APPROACHES TO PHONOLOGY AND PHONETICS

(19-21 June)

Lublin, Poland

BOOK OF ABSTRACTS

APAP 2015
This talk contrasts the two means by which the output of a given module can be transferred to another module: computational and lexical translation. The former takes the output of the sending module, transforms it by way of a computational action and returns the input of the receiving module. This input-output relationship turns items of a given vocabulary set into items of another vocabulary set, e.g. a (syntactic) NP into a (phonological) $\omega$. The mapping algorithm of SPE (which transforms morpho-syntactic structure into hash-marks), mapping rules in classical Prosodic Phonology and more recent OT-ed versions thereof (Align) are cases in point, and the computational nature of translation is conceptualized by Jackendoff (2002) in the larger perspective of Cognitive Science.

The same labour may be done by a lexical access, rather than computationally: like in a multilingual dictionary, an item of vocabulary set A (belonging to the sending module) is lexically related to an item of vocabulary set B (belonging to the receiving module). These correspondences are hard-wired, i.e. stored in long-term memory. On this count, no computational action is performed during translation.

Interestingly, computational translation is the unquestioned standard in generative linguistics since SPE, but at the interface of morpho-syntax with phonology concerns only non-morphemic information, i.e. the one that is not stored in the lexicon but created by online morpho-syntactic computation (NPs etc., which are transformed into hash marks). Morphemic information on the other hand is shipped to phonology through a lexical access: spell-out accesses a lexical entry of a morpheme and inserts its phonological representative into the linear phonological string. Nobody has ever considered a computational management of the translation of morphemic information.

The question is why two completely distinct mechanisms are used: couldn't the labour be done by just one mechanism? What are the reasons for having both, and for the fact that they are distributed over morphemic and non-morphemic information the way they are (why isn't translation of morphemic information computational, while non-morphemic information is done through a lexical access)? The reason for morphemic information being translated lexically is obvious: morphemes are stored in the lexicon and could not possibly be the output of a computational action. The question then is why non-morphemic information isn't treated the same way. A plausible answer (but which is never explicit in the literature) is that hash marks, $\omega$'s and the like are not lexical items: they are not stored in long-term memory – hence they cannot be related to morpho-syntactic information through a lexical access. Carriers of morpho-syntactic information in phonology are absent from the lexicon only because nobody has ever designed such carriers that are true lexical items, though. Were there such lexically stored items, they could be the output of a regular lexical access.

I argue that computational translation is impossible in a modular environment because it violates basic modular principles: the translating device needs to "know" two distinct vocabulary sets. The very existence of distinct vocabulary sets and hence the necessity of translation, however, imposes that any given computational system only understands and is able to parse one type of vocabulary (domain-specificity). If computational translation is not an option, it follows that carriers of morpho-syntactic information in phonology must be stored in the lexicon. As such they
need to be storable, which is shown to impose an interesting and productive restriction on possible carriers.

In absence of computational translation, there is only one channel for the transmission of information among modules: the lexical channel. That is, translation works like a dictionary, and dictionary relations are arbitrary. While this is an obvious and undisputed property of the translation between morpho-syntax and phonology (there is no reason why past tense spells out as -ed in English rather than, say, as -u), it is anything but intuitive for the relationship between phonology and phonetics. Still the channel of this translation must be lexical as well, and hence the relationship between items on both sides arbitrary.

Reference

Section A

A new laryngeal realism

Geoff Schwartz, UAM Poznań

The representation of laryngeal contrasts in languages with two series of consonants is still a point of contention in phonological theory. Despite the seemingly straightforward typological division into ‘true-voice’ and ‘aspiration’ languages on the basis of voice onset time (VOT), a number of issues remain. One problem concerns the decision as to which member of the pair constitutes the ‘unmarked’ realization of the laryngeal contrast. The traditional view is that this is determined by VOT, and that short-lag VOT is the sign of an unmarked stop. Yet VOT is just one of many perceptual cues to laryngeal contrasts, and there is evidence that it is weighted more heavily in aspiration languages than in voice languages (Keating 1979, Aperiński 2012). Another issue concerns the neutralization of contrast in certain positions. Recent proposals have started to think ‘outside the box’ with regard to both of these issues. In particular, Cyran (2013) shows that the only way for a privative system to explain sandhi voicing in Polish dialects is to assume that the voiced set is unmarked, despite the fact that those dialects group with voicing languages with regard to VOT. Van der Hulst (2014) offers a similar proposal for Dutch. The question that remains is if there is any way to reconcile these proposals with the intuitive appeal of the VOT-based categorization. In other words, VOT produces a robust categorization of languages into two types, yet these proposals appear to predict that the VOT division is not phonological.

In the Onset Prominence representational environment (Schwartz 2013, forthcoming), we gain a perspective from which the VOT-based division is indeed phonological, yet unmarked voiced consonants may appear in voicing languages. A preliminary set of representations for aspiration (the left pair) and voicing languages is shown in (1). Crucially, in the OP environment there is no ‘segmental’ skeleton, so markedness may not be a property of ‘segments’. Rather, individual structural nodes of the OP hierarchy may be marked or unmarked, and laryngeal specifications may be assigned at either the Closure level or the VO level, reflecting the relative timing of laryngeal and supra-laryngeal gestures.
OP representations for labial stops in aspiration languages and voicing languages

The only laryngeal specification is [spread glottis] ([sg]) for the voiceless set. In aspiration languages, [sg] is assigned to Closure and trickles down through the Noise node where it is interpreted as aspiration. In voicing languages [sg] is assigned to VO. There is no aspiration since [sg] does not affect the Noise node. Pre-voicing is a phonetic effect, gradient in its realization, to enhance perceptual distinctiveness. The non-phonological status is evidenced by the fact that in the absence of pre-voicing, F0 in voice languages is sufficient for perception of the laryngeal contrasts, as well as the fact that no language makes a phonemic distinction between two different degrees of pre-voicing. In aspiration languages, the articulatory effort required for pre-voicing is completely unnecessary for contrast enhancement.

References
Van der Hulst, H. 2014. The laryngeal class in RcvP and voice phenomena in Dutch. Ms.
Schwartz, G. Forthcoming. All gradience is not created equal. Available at: https://www.academia.edu/9320733/All_gradience_is_not_created_equal_-_chapter

Further sound change in Spanish – postvocalic voicing in Gran Canaria

Karolina Broś, University of Warsaw

Spanish consonants are not particularly stable and tend to undergo a series of processes analysed jointly under the umbrella term 'weakening': coda s aspiration, intervocalic stop spirantisation, coda obstruent voicing, spirantisation and elision etc (e.g. Lipski 1996). All of these changes have led to an uneven distribution of sounds: most Spanish dialects lack a voicing contrast in fricatives, while the voicing contrast in stops is maintained only phrase-initially (dos 'two' vs. los 'cough') and word-medially after a homorganic sonorant (manda 'commands' vs. manta 'blanket') due to the workings of spirantisation.

This paper presents an interesting portion of data from a dialect spoken in Galdar on Gran Canaria, which shows a change further in the direction of lenition: postvocalic voicing of p t k (my
fieldwork). Most importantly, the data cannot be analysed as intervocalic or intersonorant voicing due to the asymmetry between the left-hand and the right-hand environments. It appears that a consonantal sonorant on the left does not trigger voicing while the same context on the right does not inhibit the process as long as there is a vowel to the left. The process applies both inside words and across word boundaries. This is illustrated below.

```
a. [ab]asionado 'enthusiastic'  b. [mp]ortante 'important'
  fone[d]ica 'phonetics'
  [g]uencia 'the frequency'
  tengo una [b]rima 'I have a cousin'
  juntos y [d]al 'together and so on'
  otra [g]lase de 'other type of'
```

Interestingly, voicing is blocked after vowels which become adjacent to the stop as a result of elision. Thus: `e[s]tas son la(s) caracteri(s)tica(s) 'these are the features' does not present voicing of the stop (in bold) after deleting coda s. Neither does the phrase `por pensa(r) tonteria(s) 'for thinking about silly things' after eliding r. Moreover, voicing is blocked if a voiceless segment stands to the right (`cara[k]teristicas 'features'). Coda obstruents undergo other types of weakening in this position.

The process described here very much resembles historical changes in both Spanish and French and very well fits into the realm of category-shifting leniting sound change, especially from a diachronic perspective. I propose an analysis of the data that combines phonetic grounding of the observed changes with a formal/categorical approach, with systemic consequences for (Canarian) Spanish in mind.

---

**The influence of laryngeal features on prosodic contrasts**

*Björn Köhnlein, Universiteit Leiden*

**Goal.** Prosody, the structure above the individual sounds of a language (e.g. syllables, stress / feet, intonation), often interacts with segmental structure in processes of language change as well as in synchronic prosodic systems. This talk discusses on the basis of evidence from two varieties of West Germanic how particularly the laryngeal quality of post-tonic consonants (fortis vs. lenis segments) can shape prosodic systems from a diachronic and a synchronic perspective. From a theoretical perspective, the talk provides evidence that certain types of phonological surface oppositions can best be analyzed in terms of contrastive prosodic structure.

**Background.** The importance of the fortis-lenis distinction for the structure of prosodic systems in the varieties in question mainly derives from two properties: first of all, the fortis-lenis distinction is often accompanied by durational differences in preceding vowels, with fortis segments corresponding to relatively short vowels (pre-fortis clipping), and lenis segments corresponding to relatively long vowels (pre-lenis lengthening). Furthermore, various types of post-tonic lenition processes suggest that foot-internal onsets tend to prefer prefer lenis consonants to fortis consonants (e.g. Harris 1997, Honeybone 2012). As we shall see, both properties can cause the emergence of metrical differences between two types of words when the phonological system is restructured after processes of language change (in our case: the loss of word-final schwas).

