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BOOK OF ABSTRACTS

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PLENARY PAPER

DE POSITIONE LONGA. WHY MORAS ARE ABOUT PHONOLOGICAL LENGTH, BUT NOT ABOUT POSITION.

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The expression of syllable weight in terms of moras leads to two major descriptive problems for phonological metrical theory using iambics and trochees to describe stress.

On the one hand, there are languages with long vowels and geminates, such as iambic Pacific Yupik (Hayes 1995: 302) or trochaic Wolof (Bell 2003), where only the long vowels, but not the syllables closed by a geminate, count as heavy for stress purposes. This is problematic given the fact that syllables with long vowels and syllables with a short vowel followed by a geminate are both by definition bi-moraic. As such, they are both predicted to be stress-attracting in languages that have a quantity-sensitive stress system. On the other hand, there are languages in which closed syllables do not make a syllable heavy and where such a closed syllable is treated as light, that is, as monomoraic, by stress. The coda consonant is then analysed as being non-moraic, whereas it is moraic in languages where a closed syllable does count as heavy for stress assignment. The problematic fact here is that sometimes in languages where the coda consonant needs to be analysed as non-moraic for stress, there are segmental foot-based modifications that would, on the contrary, imply that a closed syllable is heavy.

A case in point is Cayuga (Hayes 1995:300-302). Cayuga is a Lake Iroquoian language (Hayes,1995: 222-226) where long vowels count as heavy, but where (CVC) closed syllables count as light. The language has a process of laryngeal metathesis which applies in the weak side of an iambic foot, and by which, for instance, CVʔ is realised as CʔV. This is problematic given the fact that in a CVh.CVV iambic foot, the weak part is already light, so that the (μ μμ) iambic foot already is a perfect canonical, uneven, iambic foot. In his description of Cayuga laryngeal metathesis, Hayes (1995: 300) used a two-layered moraic theory, where on one level moraic structure for stress is represented, and, where on another level moraic representation for duration is represented. A two-layered moraic model could also be used to differentiate the Wolof geminates from the Wolof long vowels for stress assignment.

In this talk, we will show that a two-layered mora model, neither for Wolof nor for Cayuga, is necessary and we will propose a straightforward simple alternative, within the framework of Harmonic Serialism (McCarthy 2016), that does allow to directly express the relation between stress and metathesis.

REFERENCES


VARIATION AND „CATEGORY-HOOD” – AND HOW THEY CAN BE MEASURED

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In the past, variation in phonological data that was not determined by phonological context was considered in generative grammar problematic or anomalous. Labeling the distribution of forms as ‘free variation’ was a white flag, a sign that we have reached the end of the (phonological) map and do not know any further.

According to Anttila (2018), “Variation means that one meaning corresponds to multiple forms” but the definition seems too narrow when applied to phonology. Phonological objects such as phonemes, features, elements have no meaning per se, so it is perhaps more appropriate to say that variation means that one abstract category (that contributes to signaling different meanings) corresponds to multiple forms.

Early attempts to address variation referred to optional rules, multiple grammars of an individual speaker, or the stratification of the lexicon (Ito and Mester 1995, Anttila 2006). Classical generative approaches looked at language as a phenomenon internal to the speaker, and inter-speaker variation was consequently of no concern. On the other hand, Labovian approaches to investigating sociolinguistic variation have brought inter-speaker variation into sharper focus. The newer stochastic and probabilistic Optimality Theoretic approaches, such as e.g. Boersma (1998), Boersma and Hayes (2001), Hayes (2008), Pater (2016), or usage-based models (Bybee 2001), can be informed by corpus data and include variation and frequency as a factor in forming individual grammars. Thus, the concept of variation has gained some ground in comparison to early generative approaches.

Research on phonological variation usually begins with an a priori defined category, moving on to recording the variation within the category and finally explanations of the surface variation within the category in terms of phonological factors.

But perhaps there is another way to proceed – and from the examination of surface variation, we could attempt to predict the categories and the grammatical forces governing the translation between abstract and physical. What we need to do is to objectively measure variation.

One way to measure variation is to look at frequencies. But again, in order to count frequencies, we need to a priori assume what is being counted. In this paper we propose a different route. We situate realizations of mental linguistic objects, in our case sounds, in a physical space (in our case, articulatory space) and measure variation in the data using the simplest measure, standard deviation. We assume that a lower standard deviation is an indication of a better ‘category-hood’ – that is, the property of being a good category, easy to recognize and learn. This is supported by insights from psychology showing that pattern recognition is a general cognitive strategy crucial for associative learning, categorization or even decision-making. For example, Wang et al. (2016) demonstrate that participants in a behavioral study fail to utilize more valid information within an inconsistent task structure. Patterns showing more variation are in general more difficult to learn. On the other hand, (high level of) variation is recognized as a necessary prerequisite of a language change, an indication of a weakening of the category-hood and of a potential re-analysis of linguistic structures.

In our study, we have plotted the position of two points on the tongue surface that maximally differ for the pairs of corresponding palatalized and non-palatalized consonants in Russian – that is the point of maximum raising of the dorsum and the point on the tongue root opposite of the tendon of the genioglossus muscle. The data consists of 416 paired measures of the tongue body position and 416 paired measures for the position of the tongue root. It comes from an ultrasound study of 10 native speakers of Russian (cf. the methodology described, e.g., in Lulich and Cavar 2019, Cavar et al.
2020). The advancement of the tongue root has significantly lower standard deviation than the fronting of the tongue body (p=4.441e-16 in the Pitman-Morgan test), showing less variation across speakers, contexts and places of articulation. We want to argue that the significantly higher variation of the tongue dorsum data points shows that the tongue root position is a better correlate of the soft and hard category than the tongue body position. This indicates that the secondary palatalization feature in our data set is [ATR].

**ACOUSTIC PROPERTIES OF PALATALIZATION AND PALATALITY (THE CASE OF LITHUANIAN AND LATVIAN LATERALS)**

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Both Lithuanian and Latvian have several common characteristics, such as phonological distinction between short and long vowels, pitch accent, etc. Still, there are quite a few substantial differences between the two Baltic languages, one of them being phonological contrast between palatalized and non-palatalized consonants in Lithuanian and the lack of thereof in Latvian, which instead has developed large subsystem of palatal consonants (Girdenis 2014, Urbanavičienė et al. 2019; Laua 1997).

The focus of the present study are acoustic properties of palatalization and palatality as in the case of Lithuanian and Latvian laterals. The experimental research of the Baltic laterals enables us to study palatalization by analyzing the sounds of the same articulation classes, cf. the class of lateral sonorants includes non-palatalized Lithuanian and Latvian /l/, palatalized Lithuanian /lʲ/ and palatal Latvian /ʎ/.

The aim of the paper is to examine how acoustic contrast manifests itself between alveolar /l/ and palatal /ʎ/ in Latvian and plain dental /l/ and palatalized alveolar /lʲ/ in Lithuanian. For the study, speech recordings from 24 adult informants (12 Lithuanians and 12 Latvians, 6 male and 6 female speakers for each language) without any speech disorders or notable dialectal traces in their pronunciation have been analyzed. Initial and final laterals in closed symmetric [l]V[l] sequences and intervocalic syllable-initial laterals in V[l]V sequences have been examined (V — one of the vowels [iː]; eː; æː; ɑː; ɔː; uː]; each sequence produced three times by every speaker). During the analysis, the focus is put mainly on F2 frequency changes in adjacent vowels (locus equations), as well as changes in lateral formant structure (especially F1 and F2 frequencies) depending both on position and vocalic context of the consonants.

The study is part of the research project *The Sound System in the Contemporary Baltic Languages at the Beginning of the 21st Century: Comparative Acoustic and Perceptive Research of Sonorants* (funded by Research Council of Lithuania) that has been carried out at the Institute of the Lithuanian Language in 2021–2022. The aim of the project is to conduct an instrumental comparative study of the Baltic sonorants. The main goal of this project is to explore, describe and compare the acoustic and auditory features of sonorants of the contemporary Baltic languages using unified methodology. Cross-linguistic comparison of sonorants from the perspective of palatalization and palatality aids us in identifying the significance of acoustic features in describing and studying primary and secondary articulation.

**REFERENCES**

PHONEME RARITY AND PHONOLOGICAL TYPOLOGY: STRIDENCY IN THE PHONEMIC AND ALLOPHONIC DISTRIBUTION OF θ AND δ

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Phonological typology, while underrepresented within the field of linguistic typology as a whole (Hyman 2005) nevertheless has an essential part to play in language typology. The aims of linguistic typology are to “uncover universals of language” (Croft 2003: 200) by examining the patterns in the universal properties found across languages. Those universal properties of phonological typology are the sound patterns found across different languages as it attempts “to characterize how languages encode the same substance (phonetics) into structured sound systems” (Hyman 2005). Phonetic features, thus, share an important role in understanding what environments are possibly conducive or unfavorable to the appearance of certain segments in phonemic inventories.

The cross-linguistic study of rarity among phonemes is a crucial component to phonological typology in order to understand why something is systematically not commonly shared across the sound systems of many different languages. While there are undoubtedly different phonemic processes that give rise to rare phonemes, their scarcity could also be the result of systematic loss or avoidance due to certain inherent features of the segments and/or within the systems they integrate. Rare or uncommon consonants as defined by Ian Maddieson (Maddieson 2013) are those consonants which are found in very few of the world’s languages. They can be divided into four classes: clicks, labial-velars, pharyngeals, and non-sibilant dental fricatives /θ, ð/ (called “TH-consonants” in this study), (Maddieson 2013). While the three latter classes of clicks, labial-velars, and pharyngeals share important linguistic commonalities in terms of their geography and genealogy, (with groups of languages distributed across visibly concentrated areas or linguistic families), the case of the fourth class of dental fricatives θ and δ is a curious one. These uncommon consonants show no demonstrable clustering in either their geography or their genealogy, being found in distinctly distant and different languages worldwide. This distribution raises questions as to the nature of these segments as phonemes but also as sounds: what environments are conducive to their appearance in such a wide variety of language types but with such diminished frequency?

