enforce feature agreement with the immediately following vowel (see also Rubach 2000). The enforced agreement between vowels and palatalised consonants can block the process of [a]-reduction. To satisfy agreement, non-high vowels undergo fronting and/or raising instead of lowering. The author discusses both the context with a preceding palatalised consonant only (§7.2) and contexts where both the preceding and following consonant are palatalised (section 7.3).

In OT, this is expressed by reference to the PAL markedness constraint that enforces CV agreement in backness, the avoidance of depalatalising consonants and AGREE[+high], which enforces agreement in height. In the contexts with both a following and a preceding palatalised consonant (§7.3), more complex AGREE-type constraints are proposed, such as AGREE-CⁱVCⁱ[+high], mandating agreement in height, and AGREE-CⁱVCⁱ[−back], mandating agreement in backness. Finally, §7.4 introduces opacity in vowel reduction after non-palatalised stridents (which are historically palatalised). The author argues that the output of reduction here depends on the quality of the input vowel. The mid front vowel raises after non-palatalised stridents, while the low vowel does not. Following Rubach (2000), the author uses Stratal OT and proposes that stridents are palatalised when they cause [e]-raising but lose palatalisation on the surface and do not induce [a]-raising. The author concludes that non-palatalised stridents in East Slavic pattern together with other non-palatalised consonants.

Chapter 8 concludes the book with remarks on the relation between vowel sonority and tone and establishes further directions for this research.

3. Overall evaluation of the book

All in all, the book is an invaluable resource on the data on vowel reduction in East Slavic. I recommend it to anyone interested in the process of vowel reduction and factors that can influence it. It would be a great resource for scientists working on Slavic languages and those who are interested in the interaction of stress with vowel quality and quantity. The book also does a great job of comparing the proposed analysis with prior theoretical work on this topic; see especially the discussion in chapters 4–6. The book has a theoretical focus. No acoustic analysis is provided.

From an undergraduate standpoint, the book recalls interesting and not commonly known data on Russian language games in chapter 3 (see Vinogradov [1926] 2005) and their relation to Russian stress. This chapter would be especially great for courses in general linguistics, phonology and morphophonology.

Chapters 4 and 5 present the core of the OT analysis proposed in the book. Chapter 4 develops the analysis of reduction in unstressed atonic positions. Chapter 5 develops the model of tone–sonority interaction for pre-tonic positions, which is arguably the key theoretical contribution of the book (see

also de Lacy 2006; Mołczanow 2015). As the author argues, one of the important implications of the analysis is that it accounts for the rich typology of attested vowel reduction patterns in East Slavic. This typology is based on the reranking of the constraints on tone assignment, word prominence and vowel sonority, among others. The following chapters (6 and 7) build on the analysis developed in chapters 4 and 5 and further refine it.

In summary, the book provides a unified OT account of the observed patterns of vowel reduction and thus would be of interest to anyone working in the framework of Optimality Theory. It explores phonological scales and combinations of multiple scales into universal constraint rankings. It also skilfully generates the typology of the observed patterns of vowel reduction in East Slavic.

Competing interests. None.

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