**Case studies.** i) In High Prussian (East Central German), final devoicing is optional (e.g. Kuck & Wiesinger 1965, Teßmann 1969). Some monosyllabic words with final (phonologically) voiced obstruents show devoicing, some do not. Historically, the opaque cases derive from schwa apocope; synchronically, this can e.g. result in alternations between devoicing singulars and non-devoicing plurals. We argue that the absence of final devoicing in some cases can best be regarded as an
epiphenomenon of metrical structure: some words with word-final lenis consonants surface with
disyllabic feet, including an empty-headed second syllable with a foot-medial lenis onset.
ii.) North Low Saxon distinguishes short lax, long tense, and overlong tense vowels. Overlong
vowels derive from schwa apocope iff the intervocalic consonants was lenis. Interestingly, final
devoicing in originally disyllabic items is incomplete, while final devoicing seems to be complete in
originally monosyllabic items (Prehn 2012). We argue that overlong vowels derive from the
presence of lenis consonants in empty-headed word-final syllables: phonetically, the lenis quality of
word-final obstruents is primarily expressed in the duration of the preceding vowel.

Section B

Repair strategies in online adaptation of Polish and Unkrainian word-initial CC
consonant clusters by native speakers of English

Marek Radomski and Kateryna Sydorenko, Maria Curie-Skłodowska University

The repair strategies applied in loanword adaptation at the phonotactic level include vowel
insertion, consonant deletion and cluster modification. The selection of a repair may be co-
determined by a number of factors, such as the position of an illicit phonotactic structure in a word,
the segmental makeup of a consonant cluster etc.

In Radomski (2014) we report on an online loanword adaptation experiment in which 30 native
speakers of British English reproduced Polish words with CC consonant clusters (both word-initial
and word-final) which do not occur in English. The article in question demonstrates that the
position of a cluster in a word influences the choice of a repair strategy, with word-initial clusters
being adapted via epenthesis, word-final ones via cluster modification and deletion being very
infrequent in both cases. Furthermore, the segmental structure of a CC sequence is shown to play
some role in that epenthesis applies most frequently to clusters of voiced obstruents, deletion is
dispreferred, except for sequences of voiceless non-strident fricatives, and cluster modification is
most common in the adaptation of voiceless CC structures containing an affricate.

In this paper we compare these findings with the results of a similar study in which 25 native
speakers of English were asked to imitate Ukrainian words with word-initial CC consonant clusters
not present in English. Both studies reveal some similar patterns, e.g. the predominance of
epenthesis in voiced clusters and a high rate of deletion in fricative sequences. Furthermore, in both
cases the sonority profile of a CC cluster has an influence on the rate of successful reproduction in
that sequences which violate the Sonority Sequencing Generalization are produced targetlike less
frequently than those which conform to this principle.

In addition, we propose a preliminary theoretical analysis of these patterns. It is argued that
neither a purely phonological view (e.g. Paradis & LaCharite 1997) nor a phonetics-only stance
(e.g. Peperkamp & Dupoux 2003) can satisfactorily account for the regularities in the data. Instead,
we suggest that a model which takes into account both phonetic factors, such as perceptual salience,
as well as phonological ones, including the sonority distance, provides a more convincing
explanation of the phenomena in question.
Correspondence between perception and production of L2 stops

Sami Alanazi, University of Essex

This study explores the idea that the acquisition of English voiced stops, which are produced with short-lag VOT, is challenging for those L2 learners whose L1 voiced stops are pre-voiced. Ten Saudi Arabic speakers were asked to produce words of their L1 starting with voiced stops. Acoustic analysis confirms that the voiced stops of Saudi Arabic are pre-voiced.

A production and perception test was conducted with 31 L2 learners. Nonce words of English with voiced stops in VCV format were recorded for perception test stimuli (See list of stimuli in the appendix). The subjects listened to the recording and identified the consonants between the two vowels.

For the production test, the learners were recorded pronouncing a list of English words starting with voiced stops on three vowel contexts i.e. [i a u] in a normal and natural voice (See list of stimuli in the appendix). VOT of their L2 stops were extracted using Praat (Boersma & Weenink, 2015). The results of production test show that the participants had produced all voiced stops of English with pre-voicing. This might be a negative transfer from the L1. The result confirms that accurate production of English stops is very difficult for those learners whose L1 stops are pre-voiced. In the perception test, the accuracy of English [b] is less compared to [d] and [g], as 42% of the participants perceived English [b] as [p]. The participants perceived English [b] which was produced with short-lag VOT, as voiceless [p] because in their L2 phonemic inventory a voiced consonant is the one which produced with pre-voicing. The results confirm that, overall, Saudi learners do not appear to have developed a new phonetic category for English stops since they produce English stops with pre-voicing like their L1 stops. There is, however, a lot of improvement in perception, but it seems that they have not yet obtained complete accuracy. This also confirms the idea that perception precedes production in L2 acquisition (Flege 1995). The reason for the variant behaviour of the participants on [d] and [g] is yet to be discovered in future research.

Appendices

A. Production test stimuli: Beep, Bar, Boot, Deal, Dark, Do, Geese, Guard, Goose
B. Perception test stimuli: aba, ibi, ubu, ada, idi, udu, aga, igi, ugu

References


Perception versus spelling in loanword adaptation from English into Polish.

The case of /æ/ and /ɪ/

Jolanta Szpyra-Kozłowska and Marek Radomski, Maria Curie-Skłodowska University

Within the last 30 years, Polish, just like many other languages, has borrowed hundreds of English words. Mańczak-Wohlfeld (2010), in her dictionary of English loanwords in Polish, lists 2000 such items, the majority of which have entered Polish recently. As observed by Molęda (2008), while anglicisms in Polish have been studied in detail from the morphological, semantic and graphic perspectives, their phonetic and phonological shape has not been dealt with in much depth. In view of considerable attention loanword adaptation has attracted in recent phonological theory, English borrowings in Polish can now not only receive a more insightful description and explanation, but they can also shed light on various theoretical controversies.

In this paper we approach an interesting and complex issue of the phonological and phonetic adaptation of two English monophthongs with no exact equivalents in Polish, namely the front mid-low vowel /æ/, as in cat, and the front centralized vowel /ɪ/, as in sit. The segments in question are located in the vowel space between Polish vowels, i.e. /æ/ between P /a/ and /ɛ/ and /ɪ/ between P /i/ and /ɨ/. Yet, in spite of this similarity, /æ/ is realized in loanwords in two ways: as the front half-open [ɛ] (e.g. E jazz > P [ʤɛs]) and, more frequently, as the front retracted fully open [a] (e.g. E rap > P [rap]), while /ɪ/ is predominantly adapted as the high front /i/ (e.g. E drink > P [drˈɪŋk]).

The paper examines this phenomenon experimentally in order to uncover the reasons behind these divergent realizations of English vowels in Polish. The perceptual experiment involved 40 Polish listeners who had never learnt English and who, while listening to a list of 40 monosyllabic words read by 4 English native speakers (2 British and 2 American), in a forced identification task, indicated the vowel they heard. In both cases much variability in the speakers’ realization of the vowels under examination was noted, which resulted in their variable perception. In the British samples, /æ/ was perceived predominantly as /a/ (96%), while in the American samples as /ɛ/ (78.5%). On the other hand, /ɪ/ in the British samples was identified as /ɨ/ in 51% and as /ɪ/ in 49% of cases and in the American samples these figures were 42.6% and 57.3% respectively. We argue that such results can be interpreted by dialectally varied phonetic inputs to loanword adaptation coupled with the influence of English spelling (orthographic input).
Friday afternoon

Plenary session 2

Final devoicing in English:
An account with arbitrary phonetics-phonology mappings

Silke Hamann, University of Amsterdam

English has been traditionally described as a language with a voicing contrast in word-final obstruents – unlike the closely related West-Germanic languages Dutch and German, in which obstruents undergo final devoicing. Recent experimental findings, however, have shown that this picture is incorrect: In the study performed by Gonet (2010), 92% of the phonologically voiced fricatives in word-final position before a pause were completely devoiced, and 46% of the corresponding plosives. At the same time, researchers agree that duration of the preceding vowel is an important perceptual cue to the voicing contrast in English, with shortened vowels before the underlyingly voiceless obstruents (pre-fortis clipping). The fact that the vowel cues are more robust than final voicing cues shows a phonetic shift in contrast from voicing to vowel duration.

In this talk, I will argue that such a phonetic shift does not necessarily result in a change of the underlying representation of the sounds in question (Hamann 2014), and provide evidence from the phonological behaviour of English final obstruents supporting this claim. Furthermore, I will illustrate that such a purely phonetic, Neogrammarian sound change is problematic for grammar models that assume universal mappings between phonological features and their phonetic implementations (such as Chomsky & Halle 1968 and following). Instead, I will apply a model that makes a strict distinction between phonetic and phonological representations and provides a mapping algorithm between the two, namely Boersma’s (2007) Bidirectional Phonetics and Phonology, and show that this model can fully account for the English data.