This paper proposes an analysis of both the phonemic and allophonic distribution of non-sibilant dental fricatives θ and δ in order to better understand their rarity and to propose a typological explanation for their (seemingly) scattered distribution. To do this, we aim to prioritize language representivity by using a 200-language sample provided in the World Atlas of Language Structures (Dryer & Haspelmath 2013). These languages were then cross-referenced with the phonemic inventories of LAPSyD (Lyon-Albuquerque Phonological Systems Database, Maddieson et al. 2014) to determine phonemic patterns for those languages which contain:

1.) only /θ/
2.) only/ð/
3.) /θ/ and /ð/ (contrasted in the same inventory)
4.) Neither /θ/ nor /ð/
Several patterns can be observed as it pertains to the co-frequency of other phonemic segments, (notably avoidance and co-frequency patterns with the sibilant fricatives /s, z/) but also within the features of the inventories. In addition to phonemic inventories, LAPSyD also provides information concerning 69 features for each one of its 1107 possible phonemes. We have created a file which includes the 200 languages of the WALS sample as well as their 6,542 total segments described according to 69 features. This allows us to create a typological hypothesis based on the structural and phonetic properties of the phonemic inventories of these languages, such as patterns in voicing and place of articulation as we observed in the case our study.

Within our allophonic analysis of TH-segments, the 200 languages of the WALS sample were divided by those languages which have:

1.) An allophone [θ] or [ð] for a /non-TH phoneme/  
2.) A segment [non-TH] replacing /θ/ or /ð/  
3.) An allophonic variation between /θ/ and [ð], or /θ/ and [ð] in the same language

This analysis of TH-consonants as non-contrastive segments also reveals certain feature patterns which may explain their rarity. Lenition (Kirchner 1998, 2004) may explain their appearance as possible allophones in some languages, however it may have further implications on the phonemization of TH-consonants, particularly in the cases where TH’s occur in inventories with s-like segments. Within our sample, no examples of allophonic distribution with s-segments occur with θ or δ, except in the case of one language with a laminally produced /s/ (which varies with [θ]). This distinction in place of articulation implies a reduced stridency of /s/ in comparison with the more strident alveolar /s/ (Brannen 2011). We make the claim that the feature stridency has a crucial role to play in the perceptive salience of TH-consonants both as allophones and as phonemes, particularly in inventories which contain s-like segments.

REFERENCES


KIRCHNER, Robert. 1998. «An Effort-Based Approach to Consonant Lenition». PhD, University of California Los Angeles.


NAÏVE LISTENERS RELY ON ACOUSTIC MEMORY AND NOT PHONOLOGICAL MEMORY IN DISCRIMINATING A NOVEL VOCALIC CONTRAST

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Previous research has shown that phonological short-term memory (PSTM) is closely connected to non-native perceptual abilities. PSTM facilitates the development of the target-like cue-weighting and is an important factor in the acquisition of L2 categories (Cerviño-Povedano & Mora, 2015; MacKay, Meador & Flege, 2001). Another important cognitive ability for non-native perception is acoustic memory (AM). Largely under-researched, AM is believed to be responsible for storing acoustic information at a pre-categorical level, and it also contributes to the task of L2 speech learning (Safronova, 2016; Ghaffarvand Mokari, & Werner 2019). In our study, monolingual Spanish speakers were asked to discriminate between two members of an unfamiliar (L0) Russian contrast /ɨ/-/ɨ/ that does not exist in Spanish. Their PSTM was measured with a non-word recognition task and AM with a target sound recognition task. Mixed-effects regression analysis showed that it was AM capacity and not PSTM capacity that influenced L0 perception. In a follow-up study with the same design, Spanish L2 learners of Russian relied on both PSTM and AM to discriminate between Russian /ɨ/ and /ɨ/. It seems that naive listeners use auditory-based pre-categorical judgments when discriminating between two members of a novel contrast, and L2 learners employ both – acoustic and phonological information in the same task. The surprising finding was that naive listeners, although outperformed by L2 learners, managed the L0 perceptual task quite well. This finding goes along with the studies that demonstrate that monolingual adults have life-long access to cross-language phonetic differences (Flege & Hammond, 1982; Grenon, 2006).

REFERENCES


WHAT DOES RESEARCH INTO L2-INDUCED PHONETIC DRIFT IN L1 TELL US ABOUT LARYNGEAL PHONOLOGY?

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The extent to which phonetic detail should influence phonological representations has been the centre of a debate for quite some time. Despite some claims disregarding the necessity of conducting phonetic studies in order to validate phonological assumptions (e.g. Substance-free phonology; Hale and Reiss 2000), acoustic experiments have been shown to shed new light on some of the impressionistic assumptions made by phonologists and improve phonological analyses of various processes. As noted by Ohala (1990), if phonological representations fail to refer to phonetic research, they may fail to accurately encapsulate linguistic phenomena. While some progress in this respect has been made in recent years, “phonetics as a motivating force for phonology remains controversial” (Dziubalska-Kołaczyk 2012). At the same time, however, phonologists appear to fall into the trap of idealisation of phones as units underlying phonological theories and it is to these idealisations that modern phonetic research constitutes a growing problem (Ladd 2009).

With respect to laryngeal typology the approaches differ. Some theories – e.g. Feature Theory (Chomsky and Halle 1968) – treat the phonetic implementation of laryngeal contrasts as an issue of no interest to phonology. Others – e.g. Laryngeal Realism (Lombardi 1991; Harris 1994; Honeybone 2005) – attempt to incorporate the phonetic reality into their representations.

In this talk I argue that phonetic evidence and insights from SLA research into cross-linguistic interaction might indeed help us determine the way in which two-way laryngeal systems should be represented and yield empirical support to the proposals made by leading laryngeal theories. According to Speech Learning Model (Flege 1995), bi-directional cross-linguistic interaction stems from “equivalence classification”, whereby L2 learners classify two sounds as belonging to the same phonological category and this can lead to a foreign accent in L2 as well as phonetic drift in L1 (Chang 2012). Assuming equivalence classification is correct in its predictions, the degree of CLI should depend on what a given theory sees as equivalent.

The current study looks at the effects of phonetic drift in the productions of Polish (a voicing language) learners of English (an aspiration language), a language pair which showcases striking differences in the implementation of VOT. Groups of 20 first year students (henceforth: 1BA) 15 second year students (henceforth: 2BA), and 15 third year students read wordlists in Polish, comprising mono- and disyllabic words starting with /p, t, k, b, d, g/ and followed by a non-high vowel. Longitudinal data obtained from 1BA students (tested three times; in October, February, and June) were compared with the productions of 2BA and 3BA students as well as with 15 quasi-monolingual Polish speakers. The results show that no influence of phonetic training in English was exerted on Polish /p, t, k/, whereas drift effects in the case of /b, d, g/ were much more striking. Such an asymmetry was also found in other language pairs, e.g. English-Czech (Podlipský et al. 2020), Bulgarian-English (Dokovova 2015), English-Spanish (Herd et al. 2015), or Brazilian Portuguese-English (Osborne 2016).

It can be assumed, then, that /b, d, g/ are phonologically identical in Polish and English and hence, subject to drift effects. It will be shown that neither Feature Theory nor Laryngeal Realism predicts such a scenario. An alternative approach is offered by the Onset Prominence (Schwartz 2016 et seq) representational environment. The representations postulated by OP rely on the feature [fortis] only, move away from linear, segment-oriented representations, and – as will be shown – predict the results of the empirical study presented herein, offering a preferable laryngeal typology of two-way systems.
PLENARY PAPER

WHY PHONOLOGY IS MADE OF THREE MODULES, AND HOW MULTIPLE-MODULE SPELL-OUT WORKS

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The talk introduces the idea that phonology is not the smallest building block in the modular system that defines language (alongside with morpho-syntax, semantics, phonetics, maybe other items): rather than representing a single computational system (module), phonology is itself a cover term for three distinct systems: sonority (Son), place of articulation (Place) and laryngeal properties (Lar).

Diagnostics for each of these areas representing distinct computational systems that abide by modular standards come from mutual visibility. It is trivial and well-known, though rarely made explicit, that Place and Lar computation appear to be mutually waterproof. While of course Place can impact Place (e.g. velar palatalization) and Lar bears on Lar (e.g. voicing assimilation), Place modifications triggered by Lar (a velar is turned into a palatal before a voiceless consonant) or the reverse (a voiceless consonant becomes voiced when followed by a labial) appear entirely outlandish and stand a good chance to be absent from the record.

Another fundamental distinction is between Son on the one hand and Place / Lar on the other: in a regular autosegmental representation the former occurs at and above the skeleton, while the latter (sometimes referred to as melody) is located below the skeleton. Selective visibility is cross-linguistically pervasive: Son, but not Place or Lar, communicate with morpho-syntax. That is, morpho-syntax may bear on items at and above the skeleton, but never impacts Place or Lar directly. Conversely, Son may bear on morpho-syntax, but Place and Lar never do (Zwicky's melody-free syntax: there is nothing like "only words with an initial labial undergo movement"). Another asymmetry is the fact that Son bears on Place / Lar (effects of syllable structure), but the reverse never occurs (Place and Lar do not condition syllable structure: there is nothing like "a branching onset can only be built if its first member is a labial / voiced consonant").

Finally, it is to be noted that items below the skeleton (Place, Lar) have a phonetic correlate (this is why they are called "labial", "voiced", etc.), while items at and above the skeleton (Son) do not (an onset, an ictus, a prosodic word or a skeletal slot have no pronunciation associated). This matches the fact that Son items are not interchangeable (replacing a nucleus by an onset makes no sense and produces an ill-formed structure), while Place / Lar items are: the phonological prime to which, say, phonetic labiality is associated may be anything and its reverse as long as it is distinct from other primes: β or ] is not any more appropriate than [labial]. That is, Son items are phonologically meaningful, while Place and Lar items are phonologically meaningless.

In account of their difference, Feature Geometry has devised distinct category nodes for Place and Lar, and externalized Son from the tree altogether (sonority is represented at the root node). Structuralizing the distinction between Son, Place and Lar is a step in the right direction, but does not forbid Place to condition a Lar process, or the reverse, since both coexist in the same computational space. Locating Place and Lar in different modules enacts the fact that processes where one conditions the other appear to be absent from the record: they are excluded since each computational system can only bear on items of its own domain.

The talk investigates what it takes to run a phonology with three distinct modules. Questions addressed are the following: what makes sonority different? How can Son bear on Place / Lar (syllable structure effects) if the content of distinct modules is mutually invisible? What does the lexical entry...
of a segment look like if it is made of three distinct types of information? How does multiple-module spell-out work? That is, how could three modules that co-define a given segment be simultaneously mapped onto a single phonetic correlate that combines the threefold information? What are the phonetic categories that this spell-out relates to? Where exactly does the transition between the discrete and the gradual occur, and how is it managed? What are the grounds for the distinction between a Language-Specific Phonetics (learned, acoustic, inside the cognitive system) and Universal Phonetics (not learned, articulatory, outside the cognitive system)?