References

Section A

On Bilabial Lenition from Late Latin to Modern Spanish

Benjamin Schmeiser, Illinois State University

The current study considers the case of lenition from Late Latin to Modern Spanish. In Late Latin, the glide [w] underwent lenition, resulting in [β]. Cross-linguistically, this process is quite common and appears to be well-understood. That said, lenition is, with specific regard to bilabials, an understudied area in Romance linguistics. In historical terms, [w] was utilized for the grapheme ν, as in veritas [vé.ɾi.tas] ‘truth’. Between the 1st Century AD and the 5th Century AD, the glide underwent lenition to [β]. However, the voiced bilabial plosive, [b], was utilized for the grapheme b, as in basium [bá.si.um] ‘kiss.’ The two phonemes merged into /b/ in Old Spanish for graphemes b and v and in the Modern Spanish examples of bata [bá.ta] ‘bathrobe’ and video [bi.ðé.o] ‘video’. However, from this phoneme, there now exists two allophones, one faithful, [b] and the other unfaithful, [β] between two [+Cont] elements, as in voy [boj] ‘I go’ or abuelo [a.βwé.lo] ‘grandfather’, respectively.

The current study is novel in that it offers an analysis based on Optimality Theory in which I detail bilabial lenition progression diachronically with regard to Late Latin and crucially consider i) if the spirant fully merged with the stop (i.e. the fricative fell out of use) and then the stop underwent lenition, or ii) the spirant maintained a presence diachronically and shifted from having a phonemic contrast to simply being an unfaithful allophone. By doing so, we understand if there were two waves of bilabial lenition or if it is better viewed as an evolution of the spirant.

The reduction of intervocalic /w/ in Polish

Kamil Kaźmierski, UAM Poznań

The labiovelar glide /w/ can be reduced in intervocalic context in Polish. Citation forms such as chciałam [ˈxtɕa.wam] and miałem [ˈmja.ɛm] often surface with the glide missing, i.e. as [ˈxtɕa.am] and [ˈmja.em]. This reduction of intervocalic /w/, missing from descriptions of the standard language (Gussmann 2007, Jassem 2003, Ostaszewska and Tambor 2000) has been referred to as a dialectal feature in Polish, typical of the regional speech of Greater Poland. For example, the descriptions of the five major dialect areas of Poland in Karaś (2009) mention it only for this, and no other region. For the ten sub-regions of the Greater Poland dialect area, descriptions of five contain examples of this reduction.

For the present paper, I will analyze a corpus of recordings of spontaneous speech of 20 speakers of Polish, 10 from Greater Poland and 10 from the New Mixed Dialects area. The recordings, each at least 10 minutes in length, will be annotated for all instances of words with intervocalic /w/. Each instance will be tagged for part of speech, the vowel preceding and following /w/, and coded as either reduced or not reduced. Coding will be based primarily on audition, aided by spectrographic analysis.

I want to address two questions in this paper. First, has this feature spread beyond the Greater Poland region? Perhaps once a dialectal feature, has it burst the boundaries of Greater Poland? A comparison of the rates of reduction between speakers from Greater Poland and speakers from outside this region will allow tackling this question. The second question refers to the grammatical influence on the reduction: most of the examples identified in Karaś (2009) are past
tense verbs, e.g. [ˈmə.am] ‘have.PST.1.F’, [rə.ˈbi.a] ‘do.PST.3.F’ (Sierociuk 2009), (but not all, e.g. [ˈkə.ɔ] ‘wheel’ [Karaś 2009]). Here, I will see whether in Greater Poland past tense verbs are more likely to undergo this reduction than other parts of speech in which the relevant phonetic context also often obtains. These include nouns, e.g. piła /ˈpʲi.wa/ ‘saw’, adjectives e.g. mila /ˈmʲi.wa/ ‘nice.F’, and adverbs biało /ˈbʲa.wɔ/ ‘white.ADV’. I will compare the rates of reduction for past tense verbs with those of other parts of speech. I will verify the expectation that the pattern of reduction is more general, i.e. not restricted by grammatical considerations in the speech on the areas to which this feature has spread, if it is restricted grammatically in Greater Poland to begin with.

References

The representation of the Proto-Germanic back glide: Evidence from Verschärfung

Helena Sobol, University of Warsaw, Siedlce

In the Proto-Germanic process known as Verschärfung, an intervocalic glide [j w] – inherited from PIE – geminated when following a short stressed vowel (for dating and detailed description see Luick 1921: § 97; Luick 1940: § 626):

(1)
P<sub>IE</sub> C<sub>0</sub>V̆Jv- > PrGmc ˈC<sub>0</sub>V̆jjV-

Skt dvayōs ‘of two’ ~ OHG zweiio, OE twēgen; ON tueggia, Goth. twaddje
OCS aja ‘egg’ ~ PrGmc *aija > OE Æg; ON eggja-, Goth. addja

(2)
P<sub>IE</sub> C<sub>0</sub>VwV- > PrGmc ˈC<sub>0</sub>VwwV-

P<sub>IE</sub> *drewā > PrGmc *triwwi > OHG triuwaltrewe ‘faith’, OE trīwe; ON tryggva- ‘faithful’, Goth. triggwa ‘alliance’,
PrGmc *ylawwa > OHG glōwermann ‘clever’, OE gléaw ‘wise’; ON glöggva ‘clever’

The gemination of [j w] after a short stressed syllable increased the weight of the first syllable, since Proto-Germanic counted as heavy both CVV and CVC syllables. Thus, the process can be represented as mora insertion (in the understanding of Hayes 1989). Although Verschärfung is reminiscent of other major Germanic changes, such as the West Germanic Gemination, no formal phonological account for it has been presented: modern studies, such as Suzuki (1991), offer only grammatical descriptions of the process.
This may be because the analysis of *Verschärfung* meets a representational difficulty. An OT (Prince & Smolensky 1993; McCarthy & Prince 1995) input such as /ˈtriμwiμ/ must correspond to the output [ˈtriuμ.wiμ] rather than the failed candidate *[ˈtriuμ.wiμ]*, as the latter could not lead to the obstruentised forms attested for North and East Germanic. My paper offers a solution to the problem by reconstructing a [+ consonantal] approximant [ʋ] in such words. The paper also presents the first formal analysis of *Verschärfung*, conducted in Optimality Theory.

**References**


---

**The realization of stress: typology and representation**

*Guillaume Enguehard, University Paris 7*

In this paper, I aim: i. to list the attested realizations of stress; and ii. to propose a unified representation of all these realizations.

The inventory of the attested realizations of stress is very narrow: only vowel lengthening, consonant lengthening, glottalization, aspiration and tones (Giavazzi, 2010; van der Hulst, 2010).

In the frame of CVCV, Larsen (1994) and Scheer (2000) proposed to represent these realizations with an additional CV unit inserted by stress. This CV unit is identified by some melodic material. In the case of vowel and consonant lengthenings, the stress CV is identified by the spreading of a neighbouring lexical segment. But the representation of aspiration and glottalization is rather unclear: Scheer (2000) assumes that the aspiration is an underlying consonant lengthening; and Larsen (1994) conversely assumes that the glottalization is a floating element which identifies the stress CV. I will show that, in some languages, it is necessary to distinguish aspiration and glottalization from consonant lengthening. In other words, we need floating elements to account for some of the stress realizations.

But this hypothesis involves two problems. First, the inventory of attested stress realizations provides a clear restriction: the floating element cannot be a vowel, and it cannot have any place feature. Indeed, we do have any stress realized with an inherent a, u, i, p, t, k, b, etc. But nothing in the theory predicts these restrictions. The second problem is that the floating elements provide distinct underlying representations for aspiration and glottalization.

However, there are no strict typological categories for the realization of stress. I show that lengthenings, aspiration, glottalization and tones can be in complementary distribution in some languages. Thus, a multiple representation of stress is not relevant. Phonology requires only one representation with several possible realizations.

I show that vowel lengthening, consonant lengthening, glottalization, aspiration and tones belong to a lenition/fortition chain. The most lenis realization is the vowel lengthening, and the most fortis is the aspiration. I assume that the stress CV is always identified by an aspiration (because aspiration cannot be derived from a simple lengthening), and all the other realizations are derived
by lenition. This representation (stress $\rightarrow$ CV+h) accounts for both the limited inventory of the stress realizations, and the variation these are subject to.

This analysis implies that stress realizations are not parametric: they are conditioned by the strength of their context.

References

Melodic domains in Central Chadic and Turkic: reappraising the work of the London and Moscow Schools

Cormac Anderson, UAM Poznań and MPI-EVA, Leipzig

This paper examines melodic domains in the phonology of Central Chadic and Turkic languages and argues in favour of an analysis of the phonologies of these languages based on the approaches of the London and Moscow Schools.

Linguists working on Central Chadic languages adopted the terms palatal and labial prosodies from the London School (i.a. Firth 1948) to describe how palatalisation, and often also labialisation, affect both consonants and vowels within a given domain, often extending to the entire word. These prosodies (symbolised with preceding superscripts) serve to distinguish lexical items, as shown in the Moloko examples in (1) (Bow 1997).

(1)
/kra/ [kəra] 'dog'
/kra/ [kəra] 'ten'
/*kra/ [kəro] 'stake, post'

As shown in (2) and (3), prosodies also act to distinguish morphological categories in Moloko.

(2)
/tsə/ 'climb' $\rightarrow$ VN /m-tsr-a/ [mɪʧɪɾɛ]
/tsər/ 'taste good' $\rightarrow$ VN /m-tsr-a/ [mɪʧɪɾɛ]

Verbal nouns are formed from the addition of a nominalising prefix /m-/ and a suffix /-a/ to the verbal root and the application of palatal prosody to the entire word.

(3)
/n-m*$ązər/ [nɨm*$ązəɾ] 'I see'
/*n-m*$ązər-am/ [nɨm*$ązəɾam] 'we see’ (Friesen and Mamalis 2004)

First person verbal forms involve the addition of the prefix /n-/ to the verbal root, while plural forms additionally take the suffix /-am/ and the application of labial prosody to the entire word. The first person singular and plural of /m*$ązər/ 'to see' are shown above.
With respect to the Turkic languages, and in a similar vein to the prosodic approach of the London School (e.g. Waterson 1956), scholars of the Moscow School spoke of synharmonism, whereby a front-back opposition extends over the entire word and effects both consonants and vowels (e.g. Jakovlev 1928; Reformatksy 1966). This is in contrast to the vast majority of contemporary linguists, who analyse Turkic languages instead as having vowel harmony, with consonant allophony conditioned by preceding vowels.

If phonology and morphology are considered separate domains, the choice of phonological analysis cannot pivot on morphological criteria. The substantial difference between Central Chadic and Turkic languages is that in the former, there is morphological evidence for the prosodic approach, in that prosodies can serve to distinguish morphological categories, whereas in the latter this morphological evidence is absent, as morphological extensions agree with root prosody. This paper argues for an analysis of the phonologies of both Central Chadic and Turkic languages based on the approaches of the London and Moscow Schools. It also considers recent research regarding the predictability of Turkish high vowels (Hankamer 2011) in view of analyses of epenthetic /ə/ in some Central Chadic languages.

References
Bow, Catherine (1997). *Labialisation and palatalisation in Moloko*. Yaounde: SIL.

***************

Section B

Phonetic convergence in the speech of Polish learners of English

*Magdalena Zając, University of Łódź*

Phonetic convergence can be described as a process during which speakers adapt their linguistic behaviour according to who they are talking or listening to. The results of previous studies on phonetic convergence in non-native pronunciation indicate that the phenomenon may take place in L2 speech and that it can be conditioned by linguistic and social-psychological factors (Zuengler, 1982, 1985, 1989; Berkowitz, 1986; Lewandowski, 2012; Rojczyk, 2012; Rojczyk et al., 2013; Trofimovich and Kennedy, 2014; Trofimovich et al., 2014; Zając and Rojczyk, 2014). An interesting aspect of L2 phonetic convergence that has not yet been thoroughly explored is the comparison of pronunciation shifts upon exposure to the speech of native speakers of the TL as compared with pronunciation shifts upon exposure to the speech of other learners. The aim of the current study was to address this issue by investigating and comparing L2 convergence strategies upon exposure to native and non-native pronunciation.
The participants were 33 native speakers of Polish, majoring in English Studies and recruited from the University of Lodz. The subjects listened to pre-recorded productions provided by two model talkers/interlocutors: a native speaker of Standard Southern British English and a native speaker of Polish (a qualified phonetician imitating a heavy Polish accent in English). The phonetic variable under investigation was vowel duration as a cue for consonant voicing; it was selected for analysis since it may be expected to have distinct realisations in native and Polish-accented English. The experimental procedure consisted of several phases. First, the informants were instructed to identify the target words in an auditory naming task (baseline condition). Next, they were asked to listen to pre-recorded English words provided by the two model talkers/interlocutors and to identify the words by saying them out loud (imitation condition). Finally, the subjects were required to read the target words for the two model talkers/interlocutors to listen to at a later time (accommodation condition). Following the production stage of the experiment, the participants completed a questionnaire whose purpose was to gauge attitudes towards native and foreign-accented English.

The results of the study show that the informants modified their realisation of vowel length following exposure to native and Polish-accented English and that convergence strategies varied as a function of model talker/interlocutor. Questionnaire responses indicate that the observed convergence patterns were interrelated with the subjects’ attitude towards L2 pronunciation. Also, the data obtained in the baseline task raise the possibility that the magnitude of phonetic convergence may be conditioned by the stage of acquisition of a given pronunciation feature in the learners’ interlanguage.

References
Emerging classroom English: phonetic accommodation by NS teachers in the instructional setting

Piotr Steinbrich, John Paul II Catholic University of Lublin

Phonetic accommodation amounts to the modifications of sounds in order to converge with target variety speakers. Previous research studies have found evidence that speakers change their speech in response to varied input. Studies on phonetic accommodation have been primarily concerned with first language acquisition (Payne 1980, Chambers 1992), dialect acquisition and dialect change (Munro et al. 1999, Evans and Iverson 2007), or heritage speakers (Wolfram, Carter and Moriello 2004, Roeder 2009). Teachers’ phonetic accommodation in the classroom context has received little attention in literature. This paper addresses the issue of BrE native speaker teachers converging with the target speakers, i.e. Polish learners of English as a Foreign Language. It will be argued that phonetic accommodation is motivated pedagogically rather than socially and that teachers’ pronunciation as used in a classroom setting follows predictable traits and, consequently, constitutes a uniform model with stable, clearly delineated pronunciation patterns irrespective of the varied accents of each speaker. The paper sets out to address the following research hypotheses: 1. Does phonetic accommodation as used by native speaker teachers in the pedagogic setting belong to the phonetic or phonological domain? 2. Are the modifications in the pronunciation of particular sounds governed by the same proximity relations irrespective of the accent of the speaker? The study is in two parts. The first one, with a sociolinguistic slant, aims to gauge the level of phonetic declarative knowledge among the participants and seeks to address the question whether the awareness of phonetic features of English has any bearing on the degree to which the teachers accommodate their speech in the classroom and whether the accommodation is systemic or accidental. In the second part, I examine those aspects of teacher pronunciation which undergo changes in the instructional setting. The main aim of this part is, firstly, to determine proximity relations for each pair of sounds (pronounced in a natural setting and in the classroom context) with respect to the accent of each participant. Secondly, the attempt is made to delineate idiosyncratic accent-specific sounds that occur exclusively in speakers’ natural contexts in order to establish whether their classroom-context counterparts are pronounced consistently by different participants.

References
Technological development in the last few decades has brought about fundamental changes in teaching and learning English pronunciation. Since the spread of electronic dictionaries made it possible to do without the IPA in ELT, the question whether IPA symbols should still be used in the EFL classroom has become highly controversial (Harmer, 2007; Newton, 1999).

The present study starts out from a recent small-scale research project conducted in a Hungarian secondary school (Piukovics, 2015), which has suggested that the IPA ought only to be taught in ELT for purposes other than providing the learners with a means for checking the pronunciation of words in dictionaries, as electronic dictionaries have made that function of the notation obsolete. One such purpose is increasing learners’ awareness of the sounds of English in contrast with those of their mother tongue (Lu, 2002).

The participants of the present study are 118 first-year university (BA) students of English, whose responses to a short questionnaire confirm that the small proportion of Hungarian EFL teachers who still work with the IPA only teach it for the obsolete purpose of checking pronunciations in dictionaries. The results of a pronunciation test the respondents also took reveal that even the students who learnt the IPA at secondary school have serious difficulties in interpreting IPA transcriptions. Typical problems include failing to notice silent letters, the lack of geminates, or how voicing assimilation works, and generally a heavy reliance on spelling and their (often mistaken) intuitions. This suggests that the way the IPA is taught at Hungarian schools is not able to draw students’ attention to aspects of English pronunciation that only the IPA can show without any ambiguity.

Based on the results we claim that the only meaningful way to teach the IPA in ELT is through a thorough course in the pronunciation of English which does not only focus on IPA symbols, but also involves explicit pronunciation teaching and a contrastive study of English and Hungarian phonetics and phonology, and which is thus beyond the scope of a school curriculum. The respondents are taking part in such a course in the spring semester of 2015, at the end of which (May 2015) they are to retake the original pronunciation test, the results of which will show if the course has helped them develop a higher level of pronunciation-consciousness as well as a better understanding of English phonetics and phonology.

References
Phonetic features relevant for intelligibility and comprehensibility of Polish-accented English to native speakers – experimental data

Agnieszka Bryła-Cruz, Maria Curie-Skłodowska University

Even though the concept of intelligibility is complex and depends on an array of linguistic and non-linguistic factors, numerous researchers are unanimous that pronunciation is a major factor in maintaining intelligibility between native and non-native speakers of English (Anderson-Hsieh & Koehler, 1988). There exists no agreement, however, as to the type of phonetic deviations most detrimental to effective communication. Moreover, some of the previous studies on foreign-accented speech have demonstrated that the perceived ease of understanding (comprehensibility) does not appear to be a good indicator of what is actually understood (intelligibility) (Derwing & Munro, 1997; Munro & Derwing, 1995, 1999; Matsuura, Chiba & Fujieda 1999).

The present research contributes to the ongoing discussion about the effect of foreign accent on communication. It employs English native listeners who are exposed to a sample of Polish-accented English. The study encompasses two types of data, vis. quantitative and qualitative. The participants fill in surveys, complete transcription tasks and make judgments and comments regarding the speaker in open-ended questions. The extent to which Polish-accented English is intelligible is measured by comparing listeners’ transcriptions and the target texts produced by stimulus providers. The results of the analysis allow for compiling a list of phonetic features relevant for intelligibility and comprehensibility of Poles to English native listeners. The secondary goal of the experiment is to investigate the relationship between the two variables.

Do they reduce? Vowel reduction patterns in native and non-native speech of Polish learners of English

Anna Gralińska-Brawata, University of Łódź

Vowel reduction is one of the most important features of English speech encompassing both qualitative and quantitative modifications of vocalic elements and constitutes "a universal phenomenon connected with informal speech and lack of prominence" (Porzuczek, 2012: 44). Polish, on the other hand, has no phonological vowel reduction (e.g. Ramus et al. 2003) and different authors represent different viewpoints as regards its phonetic existence (see Jassem 1962, Nowak 2006, Rubach 1974, Dukiewicz and Sawicka 1995, Rojczyk 2012). Because phonological vowel reduction is absent in Polish and unstressed vowels in Polish undergo minimal phonetic reduction (Schwartz 2010), its native speakers find it difficult to reduce vowels in unstressed syllables in English (e.g. Sobkowiak 2004, Nowacka 2008).