AN ELEMENT THEORY-HARMONIC GRAMMAR ACCOUNT OF GLIDE INSERTION IN POLISH

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In Polish, the presence of /u/ or /i/ in the context of vowel hiatus often provokes glide insertion (see Zajda 1977, Sawicka 1995). Precisely, the presence of /i/ on any side of the hiatus may result in the presence of /j/ in between two vowels, including /u/ (cf. Genu[j]j ‘Genoa, loc.’, mil[j]ukro[j]ić ‘cut for me’). /w/ may break up the vowel sequence if one of the flanking vowels is /u/, while the other is not /i/. (domu[w]Ewy ‘Ewa’s house, loc.’, za[w]uważyć ‘notice’ but *tu[w]idzie vs. tu[j]idzie ‘is coming here’).

The glide insertion in Polish hiatus is, therefore, a clear case of competition, where the repair which derives the most harmonic output in one form, e.g. spreading in u[w]e, gives rise to a suboptimal derivation in a minimally different environment, e.g. *u[w]i.

The glide insertion is apparently conditioned by the presence of feature [+high] in the input vowel(s). The hiatus of mid and open vowels never triggers glide insertion. The spreading must, therefore, minimally involve features [+high] and [+/-round]. Unfortunately, such a minimal account predicts the possibility of glide insertion being triggered by the central high vowel y /ɨ/, which is normally assumed to be specified as [+high, +back, -round] and never triggers glide insertion (przy[w]uczyć ‘teach’ vs. *przy[j]uczyć).

The paper argues that the absence of glide insertion triggered by the presence of y /ɨ/ is accounted for under the following assumptions (A1): vowel initial words begin in an empty consonantal (or C) position (Scheer 2004), (A2): in Polish /ɨ/ is represented as element |I|-head, while vowel /i/ is represented as |I|-operator (Gussmann 2007); (A3): the spreading of element |I| from /i/ to form the glide /j/ involves the violation of constraints against the multiple linking of element |I| (*MULTIPLE |I|), Polgárdi 1998), against the spreading across prosodic domains (CRISP EDGE, Itô and Mester 1999) and against a single element being interpreted as an operator in one or more segments but as the head in one or more different segments (UNIFORMITY). Note that, the glide /j/ must contain element |I|-head as only segments containing |I|-head in Polish may be followed by vowel /i/ (but not by vowel /ɨ/). The sequence /ji/ is grammatical in Polish, while *j[ɨ] is not.

The violation of the three constraints outweigh the violation of the constraints against empty onsets and against vowel hiatus ((CV Phonology-specific versions of constraints ONSET and *VV), Thus the spreading of element |I| from the vowel y /ɨ/ at syllable/prefix/word boundary is impossible.

If the hiatus involves vowels /i=|{I} and /u=|{U}, the spreading to the right (as in domu[w]Ewy ‘Ewa’s house, loc.’, kuchni[j]Ewy ‘Ewa’s kitchen, loc.’) does not trigger the UNIFORMITY violation as /j=|{I} and /w=|{U}. The violation of *MULTIPLE |I/U| and CRISP EDGE is not enough to outweigh the violation of ONSET and *VV and glide insertion is typically attested.
In the case of the leftward spreading of elements |I|/|U| (as in za[w]użyć ‘notice’ and tu[j]idzie ‘is coming here’), the violation of ONSET and *VV outweigh the violation of constraints *ji/wu (Kawasaki 1982, Staroverov 2014) and ALTERNATION, which prohibits spreading within a single morpheme (van Oostendorp 2007). Thus, the glide insertion by spreading of elements |I| and |U| leftward is typically attested. On the assumption that *MULTIPLE [U] carries a greater weight than *MULTIPLE [I], the spreading of |I| is more harmonic in a situation in which vowels /i/ and /u/ form a hiatus.

Furthermore, since filling the empty C-position requires the spreading of the entire Place node from the neighbouring vowel, the spreading of the Place node from the mid and open vowels triggers the violation of a heavy-weighted constraint against the element [A] being multiply linked. The weight of this constraint, together with the weights of CRISP EDGE (in the case of rightward spreading across CV units) and ALTERNATION (for leftward spreading within a single CV), decides against the glide insertion/spreading in the environment of non-high vowels in Polish.

**DECODING STRUCTURES IN SPANISH THROUGH THE CUES OF PROSODY**

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The internal representation of an utterance is built on syntactic and prosodic information. Like syntactic constituents, prosodic domains are also hierarchically represented. Prosodic hierarchy is organized into constituents different from those defined by syntax (Nespor y Vogel, 1986; Selkirk, 1986). Although many authors have noted the connections between prosodic and syntactic units, there is little consensus as to the degree of isomorphism between them. A widespread approach takes prosody as an interface since it maps the syntactic output to phonological representations and applies building rules on them that neither syntax nor phonology could resolve on their own (Nespor y Vogel, 1986; Selkirk, 1986). Prosodic structure is encoded by speakers through a range of different articulatory and acoustic cues, i.e., gestural stretching, time lengthening (Cho, 2011; Cho, 2016) and pitch movements (Baek, 2019) among other possibilities. Prosodic structure is also recognized and decoded based on these cues (Christophe, A. et al., 1994 et seq.; Gout et al. 2004). Studies on the perception of prosodic structure are very recent and they have focused on the higher constituents of prosodic hierarchy. In Spanish, Lahoz-Bengoechea (2015) has confirmed the presence of prosodic cues to phonological word boundaries from a production perspective and so have Polo & Elordieta (2016) for phonological phrases. For this reason, we hypothesize that speakers of Spanish also use prosodic cues for bootstrapping structural decoding of sequences.

The aim of this talk is to present a work-in-progress corpus to study cues that serve to code and decode different prosodic boundaries. We have designed a corpus of ambiguous contexts within and across phonological phrases in Spanish: (a) *Uno de los pasajeros subió al avión con un violín bonito* (‘One of the passengers got on the plane with a beautiful violin’) and (b) *El pasajero del violín voló por los aires todo lo que encontró a su paso* (‘The passenger with the violin blew up all that he found in his path.’), in which bold sequences match Spanish word *limbo*. We have also included segmental contexts that produce an allophonic change in Spanish that provide with a visible change to evaluate: coda obstruents, coda nasals followed by another consonant and onset spirants. Then, we retrieved from BuFon web service (Alves et al., 2010) words that both include said contexts and allowed ambiguous sequences (*limbo* allows violin + {voló, bonito}). The contexts requested were. Each query returned an average of ten thousand coincidences. To limit the amount of matches, word frequency was also taken into account using wordfreq Python library (Speer et al., 2018). In order to create pairs with a neutral meaning, a minimum frequency of 2.50e-07 was set to rule out rare words. The result
was an average of 2 thousand words per request, from which we chose those who met the following conditions. First, we checked stress position so that it does not differ between sentences and serve as a potential disambiguating cue. Once an ambiguous sequence passed each checkpoint, two frame sentences were created—one including the sequence to be spotted across a word boundary but within one phonological phrase (like sentence a) and the other split across the phrase boundary (like sentence b). We ruled out structures that allowed phonological phrase restructuring as noted in previous studies (Prieto, 2006). Finally, the two sentences were embedded in a frame text to provide a conceptual context. We ended up with an approximately amount of 4 ambiguous pairs of sentences for each context, which equals 24 items to analyse.

In the outset, we will study differences in production between the two conditions (within or across phonological phrase boundaries) – silences, formants, transitions, pitch contours and whether allophonic changes occur as expected. We will then check whether listeners’ reaction times are affected by the presence or absence of boundaries in the studied contexts, as has been previously reported for other languages like French (Christophe et al, 2003). We expect that this corpus will contribute to our further understanding of both phonological phrase in Spanish and the effects of this prosodic constituent in the interpretation of structures.

REFERENCES


**THE INTERACTION OF PERCEPTION, PHONOLOGY AND ORTHOGRAPHY IN THE ADAPTATION OF E /ɜ:/ IN LOANWORDS INTO RUSSIAN**

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*Maria Curie-Sklodowska University in Lublin, Poland*

In the process of loanword adaption, foreign sounds are inevitably altered so as to comply with the phonological principles of the borrowing language. There is, however, an ongoing debate as to whether such modifications are attributable to the phonological similarity between the source and the target segments, their acoustic closeness, orthographic conventions of the languages involved or an impact of additional extralinguistic factors. The issue seems particularly relevant in the case of those sounds whose adaptation in the target language involves several changes.

The so-called British English long schwa is one of the vowels absent from the Russian phonemic inventory. E /ɜ:/ nativisation poses an interesting research problem due to its lacking a single phonologically or phonetically closest equivalent in Russian. Thus, a considerable variability can be observed in how it is adapted. The most frequent substitutions include E /ɜ:/ → R /ɛ/, as in *alert* → *алерт* /aˈljɛrt/, E /ɜ:/ → R /ɔ/, as in *curl* → *кёрл* /kjɔrl/ as well as E /ɜ:/ → R /u/, as in *cursor* → *курсор* /kurˈsor/. The present paper aims to examine the major mechanisms and patterns of E /ɜ:/ nativisation in Russian loanwords and shed some light onto the interplay of phonology, acoustic similarity and orthography.

Towards this goal, the major adaptation scenarios of 200 established loanwords containing E /ɜ:/ have been compared to the results of an online experiment in which 41 native speakers of Russian with no command of English listened to a list of English words containing the sound in question in different segmental contexts and were asked to transcribe them using Cyrillic characters. The analysis demonstrates that while established loanwords are often influenced by orthography, spelling-based adaptations are inevitably reinforced by phonology and in some cases acoustic similarity. Moreover, a number of such adaptations is marginal if they are not supported by either phonology or phonetics, and the most common substitutes show an interplay of all three factors. Hence, our findings shed some light onto the nature of /ɜ:/ nativisation in the Russian language as well as add to the debate of the loanword adaptation phenomena in general.