The aim of the study is to examine the dynamics of vowel reduction patterns present in the native (Polish) and non-native (English) speech. The experiment adopts an acoustic phonetics approach taking into account the quantitative aspect of vocalic reduction and it tries to answer the following research questions:

- Do Polish learners of English realise durational differences between stressed and unstressed vowels in a similar way in Polish and in English?
- Do instructed learning and exposure to L2 contribute to the increase in durational differences between stressed and unstressed vowels in English?
- Is Polish affected by instructed learning and exposure to L2?

The analysed speech samples come from 30 first year students of English Philology at University of Łódź who were recorded twice (pre-training and post-training) reading the fable The North Wind and the Sun and its Polish version devised by the author for the purpose of the experiment. The
Polish text contains the same number of syllables as the English one and is characterised by approximate vowel qualities in stressed syllables and overall similar rhythmic structure to the English text. Four phrases were extracted from the reading passages and segmented manually into vocalic and consonantal intervals with the help of Praat (version 5.0.29), mainly according to the criteria proposed by Grabe&Low (2002). The results are expected to show different tendencies in the realisation of unstressed vowels in the two languages with some degree of overlap in the pre-training recording and some differences emerging in the post-training recording.

References
Are synchronic chain shifts ever more than epiphenomena?

Nicolas Neasom, University College London

The working definition of synchronic chain shift is that some underlying form A surfaces as B in a particular context, whilst in that same context underlying instances of B surface as a separate form, C (e.g., Łubowicz 2011). Many theories of how these effects should be modelled have been postulated, and all contain some mechanism with the explicit function of ruling out the /A/ → [C] mapping that perhaps would be expected, given that neither /A/ nor /B/ can surface faithfully. These mechanisms include local conjunction (e.g., Moreton & Smolensky 2002), ternary scales (e.g., Gnanadesikan 1997), and contrast preservation constraints (Łubowicz 2012).

However, in many cases, an /A/ → [C] mapping does not need to be explicitly ruled out, because there is no reason to suspect that it should ever arise. In this talk, I discuss cases where the A → B → C mappings that constitute chain shifts are either illusory or epiphenomena of more general processes. First, I argue that most examples of synchronic chain shift do not have a genuine A → B → C mapping, via an analysis of Moreton’s corpus of putative shifts (2004). In this corpus, which gives schematics of the form A → B → C for 49 putative shifts, the strings which make up the A, B, and C parts of each shift are of arbitrary length, and often only make coherent chains when irrelevant information is included in the schematic. On this basis, I suggest a domain restriction on chain shifts, limiting their application to the segment, similar to McCarthy’s 1999 assertion that chain shifts are a kind of counterfeeding-on-focus.

I then show that many putative shifts that do appear to have a genuine A → B → C mapping do not require a solution that is based on the prohibition of an A → C mapping. Through exploration of a range of effects in different languages, including a complex vowel shift process in Thok Reel (previously discussed by Trommer 2011), I show that A → B → C mappings can arise as the result of regular morphological processes that are indifferent to the form that they are acting on. This suggests that any theoretical mechanism specifically designed to model synchronic chain shift may be unnecessary, and that such processes may only ever be ‘accidental’ reflexes of other phonological or morphological effects.
The phonetic basis of phonological representations and morphological patterns

Bartłomiej Czaplicki, University of Warsaw

Construction of phonological representations (via the use of distinctive features) has been argued to be based on phonetic considerations (acoustic, articulatory) and on phonological patterning. Typically, generative analyses assume that both factors play a role but are not explicit on what happens when they come into conflict. Some approaches take a more specific position: phonetically-based approaches to phonology (Jakobson, Fant & Halle 1952, Boersma et al. 2003, Hayes & Steriade 2004) assume the primacy of phonetic factors, while substance-free phonology (Gussmann 2007, Hale & Reiss 2008) places emphasis on phonological patterning. It will be shown that expressive morphology provides evidence in support of a purely phonetic basis of phonological representations. The role of phonological alternations is at best secondary. I consider two synchronically productive processes involving palatal mutations triggered by front vowels in Polish.

(1a) retroflexes: [ʂ tʂ dʐ] (1b) alveolopalatals: [ɕ z c ɕ]

On the basis of these alternations, substance-free approaches predict that both retroflexes and alveolopalatals should be specified as palatalized. Phonetically-based approaches, on the other hand, predict that only alveolopalatals are palatalized because retroflexes are phonetically incompatible with palatalization (Żygis 2003).

Certain patterns of expressive morphology exploit an iconic relation between palatalization and smallness and may, therefore, serve as a testing ground for phonological representations. Palatalized consonants are predicted to engage in word formation processes that express the meaning of smallness (Ohala 1994). I look at the formation of hypocoristics (2a) and diminutives (2b) in Polish.

(2) a. [marta] > [martuɕa] [martea] ‘Marta’, proper name
 [darjuʂ] > [daruɕe] ‘Dariusz’, proper name

b. Regular patterns Novel patterns
gę[e] ‘goose’ – ga[ɕ]-ek gen.pl. mi[e] ‘bear’ – mi[ɕ]-ek

The formation of hypocoristics involves the insertion of alveolopalatals. When a given name contains a retroflex, it is replaced with a corresponding alveolopalatal. In diminutive formation some base-final retroflexes are replaced with alveolopalatals in violation of regular patterns. It follows that retroflexes are not phonologically palatalized. These regularities indicate that (i) representations are phonetically based (phonological alternations are irrelevant) and (ii) phonetics (via phonological representations) dynamically shapes morphological patterns. It is also argued that these conclusions are problematic for modular feed-forward approaches (e.g. Scheer 2012), which claim that phonetics cannot feed morphology.

References
Implications of „Multi-stratal” Affixes

Heather Newell, Université du Québec à Montréal

There is a well-known tension between representational and procedural accounts of phonological phenomena. Additionally, however, there is a similar tension between different procedural accounts. Compare a Stratal OT account, where “the attachment of an affix to a stem may produce a stem-level or word-level category depending on the idiosyncratic affiliation of the affix” (Bermúdez-Otero, 2011), with a phase-based account, where the position of an affix in the syntactic structure determines its affiliation with the domain of ‘stem’ or ‘word’. The former predicts a uniform behaviour for any particular affix in a language, while the latter allows for a single affix to display variable phonological behaviour.

In this talk I demonstrate that variable phonological rule application in Ojibwe, Malagasy and Turkish (for example) do not find tenable solutions within a Stratal account.

(1) Hiatus resolution

a. nô:komis  ‘my grandmother’
   ni-o:komis
   1-GRANDMOTHER

b. nîdodënìmà:  ‘I am jealous of her’
   ni-ode:n-ìm-a:
   1-BE JEALOUS-FINAL-TS(3 THEME)

(2) NC cluster repair

a. ma+m+fatra  `y measures x’
   EVENT-CAUSE-MEASURE

b. ma+mpifatra  ‘z makes x be measured’
   EVENT-CAUSE-MEASURE

(3) Stress assignment

a. gidécek+tim  ‘I will have gone’
   GO-FUT-COP-PAST-1SG

b. gör+dü+ım  ‘I saw’
   SEE-PAST-1SG

It is argued here that in each of these cases there is no conceivable manner in which the two repair strategies can be logically linked to morpheme-specific rules and that the stem/word distinction adds unnecessary procedural machinery to the derivations.

The implication of the above is that morphemes do not belong to different strata in the grammar, and that variable phonological behaviour observed is related solely to the timing of
phonological interpretation. It is put forth here that rules apply when their structural description is met, that cyclic derivation is mediated by the morpho-syntax, and that the same rule may result in a different phonological output depending on the timing of its application in relation to the cyclic interpretation of its parts.

Reference

***************

Section B

Discrimination of English tone contours by Polish learners

Arkadiusz Rojczyk and Andrzej Porzuczek, University of Silesia

A large number of studies have demonstrated how a native language can shape the perception of a foreign language. Situations when a language-specific phonology models the perception of non-native contrasts have been documented for both segments and prosody. For example, Grabe et al. (2003) found the effect of native language experience on the perception of tone contours in British English by Spanish and Chinese listeners. The results showed that, despite similarities in the performance of the tested groups, there were some language-specific differences in the perceptual organization. It was speculated that tones are generally processed by a universal auditory mechanism, however native language experience can modify the perceptual output.

Polish learners of English have repeatedly been observed to have difficulties with identifying English tone contours, especially those with changing trajectory, such as fall-rise and rise-fall. It is an open question whether those difficulties result from the inability to correctly identify and label the taught contours, or whether the sources of this inability are located deeper in the psychoacoustic processing of prosody. If the problem is only on the labeling level, then discrimination of such contours should be high.

In the current study, we tested the discrimination of English tone contours by Polish learners in an AXB task. One-syllable words were recorded with four different tone contours. A group of Polish learners of English participated in the experiment. Discrimination does not require access to phonological labels and is claimed to tap core auditory mechanism. If the discrimination performance by Polish learners is high, then it may be concluded that difficulties with correct identification of English tones are solely difficulties with labeling.

Reference
This paper investigates the prosody of native and non-native spontaneous speech among the emigré community of Polish speakers in North Wales. The particular prosodic aspects selected include not so much the segmental but suprasegmental (vowel length, word stress and intonational patterns) elements. These phenomena, located on the word level and above, generally help listeners to structure the speech signal and to process segmental, syntactic and semantic content successfully.

Previous studies report that the frequency of certain prosodic events encounters in certain contexts has an impact on the perception of nativeness and fluency. More so, the patterns encountered on a daily basis within the foreign language(s) context may and do become transferred onto the native speech. The paper reports on such instances, observed also when the particular emigrants have re-located to the country of origin. That would suggest that the changing patterns have become so profoundly grounded through usage that they have become part of their respective phonologies.