**IN DEFENCE OF AN ARTICULATED VIEW OF THE SYLLABLE: OBSTRUENT-APPROXIMANT STRINGS IN HINDI**

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1. **Introduction.** Over the past two decades, a body of research has strived to diminish the formal distinction between phonology and phonetics by reducing the role of articulated representations. For example, syllables, which are inherently hierarchical, have been abandoned by some scholars (Steriade 1999) in favour of an approach where segments are ordered to maximize their perceptibility (Wright 2004). In this paper, we defend an articulated view of the syllable, drawing on data from Hindi. We show that: (a) phonetically similar strings respect different phonotactic constraints which, in turn, motivates different syllabifications; (b) the same surface string can be subject to alternative syllabifications, one of which motivates the positing of phonetically empty nuclei.
In articulated theories of the syllable, phonotactic constraints regulate the shapes of syllable constituents (e.g., Steriade 1988, Harris 1994). For example, in languages that permit consonant+approximant+vowel (CAV) strings, two analyses are observed, based on the sonority and place constraints that hold between C and A or between A and V. When A is a liquid, CA is typically syllabified as a complex onset followed by a singleton nucleus: CAOVN in (1a) (Clements 1990). Less commonly, the liquid can form a diphthong with the following V: COAVN in (1b) (see Kaye 1985 on Vata). When A is a glide, (1a) and (1b) are both commonly attested: A can either belong to a complex onset ([w] in English; Davis & Hammond 1995) or it can form a diphthong with the following V ([w] in French; Klein 1991).

(1) a. CAOVN  
    b. COAVN  
    c. CAOVN  
    d. COvNAOVN ~ COvNAOVN

In this paper, we first show that place and sonority constraints holding for CAV in Hindi motivate both (1a) and (1b) (§§2-3). However liquids and glides can both be syllabified as per (1a) and (1b), regardless of position in the word, depending on the liquid or glide implicated. As a result, the structures that hold do not follow solely from the phonetic attributes of the segments involved.

Second, we turn to another type of sequence found in medial position: /CəAV/, which optionally undergoes schwa deletion, yielding CAV. Ohala (1983, 1999) proposes that the resulting CAV is analysed with CA as coda+onset, as in (1c) above. This analysis, however, is hard to motivate because other CAV strings, with the same type of A, are syllabified as complex onsets (1a) (see §§2-3). We propose, contrary to Ohala, that the outputs for /CəAV/ with and without schwa both contain a nucleus between C and A as in (1d), where Ø represents the deleted /ə/. We show that there is evidence for (1d) from stress, even when the nucleus surfaces as phonetically empty (§4).

2. Initial CAV. Our analysis of Hindi A in initial CAV is as follows. [l, r] form part of a complex onset (1a), but a subset of rhotics that only appear before [i] ([ri]) form part of a diphthong (1b). The glides, [w] and [j], pattern differently, as part of a complex onset and diphthong, respectively.

Evidence for the syllabification of A in CAV comes from phonotactic constraints on sonority and place: more constraints hold between C and A when CA forms a complex onset (CAOVN); few constraints hold between C and A when a constituent boundary interrupts C and A, i.e., when A forms a diphthong with V (COAVN). Considering sonority, (2a-c) show that when A = [l, r, w], the onset head (C) must be an obstruent, a constraint that holds of complex onsets in most languages (e.g., Kaye et al. 1990). If C is higher in sonority, a nasal, the cluster is ill-formed. (2d-e) show that when A = [ri, j], this constraint does not hold. C can be nasal, consistent with there being a constituent boundary between C and A in these forms (i.e., [ri, j] are in the nucleus).

(2) Sonority:

#CAOVN  
  a. A = [l]  
     [pliːhaː] ‘spleen’  
     *[mlV]  
  b. A = [r]  
     [krodə] ‘anger’  
     *[mrV]  
  c. A = [w]  
     [twoʃə]  
     *[nwV]

#COAVN  
  d. A = [ri]  
     [krijaː] ‘act’  
     *[mriɡ]  
  e. A = [j]  
     [kjaː] ‘what’  
     [mjaːn] ‘sheath’
Considering place, (3a-b) shows that when \( A = [l, w] \), place agreement between \( C \) and \( A \) is not permitted. (3c) shows that this does not hold of \([j]\). This is consistent with \( CA \) forming a complex onset when \( A = [l, w] \) and with \( AV \) forming a diphthong when \( A = [j] \). (We set \([r, r_i]\) aside in (3) and (5b) because rhotics never enter into place constraints in complex onsets, across languages.)

<table>
<thead>
<tr>
<th>Place: ( #CA_{O}V_{N} )</th>
<th>a. ( A = [l] ) &amp; b. ( A = [w] )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( *[tlV] )</td>
<td>( *[pwV] )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(3) Place: ( #C_{O}AV_{N} )</th>
<th>c. ( A = [j] )</th>
</tr>
</thead>
<tbody>
<tr>
<td>([tjo\text{ha}:r]) ‘festival’</td>
<td></td>
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</tbody>
</table>

3. **Medial CAV.** Turning to CAV in medial position, phonotactic constraints parallel to those in initial position motivate the same analyses proposed above. For example, focusing on sonority, (4) shows patterns for approximants in medial position identical to those seen earlier in (2).

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>([ka:kli:]) ‘melodious tune’</td>
<td>([wipri:t]) ‘opposite’</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(4) CAV: ( ..C_{O}AV_{N} )</th>
<th>d. ( A = [r.] ) &amp; e. ( A = [j] )</th>
</tr>
</thead>
<tbody>
<tr>
<td>([b^h\text{u}\text{pri}f]l]) ‘surface of the earth’</td>
<td>([m\text{rjtju:}]) ‘death’</td>
</tr>
</tbody>
</table>

When we probe further, though, we find unexpected patterns; see (5). Focusing on \( A = [l, r, w] \), we find that \( C \) can be nasal, contra (2a-c), and that place agreement can hold between \( C \) and \( A \), contra (3a-b). Ohala (1983) proposes that the CA strings in (5) are coda+onset (1c). This analysis, though, does not respect cross-language sonority constraints that hold of coda+onset clusters (Vennemann 1988). To further delve into the structure that holds in (5), we point out that all of these words can appear with optional schwa between \( C \) and \( A \), e.g., \([imli:] \sim [im\text{li:}]\), \([\text{apwa}:d] \sim [\text{ap\text{wa}:d}]\).

| Sonority: | \([\text{imli:}]\) ‘tamarind’ | \([d^h\text{umra:}]\) ‘blacksmith’s tool’ | \([\text{t\text{\o}nwi:}]\) ‘slender girl’ |
| Place: | \([\text{mat\text{lab}}]\) ‘meaning’ | NA; see text above (3) | \([\text{\text{o}nja}]\) ‘numerous’ |

4. **Stress and Syllabification.** One consequence of Ohala’s analysis is that forms like (5) with and without \([\text{a}]\) have different structures: (1d) when \([\text{a}]\) is overt; (1c) when it is not. We propose instead that the forms with and without \([\text{a}]\) have the same structure, (1d). Evidence for our analysis comes from stress. Hindi stress is sensitive to three weight profiles (Pandey 1989): CVXC > CVX > CV. Stress falls on the heaviest syllable that is rightmost in a word, excluding the final syllable (unless it is CVXC). The window in which stress is assigned is four syllables (Kager 2012).

In words like (6a) produced without \([\text{a}]\), stress should fall on the penult (6b) if CA is analysed as coda+onset (1c), as in Ohala, as this is the rightmost visible heaviest syllable. By contrast, stress should fall on the preantepenultimate (6c) if CA is analysed with an empty nucleus between \( C \) and \( A \) (1d), as this is the rightmost visible heaviest syllable. In a pilot study, 4 native Hindi speakers produced 8 novel words presented in writing like (6a) (schwa was written, as appropriate for Hindi orthography). Words were produced both with and without \([\text{a}]\). Productions without \([\text{a}]\) had stress on the preantepenultimate 92% of the time, (6c), consistent with the syllabification we assume.

| (6) a. \( \text{Optional schwa:} \) & b. Predicted stress as per (1c): & c. Predicted stress as per (1d): |
|-----------------------------|------------------|
| \([\text{kondet}\text{(s)li:}]\) | \([\text{kon\text{.\text{\o}l\text{.}li:}]\) | \([\text{\text{\o}n\text{.\text{\o}l\text{.}li:}]\) |

In sum, we have shown that the structures in (1a), (1b) and (1d) are all required for Hindi CAV, motivating an articulated view of the syllable where representation is sensitive to phonotactics.
REFERENCES


THE REST IS SILENCE: JAPANESE VOWEL DEVOICING, STRUCTURE, AND THE EMPTY CATEGORY PRINCIPLE

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This paper offers a fresh look at Japanese devoicing (also: deletion, taken as synonymous here) of high vowels i [i] and u [u] in voiceless environments (McCawley 1968, Vance 1987, 2008, Labrune 2012, Fujimoto 2015). We focus on categorical non-realisation (see Fujimoto 2015 for optional/gradient devoicing in connected speech including non-high vowels). We interpret devoicing as an instantiation of Proper Government (\(\mathcal{P}1\)) of a simple nucleus (\(\mathcal{P}2, \mathcal{P}5\)) which is not required to license voicing in its environment (\(\mathcal{P}3, \mathcal{P}4\)). Crucially, all three factors are interrelated and follow straightforwardly from the theory employed, Government Phonology (GP; Kaye, Lowenstamm & Vergnaud 1985, 1990); in particular GP 2.0 (Pöchtrager 2006).

Data. Devoicing (common, not always obligatory) creates an alternating pattern (1), excluding two devoiced vowels in a row. Devoicing affects high vowels following a voiceless consonant and
preceding another voiceless consonant or a pause (2). If $i$ is devoiced, (regular) palatalisation of preceding consonants occurs despite devoicing. Devoicing is blocked when a voiced consonant precedes (3) or follows (4; but see below). Devoiced vowels do not support an accent (Haraguchi 1977, Y. Yoshida 1999), leading to accent shift (5). Native Tokyo speakers are often categorical in their judgments, considering forms without devoiced vowels as unnatural/marked (6).

(1) kitsutsuki ~ kitsutsuki, *kitsutsuki ‘woodpecker’ ($u$ = devoiced $u$)
(2) tsukeru ‘to put on’, arashi ‘storm’
(3) buta, *buta ‘pig’
(4) tsubayaku, *tsubayaku ‘to whisper’
(5) kakusu ~ kakasu ‘to hide’
(6) tsukeru ‘to put on’, never *tsukeru, arimasu ‘to be-POL-NP’, hypercorrect for arimasu

**Proposal. P1.** The alternating pattern in (1) follows from the Empty Category Principle (ECP) and Proper Government (PG): A realised nucleus allows a preceding empty nucleus to remain unrealised, while unrealised nuclei cannot properly govern in turn (Charette 1991, Kaye 1990); an alternating pattern arises. This is unproblematic with $u$ [$u$], which spells out an empty nucleus (S. Yoshida 1996, Y. Yoshida 1999, Nasukawa 2010). However, $i$ [$i$] contains the element $I$ and is not empty. This leads to P2: why mid/low vowels do not devoice the same way as high vowels.

**P2.** We assume that the old element $A$ is to be replaced by structure (Pöchtrager 2006, 2013, 2018). (6) gives an empty nucleus. (7) gives $i$ (one empty position contained in the nucleus), (8) $e$ (two of them). While originally designed for vowel reduction (loss of structure, Pöchtrager 2018), the governability of high vowels falls out from (6–8) if the ECP is tweaked slightly: Both [ut] (6) and [i] (7) contain a single empty slot, allowing PG to apply. What is new is that PG can apply to a slot within a vowel. $I$ survives, explaining why $i$ palatalises despite devoicing. PG applies only once and $e$, with two empty positions, cannot be silenced. (6–8) derive another asymmetry: $i$ (but not $e$) palatalises preceding consonants ([ʃi]/*[si]). $I$ in $e$ is buried deep in the structure and cannot get out, in $i$ it can. The same holds true for Brazilian Portuguese $d$/$t$-palatalisation.

**P3.** PG fails if a voiced consonant (truly voiced in Japanese) precedes. We claim that the voicing element $L$ must be licensed in the onset by its nucleus. Voiced consonants show distributional differences to plain ones (Hō & Mester 1986) and $L$ has special licensing needs (Nasukawa 2005). Obligated to license $L$ in its onset, the nucleus is shielded from PG; this is an extension of Charette (1990, 1991) that (government-)licensing nuclei reject PG.

**P4.** Counter to previous accounts (S. Yoshida 1996, Y. Yoshida 1999), we propose that final empty nuclei are possible in Japanese under the same conditions as other empty nuclei (P2–3), which explains devoicing word-finally. Another condition often mentioned, viz. that a following consonant must be voiceless, seems problematic given emerging forms containing nasals: sunawachi [snawate] ‘therefore’ (Fujimoto 2015). This is not found in all speakers and we remain agnostic on that issue for now.

**P5.** If devoicing is PG, why is it blocked in the sequence [ju]? S. Yoshida (1996) and Y. Yoshida (1999) argue that [ju] forms a light diphthong, i.e. glide and vowel within a complex nucleus (Kaye & Lowenstamm 1984). Since these nuclei have complex internal structures, they cannot be governed, similar to empty nuclei (government-)licensing their onset (Charette 1990, 1991).
REFERENCES


Pöchtrager, Markus A. 2018. Sawing off the branch you are sitting on. Acta Linguistica Academica. 65:1, 47–68.


PLENARY PAPER

APART, BUT WHERE’S THE BOUNDARY?

Geoffrey Schwartz
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The relationship between phonetics and phonology has been a persistent area of controversy for phonological theory, as reflected in the leitmotif for this conference. In this talk, I present a research program whose ultimate goal is to resolve the controversy. The research program is based on a model of phonological representation, the Onset Prominence (OP) framework (Schwartz 2010 et seq.), which facilitates the formulation of new hypotheses for experimental phonetic study. In this sense, it may
appear at first glance that OP represents a phonetic approach aimed at providing evidence for models that integrate phonology with phonetics (e.g. Hayes et al. 2004). This is a misconception. The goal of OP is to establish a clear boundary that separates phonetics from phonology.

To identify a dividing line between phonetics and phonology, it is necessary to reconsider a fundamental question: “which phonetics is phonological?” In other words, OP-inspired research has aimed at identifying phonetic properties in the speech signal that lend themselves to categorical perception and phonological behavior (cf. Donegan 2002). On the basis of OP’s postulates, as well as experimental evidence gathered in OP-inspired research, a number of claims can be advanced.

- The ‘segment’ and ‘syllable’ are not universal primitives of phonological representation. They are epiphenomena that are derived from the OP representational hierarchy, which is based on a stop-vowel CV sequence
- Due to their acoustic complexity, the phonetic properties associated with consonant manner of articulation are more conducive to a ‘phonological’ interpretation than phonetic details associated with place or laryngeal specifications
- Ambiguity is built into OP representations in accordance with perceptual ambiguities in speech. The ‘same’ segment or sequence in different languages may have different representational properties deriving from these ambiguities
- Greater variability along a given phonetic dimension is associated with a lower likelihood that the feature in question has ‘phonological’ status

This talk will investigate these claims in detail, discussing their conceptual motivation, representational origins, and empirical evidence supporting them.

REFERENCES


TONE DISTINCTION BETWEEN THE ADDRESS TERMS AND THE REFERENCE TERMS OF GONGYI DIALECT IN HENAN

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Addressing terms can reflect the typical characteristics of dialects in terms of phonology. It has been pointed out that there is distinction between the address terms and the reference terms (Guo Jimao 1995; Cao Wei 2005). Gongyi City is located in the east of Zhengzhou City, and its dialect belongs to Luosong Cluster, the Mandarin dialect of the Central Plains. The predecessors have explored the phenomenon of rhyming in the research on the addressing terms of the Central Plains Mandarin (Li Congcong 2013); while in the oral communication of the Gongyi dialect, words including names, relatives and occupations can be used as addressing terms. At the same time, there is a significant tonal difference between the address terms and the reference terms, and the tones of the address terms change obviously.
Using experimental methods, we designed 25 names with the combination of the five tones in Gongyi dialect, and put them in the sentences of daily life. The tones of the address terms and the reference terms spoken by 30 citizens of Gongyi aged 20 to 85 years old who live in Xicun Town, Zhitian Town and in downtown Gongyi under different situational requirements are analyzed. After using praat to extract the pitch data, the T-value formula (Shi Feng 1986) was used to calculate, and the tones of the address terms and the reference terms of the Gongyi dialect were obtained. The results of the experimental study show that under the various tonal combinations of the five tones, the tones of the address terms in Gongyi dialect are on the rise relative to the tones of the reference terms, and there is obvious difference between the tones of the ending characters of the address terms and the tones of the character itself originally. This phenomenon of tone distinction is especially significant when address terms are located at the beginning and the middle parts of a sentence.

Exploring the tone distinction phenomenon of the Gongyi dialect addressing terms can further enrich the research on the dialect’s phonetic phenomenon, and can provide new ideas for exploring the semantic meanings of tones in the Gongyi dialect.

**COMPUTING LONG-DISTANCE DEPENDENCIES IN PHONOLOGY: A STRONG PROCEDURAL MODEL**

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We propose a strong procedural model for computing long-distance phonological relationships and illustrate its effectiveness with a discussion of vowel harmony. Traditionally phonologists have tried to explain away long-distance relationships in phonology by assuming that phonological relations hold under *segmental adjacency*. This has unfortunate side-effects ranging from iterative rule application to positing special properties inherent to neutral vowels and/or special constraints that apply uniquely to neutral vowels (Bakovic & Wilson, 2000). In contrast, we develop a recipient-initiated SEARCH & COPY algorithm that works by linearly scanning phonological strings (SEARCH-ing) for specific valued features on donor-segments, and then COPY-ing said feature onto the recipient (Reiss, 2007). Following Raimy’s (2000) arguments we assume that phonological strings are ordered sets of timing slots associated with feature-bundles ($\Sigma = \langle X, \leq \rangle$, with the expression $a \leq b$ being read ‘*timing slot a precedes b*’), and all ordering of features is induced from this order. Following standard mathematical practice we define *immediate precedence* as a special sub-case of precedence ($a \prec b \iff a \leq b \& \forall c \neq a, c \leq b \Rightarrow c \leq a$). This reduction of *immediate precedence* to a sub-case of *precedence* means rules that apply over segmental adjacency are re-conceptualized as special cases of long-distance relationships.

This means that long-distance relationships lose their ‘special’ status since the mechanisms that capture them are already employed for capturing adjacency. Crucially, all locality conditions are derived from the syntax of the SEARCH algorithm. Further, such derived locality conditions are argued to be strictly asymmetric – if $a$ is in a locality relation $L(a,b)$ with $b$ does not imply $b$ is in a locality relation $L(b,a)$ with $a$. In effect this implies that SEARCH initiated from different points can reach the same termination point, thus eliminating the need for iterative rule application. Arbitrary conditions are allowed to be imposed on both SEARCH and COPY, and we show that this affords us the luxury of providing a unified account of all neutral vowels that (a) eschews any ad hoc assumptions regarding said vowels, instead making use of underspecification and (b) discards labels like *transparent* and *opaque* and reduces the behavior of neutral vowels to the syntax of phonological rules themselves. We provide evidence from Turkish, Kirgiz, Hindi and Bangla, and argue that beyond long-distance harmony, our model is further capable of generalizing to all cases of consonant-vowel
interactions in assimilatory processes, affords an unified account of synchronic and diachronic patterns, and all while taking important steps towards establishing cross-modular structural parallelism (e.g. our SEARCH algorithm is largely isomorphic to AGREE in phrasal syntax). We argue that a proper interpretation of Occam’s Razor suggests that a parsimonious theory is one that can account for both attested and attestable data, while ruling out only the unattestable ones, with the fewest theoretical assumptions instead of trying to limit itself to fewest ontological objects (Odden, 2013; 259-260). On this ground, then, our model succeeds on all fronts given that it (a) removes the explanatory burden for locality from the grammar, thereby simplifying its characterization, without shying away from long-distance dependencies, (b) strips neutral vowels of any special theoretical significance, (c) offers an unified account of synchronic patterns in phonology as well as diachronic change, and (d) makes use of computational machinery that are already used extensively in other modules of grammar such as syntax.