It therefore appears that these discrete categories within the three different phonological systems interact, as a result of which new patterns emerge from the variable tokens. We shall briefly investigate the nature of this interaction and its consequences for the usage-based model of phonology in an L1 and L2 context. We follow here primarily the ideas of Bybee (2001), who claims that linguistic categories and their organization into higher-order units emerge as a consequence of patterns’ frequency of occurrence and co-occurrence. When elements frequently pattern together, they are likely to emerge as independent functional units of language. The prosodic pattern changes observed among Polish speakers in North Wales appear to be the result of actual language use, and consequently, they acquire the status of prototypical solutions for spontaneous speech.

References

Pause patterns in L1 and L2 speech

Ewa Guz, *John Paul II Catholic University of Lublin*

Along with accuracy and complexity of learner language, speech fluency has merited considerable research attention and emerged recently as a one of the most commonly used indicators of L2 proficiency and progress (Brandt and Götz 2011; Cucchiarini et al. 2002; De Jong et al. 2009, 2012; Foster and Skehan 1996, 1999; Foster, Tonkyn and Wigglesworth 2000; Götz 2013; Hilton 2008; Skehan and Foster 2012; Segalowitz 2010). Defined as observable, real-time speech behaviour, oral fluency is described and measured in terms of a set of temporal variables related to the speed of speaking, time filled with speech vs silence and the occurrence of hesitation and repair phenomena. Previous studies into L2 fluency identified a fluency gap (Segalowitz 2010) between native and non-native speech and found that the latter is produced with considerably lower speed and a higher incidence of pausing and hesitation phenomena (Deschamps 1980; Guz 2014; Hincks 2010; Raupach 1984). The gap has traditionally been ascribed to the lower degree of automaticity of
syntactic and phonological encoding of L2 speech, which is processed less rapidly and smoothly as a result of incomplete knowledge of L2, the need to inhibit L1 production procedures and greater demands on self-monitoring (Kormos 2006). However, more recent accounts which looked more closely at the nature of the relationship between L1 and L2 fluency suggest that reliable L2 fluency measures should be corrected to accommodate baseline, temporal characteristics of L1 (Derwing et al. 2009; De Jong et al. 2012, Osborne 2008). In fact, it has been argued that the temporal characteristics of a speaker’s L2 output are a function of their idiosyncratic way of speaking as well as the degree of automatization of L2 processing. This paper intends to investigate the validity of the claim that L1 and L2 fluency should be considered in conjunction. We compare the pausing patterns in a 22,000 word data set consisting of L1 and L2 monologic speech samples elicited from advanced Polish speakers of L2 English (N=50) in response to a personalization task. The data include both the recordings and their pause-annotated transcriptions and are analysed in terms of: the type, length and placement of pauses and disfluency phenomena such as false starts, repetitions and reformulations. An attempt is made at establishing similarities between pausing/hesitation patterns in L1 and L2 data.

References
There is a well-established collection of speaker-independent methods for discovering phonotactic patterns in languages – philological, phonological and more recently computational. There is also an increasingly varied collection of experimental methods for ascertaining how much of this patterning is actually learned by speaker-hearers.

In seeking to determine what makes a phonotactic pattern learnable, researchers have focused on a variety of factors, including the following.

- **Regularity**: does the pattern broach lexical exceptions?
- **Productivity**: is the pattern extendable to new words?
- **Naturalness**: does the pattern have a plausible phonetic motivation?
- **Simplicity**: how formally complex is the structural description of the pattern?
- **Alternation**: does the pattern show up in alternations or as a purely static distribution?
- **Rules vs. words**: is the pattern grammaticalised as a rule/constraint or is it extracted on the fly from the lexicon or word usage?

Teasing apart the relative contributions of these factors is no easy matter. There is already a certain amount of disagreement about what experimental studies in this area show. For example, within the paradigm of artificial grammar learning, there is a continuing debate about whether the internalisation of a pattern is favoured more by how simple it is than by how natural it is.

Making progress in understanding what influences the learnability of phonological patterns depends to a large extent on being able to compare case studies that exemplify different permutations of the factors above. The permutations investigated by existing studies have produced results that are more or less surprising. For example, by-now classic wug-test studies confirm what traditional phonological scholarship might have led us to expect: that speakers internalise and can productively apply patterns, such as English -s, that are regular, simple and natural. On the other hand, studies have also shown that speakers can productively apply patterns, such as English velar softening and vowel shift, that are irregular, relatively complex and not synchronically natural.

The paper examines English phonological patterns involving particular permutations of the factors above that have been little studied from the perspective of learnability. It focuses on the pattern that restricts consonants following /aw/ to coronals (e.g. pout, loud, town, but not *pawk, *lawb, *tawm). The pattern is regular, simple, non-alternating and (despite claims to the contrary) not natural. Initial results of a non-word rating study suggest that, to the extent that speakers have tacit awareness of this pattern at all, it is probably not encapsulated in anything like a phonologist’s rule or constraint.
Section A

No diphthong, no problem

Peter Szigetvári, Eötvös Loránd University

There is near consensus among phonologists that the vowel inventory of British English contains several diphthongs. MOUTH, CHOICE, PRICE, FACE, and GOAT are diphthongs for almost all speakers, FLEECE and GOOSE are pronounced as diphthongs by many.

<table>
<thead>
<tr>
<th>j</th>
<th>w</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>aj (price) aw (mouth)</td>
</tr>
<tr>
<td>e</td>
<td>ej (face) ew (fell)</td>
</tr>
<tr>
<td>i</td>
<td>ij (fleece) iw (fill)</td>
</tr>
<tr>
<td>o</td>
<td>oj (choice) ow (doll)</td>
</tr>
<tr>
<td>u</td>
<td>— uw (goose)</td>
</tr>
<tr>
<td>ø</td>
<td>— aw (goat)</td>
</tr>
</tbody>
</table>

The vowels above — au, oi, ai, ei, au, ui, and uu, respectively — could, however, also be analysed as vowel + consonant sequences (transcribed as aw, oj, etc, to show this). I collect evidence for analysing the glides of diphthongs as consonants, equal to the j of yet and the w of wet, with the aim of showing that the balance does not tilt towards the diphthong analysis as doubtlessly as is usually assumed.

1. More and more speakers vocalize coda l: a system is evolving where almost any combination of short vowel + glide is possible.
2. Epenthesis is encountered in a number of “diphthong” + sonorant sequences: file fajl, fail fejl, feel fjol, foil fjol. This resembles a similar epenthesis in other sonorant + sonorant clusters, where the sonority distance between the two consonants is too little: film flaam (also in rhotic accents: fire fajar, flour flawor). The epenthesis occurs word finally, but not when a vowel follows the cluster: filing fajln, filming filmnj, etc (also cf virus vajras). One expects vowel epenthesis between consonants.
3. There is a curious phonotactic gap in English: intervocalic glides are very limited, and practically nonexistent after a stressed short vowel (the nonEnglish name Dewi děwij is one of the very few examples). If diphthongs are seen as vowel + consonant sequences, this gap is filled: we get many intervocalic glides (chaos kéjos, lion láján, coward káwad). It is a bonus consequence that any case of hiatus disappears: monophthongs do not occur prevocally, “diphthongs” now end in a consonant.
4. Schane (1995) claims that natural languages do not contrast a long vowel like iː and a diphthong like ij, but they may contrast iː and a vowel + consonant sequence ñj. The NEAR vowel in current British English is a long monophthong, rː, while FLEECE is ij, hence pierce prːs and piece piːs contrast in exactly the way Schane says is impossible… unless ij is a vowel + consonant sequence, not a diphthong.
Evidence for syllable structure and autosegmental constituency in the phonology-speech perception “interface”

Faith Chiu, University College London

This paper examines the existence of syllable structure by way of autosegmental association and constituency in the phonology-speech perception “interface”. First, we review and interpret recent literature from theoretical neuroscience and computational biology for evidence of autosegmental constituency and its association of segmental material. Second, we present preliminary results and related methodological discussions from a pilot electroencephalography (EEG) experiment that attempts to fine-tune our current understanding of the neurophysiological response to phonotactic violations and autosegmental constituent affiliation.

How flat is phonology?

Opinions diverge in terms of the flatness of phonology. Samuels’ entirely flat phonology (2011) forms an extreme end in opposition to theories of phonology which include autosegmental structure to different degrees; these include the sparse onelevel CVCV model (Lowenstamm, 1996; Scheer, 1998 et seq.) as well as more hierarchical variants with rhyme-specification (Kaye et al., 1990; Harris, 1994), or the inclusion of a coda within a syllable (Kahn, 1976).

Recent modelling techniques from computational biology provide evidence in support of a phonology that is not entirely flat. By successfully producing a recognition scheme for dynamic speech transitions, Kiebel et al. (2011) demonstrate that the acoustic speech signal is not just a one-layer sequential string of phonemicsegmental realisations with dynamic transitions. Within the signal, there are sound sequences that exist in different time scales. Using the concept of stable heteroclinic channels combined with a Bayesian inversion scheme, it is shown that sequenced elements on a larger time scale can constrain the expression of sequences on a finer time-scale, mirroring segment-“syllable” relationships. Sequences are hierarchically structured: phonemic sequences are actually sequences of sequences. We state that this discovery is in line with evidence of constituency and syllabic organisation as shown in C-centre studies (Hermes et al., 2008, et seq.).

In Italian, for initial nonsibilant onset clusters (/prV/), the rightmost consonant to the vowel decreases in its Ccentre measure, meaning it is constantly shifted rightwards to make room for an added consonant, while the sibilant of sibilant-consonant clusters (/sC/) does not add to this effect. This differentiates their autosegmental constituent affiliation.

Experiment

The findings above are then considered in an experimental paradigm that attempts to elicit neurophysiological responses for complex syllable structures. Although there are isolated EEG components such as the N400 that corresponds with phonotactic violations (Rossi et al., 2013), there seems to be no existing study which has exhaustively considered variations in syllabic structure or constituent affiliation. In our pilot experiment we will compare across different syllable structures predicted by different phonological theories and examine possible correspondences in event related potentials. Data collection is in progress.

Changing the Boundary Tone Pattern – Changing the Meaning in Echo (non-Wh) Questions in Bulgarian

Gergana Padareva-Ilieva, SWU Neofit Rilski

This preliminary study considers intonation and its meaning in echo (non-Wh) questions in Bulgarian. The intonational meaning is an actual theme but in Bulgarian literature studies of this type are insufficient. A fundamental question in intonation research is how do we know whether particular differences in pitch pattern should be regarded as phonologically distinct units or as phonetic variants of a single unit? This problem arises when patterns differ along a single dimension, such as pitch range as is the case here. LH
contour is often used in Bulgarian speech in some dialects as information question but in literary speech almost the same tone model with a small difference in the boundary tone rather expresses surprise, disapproval and so on. The main goal here is to test if it’s possible to change the semantics of the utterance by changing the boundary tone pattern.

The research applies Pierrehumbert’s intonational model (Pierrehumbert 1980). It is also to some extent based on Kiel model (KIM; Kohler 1991) with a specification – studying not the accent peak shifts which is the starting point in the development of KIM but the pitch movement in the frame of the last word in the phrase.

Five echo questions were used as stimuli in the current research. Each of them is a part of a dialog where the first speaker states something and the second one repeats this statement with an echo question in two varieties of the contour:

Ivan obicha Ana? (Ivan loves Ana?)
L \( \downarrow \) H*H%

Ivan obicha Ana?
L \( \downarrow \) H*H%

The pitch movement is represented iconically by tone marks (‘\’ and ‘/’), placed before the word, consistent with a ‘high fall’ or ‘high rise’ (House 2006). The T% here is ‘much’ higher than the L tone in the beginning and a ‘little’ lower than the H* but the intonation phrase is usually perceived as LH.

The imitation task (Pierrehumbert & Steele 1989; Gussenhoven & Rietveld 2000), the so-called semantic task was used in the perception experiment undertaken in this study. The listeners were asked to rate the two intonational varieties as disapproval of the whole statement vs. disapproval of the word in the focus only. Listeners showed a different pattern of responses for both categories, lending support to the hypothesis that the two pitch contours are categorically distinct in Bulgarian.

References

What phonetics tells phonology: Degemination, ambisyllabicity and the duration of Dutch intervocalic consonants

**Haike Jacobs, Radboud University Nijmegen**

Dutch intervocalic consonants preceded by a lax vowel are traditionally (van der Hulst, 1985, Booij, 1994, van Oostendorp, 1992, Gussenhoven, 2008) considered to be ambisyllabic consonants. That is, they are at the same time coda of the preceding syllable as well as onset of the following syllable, as in the first forms of pairs such as *vellen* ‘to chop’ versus *velen* ‘many’ and *mazzelen* ‘to be lucky’ versus *mazelen* ‘measles’. Their duration is predicted to be close to identical in such forms. Dutch also has a process of degemination reportedly leading to homophony (Trommelen and Zonneveld, 1982), reducing two identical consonants in for instance *Zendtijd* ‘broadcasting time’ (homophonous with *Zentijd* ‘time for Zen’) and *vissoep* ‘fish soup’ into a single consonant. Glides are reported not to be subject to degemination. For instance, *fraai jacht* ‘nice yacht’ is realized as
fra[j]acht in slow, careful speech and as fra[jː]acht at a normal speech rate, but not as *fra[jː]acht (Gussenhoven and Jacobs, 2006: 61). Given the fact that in current moraic models of the formal representation of the syllable it is impossible to distinguish geminate consonants from ambisyllabic consonants, the important question arises how these contrasts must be analyzed.

This talk reports on two production experiments set up to verify whether the duration of degeminated consonants actually does correspond to the claims in the Dutch phonological literature. The experiment reveals, contrary to Gussenhoven and Jacobs (2006), no durational difference for glides, but does instead show a clear differential durational behavior for fricatives. Average measurements durations from both experiments with different groups of speakers show that degeminated fricatives are significantly (around 50 ms.) longer than degeminated plosives (with a statistically) or liquids (without a statistically significant difference, but still with clear different allophonic properties), which thus would seem to lead to a three-way surface length opposition (short word-internal ambisyllabic consonants, short word-internal intervocalic consonants preceded by tense vowels, and long versus short (created by degemination) consonants. The results of the production experiment will be discussed in relation to the formal representation of the syllable. Rather than interpreting the production experiments as arguing for a return to a moraic+CV model of the syllable, we will shown them to be compatible only with a completely new view: Dutch does not have any word-internal ambisyllabic consonants at all, contrary to what has been claimed up until now. Furthermore, we will report on a perception experiment to verify whether the claimed results are robust enough for listeners.

References


Phonetics/phonology mismatches in Italian and Italo-Romance geminates

_Diana Passino, Università di Roma 3_

This contribution highlights some phonetics/phonology mismatches concerning geminates in Standard Italian, regional varieties of Italian and Southern Italo-Romance dialects. In these languages consonant length is usually distinctive, as shown by the presence of minimal pairs (It. *kane* ‘dog’~*kanne* ‘reeds’ Calabrian *misi* ‘month’~*missi* ‘holy masses’). However, some long consonants exist lacking a singleton counterpart, like for instance *ʎ, ɲ, ʃ, ʦ, ʣ* in Italian. These segments are usually referred to as ‘intrinsic geminates’. /j/ on the other hand is always short in the Standard variety, while in the variety spoken in Rome is always long, together with /ʤ b and all the intrinsic geminates see above. While long /j/ is typical of Roman Italian, /dʤ/ and /b/ are intrinsically long in all Southern Italy, both in Italo-Romance dialects and in the Italian spoken in southern districts of Italy. For Italian it has been shown that acoustically the geminate singleton distinction is conveyed by duration of the consonant, duration of the preceding vowel and ratio between those durations (Rossetti 1995 among others). In addition geminates have been shown to be heterosyllabic in Italian and in Italo-Romance dialects (Loporcaro 1996).

This contribution highlights phonetic/phonology mismatches in the case of Italian and Italo-Romance geminates gathering evidence from:

- the distribution of the allomorphs of the Italian definite article (*lo* precedes geminates, heterosyllabic clusters and *j, il* precedes singleton consonants and tautosyllabic clusters)
- *Raddoppiamento Sintattico* (Chierchia 1983-86 among others), a productive gemination
process, which lengthens singleton consonants and first members of tautosyllabic clusters when following a stressed vowel.

- Differences in vowel quality in open and closed syllables.
- Vowel-zero alternations.

Among other things concerning intrinsic geminates, it is shown that /ʎ, ɲ, ʃ, ts, dz/, phonetically long segments, also behave as geminates phonologically in Italian and other Italian varieties. This straightforward relation, it is shown, does not hold for all dialects and regional varieties. In addition /j/, phonetically short in all Italian varieties but the Roman, is in fact long underlyingly, as shown by its phonological behaviour in definite article selection (it selects lo) and Raddoppiamento Sintattico (it surfaces as short also in Raddoppiamento contexts). /j/ then, phonologically belongs with intrinsically long consonants, but its length is only virtual, since it is spelt out as short, except in Roman Italian. The virtual geminate (cf. Ségéral and Scheer 2001) status of /j/ is also evident in some Italo-Romance dialects spoken in the Abruzzi. In the dialect spoken in Teramo not only does /j/ appear as short in Raddoppiamento Sintattico contexts, but it also patterns with long segments and heterosyllabic clusters in triggering vowel-zero alternations in the negative adverb non, which surfaces as nno before /j/. In addition, in the dialect spoken in San Valentino, where different vocalic allophones surface in open and closed syllables, intervocalic singleton /j/ is always preceded by the allophones appearing in closed syllable, as if it occupied two syllabic slots.

References

***************

Section B

English sonorant devoicing and aspiration of plosives in the pedagogical context

Wiktor Gonet, Maria Curie-Skłodowska University

Prerequisite to successful teaching of, when, and to what extent the English sonorants devoice, is an access to an up to date description of the implementation of the process in the speech of native speakers of English, illustrated with clear visualizations. Presentation of such a devoicing model constitutes the first goal of the present paper. It will be shown that the properties of actual native realization of sonorant voicing depart from the textbook descriptions.
The second goal of this paper is integrating the sonorant devoicing model with the aspiration of plosives. It will be argued that plosive aspiration can be treated as devoicing of the following vowel, implemented according to principles that are virtually identical with those governing sonorant devoicing, both in their motivation, implementation and perceptual effect. This view greatly facilitates the teaching of correct pronunciation of devoiced sonorants and what has been commonly called “aspirated plosives”.

Verifying a holistic multimodal approach to pronunciation training of intermediate Polish learners of English

Jolanta Szpyra-Kozłowska and Sławomir Stasiak, Maria Curie-Skłodowska University

In her book, Szpyra-Kozłowska (2015) develops a holistic multimodal approach to EFL phonodidactics arguing that, in order to be effective, teaching pronunciation to foreign learners should be devised in such a way as to cater for different learning styles by combining elements of auditory, articulatory, cognitive (phonetic and phonological) and multisensory training. She provides, however, no empirical evidence to show that this proposal is indeed superior to the traditional ‘listen-and-repeat’ procedure, commonly employed in the ELT classroom.