REFERENCES


SPECTROGRAPHIC ANALYSIS OF WORD STRUCTURES AND LEXICAL STRESS CORRELATES IN PAKISTANI ENGLISH

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Phonological influence of indigenous languages spoken in Pakistan makes Pakistani English PE a distinct variety. The present study is an attempt to describe two supra-segmental features, i.e. word structure and word stress patterns on the basis of lexical stress correlates, of this variety. For this purpose, the spectrographic analysis of PTV and Radio Pakistan news is done from the spectrograms of lexical words taken with the help of Praat software version 5.3.56. (Boersma and Weenink, 2000). The explored stress patterns of polysyllabic words; such as bi-syllabic, tri-syllabic, tetra-syllabic, penta-syllabic, hexa-syllabic, octa-syllabic; are shown in the form of word structures. Spectrogram and waveform of one word from each type of structure is also shown. The research concludes with descriptive generalization of word structure, lexical stress correlates and stress patterns of PE based on spectrographic analysis. It is found that only mono or bi-syllabic words permit syllables with FIVE segments, words having three or more syllables contain syllable with no more than FOUR segments. It is also noted that forceful production of coda plays a vital role in assigning stress, so in PE heavy syllables H are those syllables which must contain one long vowel with or without coda in a rhyme, i.e. V | or V | C, Diphthong VV as a nucleus, and one long vowel or one short vowel except ↔ with forcefully produced coda, i.e. VC’. Moreover, polysyllabic words form either ultimate or penultimate stress patterns but do not allow antepenultimate stress.
VOT IN KHUZESTANI ARABIC VOICING CONTRAST

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**Introduction** There are two approaches dealing with the phonetic and phonological make-up of voicing contrast: the traditional/substance-free approach (TA) (Keating, 1984), and laryngeal realism (LR) (Beckman et al, 2011; Schwarz et al, 2019). In TA, the binary abstract feature [±voice] is used for this distinction. While in LR, voicing features are privative ([voice], [spread]). Laryngeal realists use three types of evidence for specifying the feature representations of this contrast in a language: the phonetic realization of the segments, diagnostics of control, and phonological behavior (Schwarz et al, 2019). In this paper we examined the first type of evidence in LR, i.e. phonetic realization, in an understudied minority language, Khuzestani Arabic (KhA) to fill one of the many research gaps in KhA and enrich the literature of LR. The other types of evidence will be evaluated in the upcoming studies. Phonetic realization is the notion that the phonetic cues distinguishing plosive classes in initial position should directly correlate to their feature representation. If they are distinguished by the presence of vocal fold vibration, [voice] is specified. If duration of the burst is the distinguishing element, [spread] is specified. The effects of gender, voicing status (voiced and voiceless), place of articulation (labial, plain dental, dental emphatic, palatal, and uvular), and vocalic contexts (/iː, uː, aː, a/) on VOT, along with the vowel:voice, place:voice, and gender:voice interactions were inspected.

**Method** 15 female and 15 male KhA native informants aging between 20 and 43 were asked to read 31 authentic KhA words containing /b, p, d, t, tˤ, k, ɡ, q/ word-initially (four disyllabic items and 27 monosyllabic words with ‘CV(ː)C structure), three times. The target consonants occurred before /iː, uː, aː, a/, and /a/. No example containing /p/ followed by the long vowel /aː/ was found. /q/ and /tˁ/, the two plosives with no VOICED counterpart, were added only for comparative and descriptive reasons. The recordings were made in a quiet room, using Praat. For statistical analysis, we used linear mixed effects models performed in R.

**Results and Discussion** In KhA /p, t, k/ are articulated with positive VOTs of around 50 ms (i.e. long lag); and /tˤ, q/ have positive VOT values of roughly 20 ms (i.e. short lag). /b, d, g/ predominantly display voice lead. According to LR, in KhA the contrast between homorganic stops is realized by [voice] vs. [spread]. This makes it similar to Swedish (Helgason & Ringen 2008), Najdi (AL-Ghamdi et al. 2019), and Qatari Arabic (Kulikov 2020). The absence of contrasting features, shown by [Ø], in the production of /tˤ, q/ can be related to their place of articulation. Although the peak of VOT distributions of homorganic pairs were considerably apart, there was a degree of overlapping between homorganic sounds at both individual and group level. Statistical models demonstrated that voicing status and place of articulation had significant effects on VOT. However, the effects of place of articulation and vocalic context were proved significant only at the voiceless level.

**REFERENCES**


NASAL ASSIMILATION IN BASQUE

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In Basque, stops and affricates alternate in consonantal clusters; specifically, stops are deleted and affricates are simplified to fricatives, e.g., //bat paratu//→[ba paratu] ‘put one’, //ots bat//→[os bat] ‘a cold’ (Hualde 1991). These mappings can be attributed to similarity avoidance, or OCP (Leben 1973). OCP is a cross-linguistically attested phenomenon that drives various types of dissimilation (Suzuki 1998). In Optimality Theory (OT, Prince & Smolensky 1993), Basque dissimilation is expressed as a constraint militating against adjacent non-continuants, OCP[-cont] (see Fukazawa 2001 for OCP[-cont] in Yucatec Maya).

(1) (i) //bat paratu// OCP[-cont] MAX(SEG) Ident[-cont]
   ☞ a. ba paratu *
   b. bat paratu *

(ii) //ots bat// OCP[-cont] MAX(SEG) Ident[-cont]
   ☞ a. os bat *
   b. ots bat *

A problem arises when the behavior of nasals in similar contexts is considered. Pre-nasal stops and affricates alternate, i.e., the former are deleted and the latter are spirantized; e.g., //bat+naka//→[banaka] ‘one by one’, //arit+s+mendi//→[arismendi] ‘oak mountain’ (Hualde 1988). This indicates that nasals must be considered as non-continuants and that they trigger OCP. However, in the reverse scenario, when a nasal is followed by a stop, the cluster remains unchanged; e.g., //ken+du//→[kendu] ‘remove’.

In order to salvage the OCP analysis without losing the generalization, I propose that OCP is not triggered in nasal-stop clusters due to nasal assimilation. In Basque, nasals assimilate to the following stop in Place features (Hualde 1991). However, considering the arguments put forward in Padgett (1991), nasal assimilation should also involve the spreading of the feature [-continuant]. In effect, in nasal-stop clusters, the nasal shares the feature [-continuant] with the following stop and hence does not trigger dissimilation. Conversely, in stop-nasal clusters, the segments do not share any features and hence are in violation of OCP (c.f. Jun 2004 for the typology of assimilation). In OT, this relation is expressed by a faithfulness constraint militating against unfaithful linking of feature geometric nodes (ParseLink, Ito, Mester & Padgett 1995). Additionally, nasals in predictable contexts must be underspecified in the UR (Rubach 2019). ParseLink is not violated if the relevant node is not present in the input.
(2) 

(i) \[//bat+naka//\] ParseLink MAX[nasal] OCP[-cont] MAX(SEG) 

<table>
<thead>
<tr>
<th></th>
<th>ParseLink</th>
<th>MAX[nasal]</th>
<th>OCP[-cont]</th>
<th>MAX(SEG)</th>
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<tbody>
<tr>
<td>a. banaka</td>
<td></td>
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<td></td>
<td>*</td>
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<tr>
<td>b. batnaka</td>
<td>/ \ [-con][-con]</td>
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<td>*!</td>
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<tr>
<td>c. batnaka</td>
<td>/ [-con]</td>
<td></td>
<td>*!</td>
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</tbody>
</table>

(ii) \[//keN+du//\] ParseLink MAX[nasal] OCP[-cont] MAX(SEG) 

<table>
<thead>
<tr>
<th></th>
<th>ParseLink</th>
<th>MAX[nasal]</th>
<th>OCP[-cont]</th>
<th>MAX(SEG)</th>
</tr>
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<tbody>
<tr>
<td>a. kendu</td>
<td>\</td>
<td>[-con]</td>
<td></td>
<td></td>
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<tr>
<td>b. kendu</td>
<td>/ \ [-con][-con]</td>
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<td>*!</td>
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<tr>
<td>c. kedu</td>
<td>/ [-con]</td>
<td></td>
<td>*!</td>
<td></td>
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<tr>
<td>d. kenu</td>
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REFERENCES


THE INFLUENCE OF L1 SYLLABLE STRUCTURE ON L2 ACQUISITION: A CASE STUDY OF HUNGARIAN ACCENTED ITALIAN

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Foreign accent (FA) is a practically unavoidable phenomenon accompanying second language (L2) speech production. L2 learners generally consider it a mistake and tend to minimise its effects; fortunately, with limited success only, since FA represents a priceless data source for phonologists. One of the most significant components of FA stems from the interference with L1’s synchronic phonology: productive phenomena are transferred onto L2 pronunciation (cf. Flege 1981; Altenberg & Vago 1983; Archibald 1998; Major 2001; Hansen Edwards & Zampini 2008; etc.). Apparently, syllable structure plays a key role in the composition of FA; in fact, learners unconsciously tend to syllabify L2 words according to the syllabic constraints of their L1, which leads to various pronunciation mistakes (autoreference).

The present case study is built on an experiment made with Hungarian native speakers who fluently speak Italian as L2. Hungarians do not have a strong foreign accent while speaking Italian, because the articulatory bases of the two languages considerably overlap. Still, a unique accent can be detected in Hungarians’ Italian pronunciation, called here “Ungheriano” (Ung.), whose peculiarities mostly originate in the differences of the syllable structures. In the experiment 10 informants have been interviewed (all teachers of Italian as L2 and native speakers of Standard Hungarian), who also completed a two-page questionnaire.

First, the informants were asked to syllabify 24 Italian words containing various vowel and consonant clusters. Standard Hungarian does not have diphthongs; accordingly, the informants had difficulties in the syllabification of neighbouring vowels, and they often separated the Italian diphthongs or triphthongs, e.g. It. a-zio-ne ‘action’ > Ung. a-zi-o-ne, It. gra-tui-to ‘free’ > Ung. gra-tu-i-to, It. eu-ro > Ung. e-u-ro, It. in-sie-me ‘together’ > Ung. in-si-e-me, It. a-iuo-le ‘flowerbed’ > Ung. a-iu-o-le, It. gra-zie ‘thanks’ > Ung. gra-zi-e etc. Thus, in the typical Ungheriano pronunciation such words are lengthened by a new syllable.

Even more syllabification mistakes were detected among the stop+liquid (TR) clusters. In Italian (as in most Indo-European languages) TR is a tautosyllabic cluster (cf. Krämer 2009); however, in Hungarian it is presumed to be heterosyllabic (cf. Siptár & Törkenczy 2000). The latter fact is also confirmed by the results of the informants of this study, who often syllabified TR as a heterosyllabic cluster, e.g. It. al-le-gro ‘happy’ > Ung. al-leg-ro, It. ma-no-vra ‘operation’ > Ung. ma-nov-ra, It. so-pra ‘above’ > Ung. sop-ra, It. qua-tro ‘four’ > Ung. quatt-ro etc. This fact has serious consequences to further phonological components of Ungheriano.

In the second part of the questionnaire the informants had to assign (through different tasks) the stressed syllable and the long vowel in 85 polysyllabic words. One of the most important results is that they usually do not lengthen the stressed vowel before a TR cluster. The stressed vowel is always long in Italian in an open syllable because of SWP (Stress-to-Weight Principle; i.e., the stressed syllable must be heavy; cf. Krämer 2009), e.g. s[ˈo]pra ‘above’, m[ˈa]dre ‘mother’ etc. Apparently, Hungarian speakers perceive these syllables as closed ones because of the heterosyllabic syllabification of TR; that is, they do not feel the need to strengthen the stressed vowel, since the syllable is already heavy due to the coda consonant, e.g. It. s[ˈo]pra > Ung. s[o]pra, It. v[ˈɛ]stro ‘glass’ > Ung. v[ɛ]st-ro, It. man[ˈo] vra > Ung. man[ɔ]v-ra, It. C[ˈa]pri > Ung. C[ˈa]pri, It. d[ˈu]plice > Ung. d[ˈu]plice etc.

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The other significant finding is the synchronic “logic” the informants apply during the assignment of the stressed syllable of words containing more than 3 syllables. Word stress assignment goes back to diachronic reasons in Italian; however, in Ungheriano it is based on synchronic phonological patterns, which lead to pronunciation mistakes. Four possibilities emerge if we consider the last three syllables of the keywords. If the first syllable is closed (C) and the other two are open (O), (COO), Hungarians follow SWP, and they place the stress to the closed syllable, even if in Italian it is not always the stressed one, e.g. It. cornice ‘frame’ > Ung. còrnice, It. graffito ‘graffiti’ > Ung. gràffito, It. pantèra ‘panther’ > Ung. pàntera, It. nocciola ‘hazelnut’ > Ung. nòcciola, It. appendice ‘attachment’ > Ung. appèndice etc. If the second syllable is closed and the other two are open (OCO), Hungarians also follow SWP, e.g. It. ânatra ‘duck’ > Ung. anàt-ra, It. cèlèbre ‘famous’ > Ung. celèb-re, It. lùgubre ‘lugubrious’ > Ung. lugùb-re, It. màcabra ‘macabre’ > Ung. macàbro, It. pènetra ‘to penetrate, 3sg’ > Ung. penèt-ra etc. Note that in this case the second syllable is closed again because of the Hungarian heterosyllabicity of TR. If there are two closed syllables and one open one (CCO), Hungarians usually place the stress to the second closed syllable, probably by the influence of the most typical Italian penultimate stress assignment, e.g. It. âlbatro ‘albatross’ > Ung. albàt-ro, It. ârbitro ‘referee’ > Ung. arbit-ro, It. càttedra ‘desk’ > Ung. cattèd-ra, It. màndorla ‘almond’ > Ung. mandòrla etc. Finally, if all syllables are open (OOO), Hungarians usually place the stress to the first syllable of the last three, e.g. It. canòa ‘canoe’ > Ung. cànóa, It. civile ‘civil’ > Ung. civile, It. erède ‘heir’ > Ung. èrede, It. nèmico ‘enemy’ > Ung. nèmico, It. radice ‘root’ > Ung. ràdice, It. sevèro ‘strict’ > Ung. sèvero etc. The main reason of this tendency is probably WSP (Weight-to-Stress Principle); that is, if there are not any closed syllables (so SWP cannot be applied), Hungarians need to choose to lengthen a vowel, and they prefer to do it with the first available one.

REFERENCES


THE BRAZILIAN PORTUGUESE LATERAL SOUNDS PRODUCED BY HUNGARIAN LEARNERS OF L2 PORTUGUESE: AN ULTRASOUND TONGUE IMAGING STUDY

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The markedness differential hypothesis (MDH) claims that when a sound of the target language that differs from the native language is marked, learning problems arise [1]. Brazilian Portuguese (BP) phonological system [2] includes the palatal lateral /ʎ/, whereas Hungarian does not [3]. Therefore, this sound is considered to be marked for Hungarian learners of Brazilian Portuguese, and it may cause pronunciation difficulties for them. Both languages include the alveolar lateral /l/, and the palatal central approximant /j/. These consonants are the closest in both consonant systems to /ʎ/. The aim of the study is to reveal whether L2 Portuguese learners with Hungarian as L1 show the difference between the production of the palatal lateral /ʎ/ from both the alveolar lateral /l/, and palatal /j/ in Brazilian Portuguese speech production, and which of these consonants are pronounced if they do not produce /ʎ/. The phonological contrast only occurs in the intervocalic position of the words. Results of the difference between the /l/, /ʎ/ and /j/ in the perception of English speakers who are L2 Portuguese learners are found in the literature [4]. Our previous production study on Hungarian BP-learners F2-data of these three consonants [5] showed that Hungarian subjects differentiate /l/ and /ʎ/, while they do not differentiate /ʎ/ and /j/. Our goal is to widen this acoustic study with articulatory results based on ultrasound tongue contour imaging.

The literature widely discusses the differences in articulation of BP /l/ and /ʎ/ [6, 7, 8, 9], which include the (i) interdental channel; (ii) position of the tongue body; (iii) position of the tongue root; and (iv) supralingual cavity. In the acoustic domain, the alveolar lateral is characterized by a low F2, while the palatal lateral shows a high F2 [6, 9]. As for the difference of /ʎ/ and /j/, only one articulatory research [10] studied these sounds in different sets of languages. It suggests that the /ʎ/ is classified as alveolopalatal, while /j/ as palatal, based on EPG-data. The palatal lateral differs from the palatal glide primarily in terms of F2 frequency: F2 is higher in the glide [6]. We hypothesize that Hungarian learners can produce the alveolar lateral /l/ and the palatal /j/ but not the lateral palatal /ʎ/ that they substitute by the glide /j/, which is part of their L1 system. We also assume that students of higher proficiency level may employ the production of /lj/ (an allophone of /ʎ/ in BP), trying to approximate their production to the /ʎ/.

In this study, 4 native speakers of Brazilian Portuguese (all females) and 10 Hungarian learners of Portuguese as L2 (8 females) participated. Minimal pairs embedded in the identically structured sentence were applied as linguistic material. The words were tela te[ʎ]a (‘screen’), telha te[ʎ]a (‘roof tile’) and teia te[ɲ]a (‘spider web’), as well as vela ve[ɲ]a (‘candle’), velha ve[ʎ]a (‘old woman’) and veia ve[ɲ]a (‘vein’). The sentences were presented on a computer screen, and 5 repetitions of target words per subject were recorded in a random order. Further words were included in the same setting as distractors. The speakers had a small conversation with a native speaker before the recording in
order to “warm up” their language knowledge. We recorded ultrasound and acoustic signal synchronously. The tongue contours were recorded in midsagittal orientation using the “Micro” ultrasound system (AAA, Articulate Instruments Ltd). The speech signal was recorded with a head-mounted microphone (time aligned to the ultrasound recording automatically by the recording software). The segmentation was carried out by forced alignment and manually corrected in Praat [11]. The tongue contours of the target sounds are traced manually in AAA at each frame along the time course of the target consonant. Formant values are to be obtained at the same time points. Generalised additive mixed models (GAMM) and polar GAMMs are used (R [12]: mgcv, itsadug and articulate) for data analysis. The results can be applied in the pronunciation training of Portuguese as L2.

REFERENCES

/ʃ/ IN INTERVOCALIC AND SIBILANT + /t/-SEQUENCES IN HUNGARIAN

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Sibilants are known for both high coarticulatory aggressiveness and resistance (Recasens, 2014), i.e. their acoustic features are hypothesized to undergo relatively small changes regardless of the phonetic context, and to trigger acoustic changes in the neighboring consonants when appearing in clusters. /ʃ/ was found to lower CoG in /stʃ/ clusters and therefore get closer to the /ʃ/ realization (Stuart-Smith et al., 2019), a phenomenon referred to as /ʃ/-retraction. Decrease was found in the CoG of /ʃ/ also in /stʃt/ clusters, and affrication of /tʃ/ have been reported in these sequences. The changes in
/t/ and /s/ have been suggested to appear due to /ɹ/. The CoG of /s/ showed gender-, dialect-, and speaker-specific behavior: decrease or similar value compared to the intervocalic positions (Stevens & Harrington, 2016; Stuart-Smith et al., 2019). The present study raised the questions of (i) whether the spectral features of /s/ are different in intervocalic position and before /t/ compared to the values of /ʃ/ in similar positions, (ii) whether /t/ shows alternative (non-plosive) manner of articulation in the sibilant + /t/ sequences, and (iii) if any differences can be found between male and female speakers in terms of the sibilants and the /t/ pronunciations.

72 native speakers of Hungarian (between 20 and 50 years) were selected from a speech database (Neuberger et al., 2014). The recordings include two reading tasks (25 sentences, 1 text). 3 intervocalic /s/, 3 intervocalic /ʃ/, 3 V/st/ and 3 V/ʃt/ clusters occurred in the reading tasks, that could be paired as quasi-minimal pairs (including syllables with /s/ vs. /ʃ/ either in intervocalic or before-/t/ positions). The manner of articulation of the /t/ segment, the duration, center of gravity (CoG), standard deviation (sd), skewness and kurtosis of the spectral features of the sibilants were analyzed in Praat. Chi-square test was run to analyze the distribution of /t/-types between the two sibilants, between two genders and between the position of the sibilant + /t/ cluster in the word. Linear mixed models including random intercept and slope by subjects were run to analyze the spectral moments of the two fricatives regarding the phonetic position (intervocalic or before-/t/) and genders, using standards backwards selection methods of model simplification.

The results showed that /t/ exhibited large variability in both clusters, but there was no difference between /st/ and /ʃt/. Female speakers pronounced /t/ as plosive more frequently than male speakers, whereas its affricate and fricative realization was more common for males. The duration and the first three spectral moments (CoG, SD and skewness) of the sibilants did show the effect of the phonetic context, i.e. whether they appeared between vowels or in sibilant + /t/ clusters. Female speakers showed higher CoG values for /st/ than for intervocalic /s/, but there was little or no retraction for males.

To conclude, the /t/ variants cannot be explained by only to the presence and effect of /t/ in /stʃ/ sequences, but the closure phase might be articulated with reduced closure. The observed gender differences in /s/-retraction are not only due to the physiological differences but also sociolinguistic factors must be considered, as well (Fuchs & Toda, 2010).

REFERENCES


ON THE TEMPORAL ATTRIBUTES AFFECTED BY GEMINATION IN HUNGARIAN

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Consonant length/quantity is a phonemically contrastive feature in many languages. An essential question for the phonetics-phonology interface is how phonological categories of quantity (singleton and geminate) can be discriminated along a continuous durational scale of the phonetic realisations. Previous findings confirmed that duration is the main acoustic cue for the distinction between singleton and geminate consonants (see Ridouane 2010 for a review of the temporal acoustic attributes affected by gemination in 24 languages). In addition, preceding vowel duration has been found to interact with consonant length in some languages. Moreover, previous studies (Pickett et al. 1999; Hirata & Whiton 2005) stated that relationally invariant measures exist that divides the two phonemic categories e.g., the ratio of stop closure to preceding vowel durations is a stable indicator of this distinction.

The present study aims to investigate how gemination affects the temporal structure of the phonetic context, i.e. duration of adjacent vowels, in Hungarian stops. By analysing the previous and following vowel duration relative to singleton and geminate stop duration, we would like to shed light to a possible acoustic invariant measure of length opposition. We hypothesized that besides the absolute duration measures, relational timing also plays a role in length distinction.

A total of 600 tokens containing intervocalic single and geminate consonants /p, t, k/ were collected from ten male native speakers of Hungarian (aged between 21 and 29 years). Spontaneous speech data were drawn from the BEA database (Neuberger et al. 2014). Manual annotation and durational measurements were conducted using Praat software (Boersma & Weenink 2015). Statistical analyses were carried out in R (R Core Team 2019).

Results showed that geminates were, on average, one-and-a half times longer than single voiceless stops in Hungarian spontaneous speech; however, duration of singleton and geminate stops showed considerable overlap in production. Vowel duration proved to be longer before geminates and shorter after geminates. Concerning relational timing, we found differences in closure duration divided by preceding vowel duration (C/V ratio) between singletons and geminates. Findings of this study indicated that length distinction is manifested both in absolute and relative measures of the temporal properties of speech sounds.

REFERENCES


The phenomenon of style-shifting in singing accent has been studied from various analytical perspectives (Trudgill 1983, Simpson 1999, Beal 2009, Gibson and Bell 2012, Konert-Panek 2018, Watts and Morrissey 2019 among others). The typical direction of the shift is Americanisation, interpreted as a symbolic tribute paid to the old masters, i.e. American popular music icons. However, a recently growing trend is the use of local accents, even if they are stigmatised. This phenomenon may be seen from the language-ideological perspective (Silverstein 1976, Agha 2003, Milroy 2004), according to which the departure from the default Americanisation trend is an indicator of authenticity, positioning a given artist outside the musical globalised mainstream. To some extent this view seems to correspond with the functionalist account, which points to the connection between the use of one’s natural accent and the lyrical content of the song (field). Additionally, the functionalist factor of mode may also be relevant in the case of those musical genres in which the vocal style resembles Sprechgesang.

In the present paper, the singing accent of Gríam Chatten, the vocalist of Fontaines D.C., a post-punk band based in Dublin (Ireland), is analysed in the light of the abovementioned theoretical frameworks. The main aim of the study is to analyse the relation between the singing accent and identity, whether understood geographically/locally or metaphorically/globally. Moreover, given the coexistence of three major varieties of contemporary Dublin English: local, mainstream and new/fashionable (Hickey 2004, 2005), the goal of the study is to specify which of them is (or are) used by the vocalist. The analysis of the singing accent is based on the material from the band’s debut album, Dogrel (2019). For comparison, selected spoken language samples are also analysed. The features considered are mainly vocalic: STRUT, LOT, FLEECE, GOOSE, BATH, THOUGHT, PRICE/PRIDE and MOUTH, with the focus on the PRICE/PRIDE diphthongs, as they show considerable degree of variability in the analysed corpus. The method of analysis is primarily auditory – due to the interference from musical instruments – with Praat (Boersma and Weenink 2016) used to provide acoustic verification of selected tokens.

The results show that the variety of Dublin English used by the vocalist is predominantly local. This corresponds with the overall image and message of the band, its immersion in the local culture and tradition and is also reflected in Dublin-related themes of lyrics. The results seem to confirm the associations regarding the local and non-local forms, with the former ones typically used by the speakers who identify strongly with traditional Dublin and the latter ones – by the representatives of metropolitan population wishing to distance themselves from vernacular forms in an act of local dissociation (Hickey 2004: 83). The case under analysis also shows a relatively new phenomenon: achieving global popularity without switching to some default, typically Americanised accent. At the same time, some pronunciation features in the analysed corpus may be interpreted as indicators of punk-rock identity, taking this notion beyond its local, geographical scope and connecting it with broader subcultural community. This finding confirms “the capacity of phonological elements to index group collectivities of many kinds” (Milroy 2004: 162) and emphasises the complex nature of staged performance.

REFERENCES


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**“HEARING” QUOTES**

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Quotation marks (or quotes) are a common tool in written and gestural language. They can be used for different purposes, see (1), see also, e.g., Brendel, Meibauer & Steinbach (2011).

1. a. “July” has two syllables.
   b. These little apes, called “lemures”, predominantly live in Madagascar.
   c. “I see,” Tom said.
   d. The minister emphasized the possible consequences of this “dramatic situation”.
   e. The “villa” was in reality a small bungalow without any window.

(1a) is an example of pure quotation, in which the linguistic structure of the noun in quotes is described in a metalinguistic way. (1b) illustrates name-informing quotation, that is, the name of a specific lexical concept is highlighted within quotation marks. Direct quotation is shown in (1c). (1d), in turn, represents mixed quotation, characterized by the integration of a directly uttered sequence within indirect quotation. Finally, in (1e), we find a case of scare quotation since the word in quotes is used with a meaning deviating from its standard denotation. In the present paper, the focus is on name-informing quotation.

In two recent production studies, it was shown that quotation marks are read out (see Schlechtweg & Härtl 2020).¹ An example of the test materials (from German) is given in (2).

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¹ For other studies on the production and hearing of quotation marks, see Kasimir (2008) and Apel et al. (2020). However, these studies suffer from several shortcomings, such as low sample sizes, the absence of appropriate

‘This basket-like bag for the back facilitates the work in agriculture. One calls it pannier / “pannier” among farmers.’

As we see in the example, the same sentences were contrasted, and one specific word was either embraced by quotes or not. During the phonetic analysis, one focus was the syllable right after the first quotation marks, that is, the syllable Kie in (2). Different acoustic parameters were analyzed, these were syllable duration, plosive duration, constriction duration and voice onset time (of the plosive), vowel duration, maximum fundamental frequency and maximum intensity of the vowel. A key finding was that the syllable, plosive, constriction, and voice onset time were significantly longer if quotes were present in comparison to if they were absent.

Having presented the details of the production studies just mentioned, I will discuss a new study, in which it is tested whether language users hear quotation marks. In an experiment realized with Eprime, subjects are exposed to two sound files in each trial. The sound files are taken from a production study just outlined. One sound file of each trial is the one in which a subject read out a sentence without quotation marks (2 above with Kiepe) and the other sound file of the same trial is the one in which the same subject read out the same sentence with quotation marks (2 above with „Kiepe”). The order of the conditions within the trials is counterbalanced. The study includes the listening judgments of German native speakers different from the speakers of the production studies. On the basis of the first about 2,500 evaluated sound files we can say that language users hear and detect quotation marks with a probability of about two third. We will add further data in order to improve the overall picture and will finally interpret the results against the background of the function and significance of quotation marks in different language modes.

REFERENCES


FAKE DUKE-OF-YORK; A PODHALE GORALIAN ARGUMENT FOR PARALLELISM

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A Duke-of-York derivation (DY; Pullum 1976) is a zigzag development in which segment A changes to segment B only to become segment A again, schematically: $A \rightarrow B \rightarrow A$. Because of their inherent serialism, DY derivations have been used as evidence against fully parallel phonological acoustic analyses, the absence of a (complete) statistical analysis, or semantic-pragmatic issues, see Schlechtweg & Härtl (2020, 2021) for extensive discussion.
evaluation (e.g., Rubach 2003). However, my recent data from Podhale Goralian (PG; Rubach & Łuszczek 2019), a Polish dialect spoken in Lesser Poland, document a DY derivation that can be folded into a parallel analysis in terms of constraints.

PG exhibits a process called Final Tensing (FT) which changes ɔ→o before word-final voiced consonants, e.g., B[ɔ]g ‘God’ (cf. B[ɔ]g+a (gen.sg.)). PG also has an independently motivated rule of Nasal Laxing (NL), which changes o→ɔ prenasally, e.g., gr[ɔ]m ‘thunder’. The two rules are in conflict because they impose contradictory requirements: [oN] vs. [ɔN]. Rule-based theories, such as Lexical Phonology (Kiparsky, 1982; Booij & Rubach, 1987), resolve such conflicts via rule ordering.

(1) //grɔm//
   grom FT: ɔ→o
   grɔm NL: o→ɔ
   [grɔm]

The result is a DY derivation. Crucially, this derivation is a necessary consequence of the rule theory, which requires rules which are independently motivated must apply whenever their conditions are satisfied (cf. Zwicky’s (1970) Free-Ride Principle).

Optimality Theory (OT; Prince & Smolensky 2004; McCarthy & Prince 1995) recasts the stepwise and circular chain ɔ→o→ɔ as a single parallel evaluation using ranked and violable constraints. The contradictory structural changes are induced by two markedness constraints.

(2) a. FIN-TENSING: Back mid vowels must be tense before word-final voiced segments.
    b. NAS-LAXING: Back mid vowels must be lax before [+nasal].

Since the grammar prefers lax ɔ over tense o in the prenasal position, NAS-LAXING must be ranked above FIN-TENSING.

(3) Ranking argument: NAS-LAXING >> FIN-TENSING

<table>
<thead>
<tr>
<th>//grɔm//</th>
<th>NAS-LAXING</th>
<th>FIN-TENSING</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. grɔm</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. grom</td>
<td>*!</td>
<td></td>
</tr>
</tbody>
</table>

The evaluation is correct. Significantly, while the rule-based analysis produces the DY chain ɔ →o→ɔ, OT simply offers a choice between surface lax [ɔ] and tense [o], which is settled via harmonic evaluation. To conclude, the DY derivation in (1) is an artefact of the rule system, a complication that does not exist in OT. In fact, OT shows that this DY is fake because it yields to a non-derivational analysis.

REFERENCES