The present study attempts to verify the validity of the approach under discussion. It is a report on an experiment, carried out with 30 Polish intermediate learners of English, representing the pre-intermediate and intermediate level of general proficiency, who, for the period of three months, were taught selected aspects of English pronunciation (the interdental fricatives, the palatoalveolars, inflectional endings, strong and weak forms of modal verbs, stress in words with stress-neutral suffixes) in two ways: in Group A only ‘listen-and-repeat’ exercises were employed while in Group B a holistic multimodal approach was adopted. The study aimed at answering the following research questions:

- Which procedure, i.e. a ‘listen-and-repeat’ approach or a holistic multimodal training brings better improvement in intermediate learners’ pronunciation?
- Do the obtained results depend on the students’ learning styles?
- How do learners with different learning styles evaluate the holistic multimodal training?

Phonological Symmetry but Phonetic Asymmetry:
An Acoustic Study of Voicing Contrast in Stops and Fricatives in Russian

Mayuki Matsui, National Institute for Japanese Language and Linguistics, Japan

Introduction: Russian obstruents have voicing contrast, which includes stops and fricatives. Russian stops and fricatives behave symmetrically in phonological voicing processes, for instance, in regressive assimilation and word-final devoicing. However, in terms of phonetics, stops and fricatives are not symmetric. Because of their aerodynamic conditions, fricatives encounter more difficulty in maintaining vocal fold vibrations than stops do (Ohala (1983). In accordance with this claim, Barry (1995) reported that 25.6% of the Russian intervocalic voiced fricatives in her data were produced only with partial vocal fold vibrations. However, no comprehensive acoustic analysis of voicing contrast in both stops and fricatives in Russian has been undertaken. This study aims to document how voicing contrast is implemented in both stops and fricatives in Russian.

Production Experiment: The experiment was designed to examine the acoustic manifestation of voicing contrast in Russian obstruents, while controlling for orthography and word frequency effects. The speech material comprised 30 minimal pairs. All were nonsensical pseudo-nouns
Results and Discussion: The results showed that the vast majority of the stops were produced with full voicing, while 23.6% of the fricatives were produced with partial vocal fold vibration, consistent with Barry's findings (1995). The results also demonstrated that voicing contrast is maintained by some durational properties (e.g., preceding vowel duration), frequency properties (e.g., the value of fundamental frequency at the edge of the preceding vowel). In general, the results showed that although voiced fricatives are frequently realized only with partial vocal fold vibration, fricatives have a greater variety of cues to voicing contrast than stops do. This suggests that stops and fricatives have different mechanisms for implementing voicing contrast.

Summary: The present study examines how voicing contrast is implemented in stops and fricatives in Russian. In general, the results demonstrate that while stops and fricatives in Russian phonology behave symmetrically in terms of voicing, the acoustic manifestation of voicing contrast in stops and fricatives are asymmetric. This reflects the respective aerodynamic conditions under which vocal folds vibrate.

Selected references

Lexical stress in Russian stem classes: evidence from acquired surface dyslexia
Ulrike Domahs,* Janina Motczanow,** Richard Wiese* and Ekaterina Iskra,***
*Philipps Universität Marburg, **University of Warsaw, ***National Research University, Moscow

The present study investigates the production of different stress patterns by Russian speakers with surface dyslexia. As surface dyslexia is characterized by impaired access to lexical information and an intact grammatical component, metrical errors produced by people with surface dyslexia reflect regularizations of irregular stress patterns in a given language. It is not clear which aspect of metrical structure is regular in Russian, a language with contrastive stress and a plethora of idiosyncrasies. This paper reports the analysis of stress errors produced by people with surface dyslexia in a word reading experiment. In the majority of cases, stress was incorrectly shifted from the penultimate to the final syllable. The overgeneralization of final stress by participants suffering from surface dyslexia indicates that the final syllable is the default stress position in consonant-final nouns in Russian. In addition, the error patterns point to an interesting relation between stem types and stress errors. The increased number of errors in stems with mobile stress as compared to other stem types suggests that stress is lexically specified for these stems and is not derived by a default rule, as assumed in most previous theoretical analyses of Russian stress.
Russian Vowel Alternations: Lexical Faithfulness and Phonological Markedness

Naoya Watabe, University of Tokyo

The aim of this presentation is to argue that some phonological constraints should be indexed to the lexical properties in order to account for Russian vowel deletion and reduction. We will claim that only faithfulness constraints can be indexed lexically, contrary to Gouskova’s (2012) analysis of Russian and to Pater’s (2007, 2010) general discussion, which assert the necessity of the lexical indexation of markedness constraints. We further argue for the current theory by explaining loanword phonology in Russian.

(1) shows that Russian vowel-zero alternation is not fully predictable: while the word-final mid vowels are deleted when another vowel follows in (1a), such a vowel deletion does not occur in (1b). Gouskova (2012) suggests that the lexically-indexed markedness constraint eliminating mid vowels (*MIDL) dominates the faithfulness constraint banning vowel deletion (MAX). With regard to the fact that non-mid vowels also participate in this alternation due to the reduction of mid vowels, she explains such cases by assuming the lexically-indexed faithfulness constraint prohibiting vowel reduction (IDENTL) that is ranked higher than MAX.

Gouskova’s (2012) analysis, however, fails to account for the fact that a low vowel undergoes vowel reduction, but never alternates with zero. If a word possessing the final unstressed low vowel were lexically-indexed as the undergoer of the vowel-zero alternation, her grammar would predict deletion, rather than reduction, of the vowel when another vowel follows. In this presentation, then, we claim that the general faithfulness constraints prohibiting the deletion of underlying non-mid vowels should dominate the markedness constraint on vowels. The idiosyncrasy of the vowel-zero alternation can be explained if only the faithfulness constraint on the deletion of mid vowels is lexically-indexed.

Furthermore, the lexical indexation of markedness constraints should predict an unattested pattern of loanword phonology (Ito & Mester 1999, 2001). Russian loanwords never undergo vowel-zero alternation, but sometimes vowel reduction (2). This fact suggests that unaccented vowels are more marked than accented ones. However, if markedness constraints could be indexed lexically, then the constraint on accented (or all) vowels might dominate that on unaccented ones in some lexical domains, and we should encounter the loanwords undergoing vowel-zero alternation, but not vowel reduction.

In summary, some constraints should be lexically-indexed in order to account for the lexical idiosyncrasy of sound alternations, but such indexation must be restricted to faithfulness constraints.

Data:
(1) a. okon ‘window (gen. pl.)’ ~ okna (gen. sg.); p’en’ ‘stump’ ~ pn’i (nom. pl.)
   b. zakon ‘law’ ~ zakona (gen. sg.); st’ep’en’ ‘step’ ~ st’ep’eni (gen. sg.)
(2) más[tir] (master) ~ mástera (gen. sg.); adáp[ter] (adapter) ~ adáptera (gen. sg.)

References
Sunday morning

************************

Section A

Space matters: using word boundaries in Korean

Jieun Bark, University of Nantes

Whether Korean tense consonants are underlyingly geminates unlike plain consonants is a highly controversial issue (Kim H. 2011; Avery & Ildarsani 2001; Choi 1995; Kim R. 1974). Adopting GP2.0 (Pöchtrager 2006), we argue that this distinction should be expressed structurally. We present evidence from Post Obstruent Tensing (POT) variation due to morpho-syntactic categories: POT is explained by access to pre-existing space. Typical processes (Coda Neutralisation (CN) and Palatalisation (Pal)) like POT make use of space provided by word boundaries (Lowenstamm 1999, 2007, 2010). POT. An obstruent normally becomes tense when preceded by another obstruent (1).

(1) a. /hak+y/o/ → [hakk'y/o] school  
d. /ap+t/o/ → [ap't'o] front too  
b. /pak+s/u/ → [pak's'u] clapping  
e. /mas+c/ip/ → [mate'ip] good restaurant

However, there are exceptions (Ahn 1985). Compare noun (2a-b) and passive (2d-e) forming suffixes.

(2) a. /an+k/i/ → [ank'i] embracing  
d. /an+k/i/ → [angi] to be embraced  
b. /sum+k/i/ → [sun+k'i] hiding  
e. /sum+k/i/ → [sumgi] to be hidden

Following (Ahn & Iverson 2003), two possible scenarios arise: creation of a structure (3a) or using a pre-existing position (3b). (3) a. 

Following (Ahn & Iverson 2003), two possible scenarios arise: creation of a structure (3a) or using a pre-existing position (3b). (3) a. 

We argue that POT is triggered by access to word boundaries (where #c = evc and c# = cv) and driven by morphology (Lowenstamm 2012).

(4) a. /an+k/i/ → [ank'i]  
b. /an+k/i/ → [angi]

/k/ makes use of cv (4a) unlike (4b). The difference consists in selecting a root ‘\an’ (4a) or a word ‘\s/v\an’ (4b). To understand the implications of this claim, we turn to CN and Pal.

CN. [+anterior] are neutralised to [-ant, -cont] in coda (5).

(5) a. /næc/ → [næt] day  
c. /sæs/ → [sæt] past form of verb buy  
b. /s/ɪs/ → [s'ɪt] to wash  
d. /pæt/ → [pæt] red bean

Pal. /t, ð/, s/ are palatalised to [c, cʰ, s] before /i/ (6).

(6) a. /mat+i/ → [mači] the oldest son  
b. /os+i/ → [os+i] clothes-Nom

d. /pæt+i/ → [pæt+i] field-Nom  
e. /kat+i/ → [kæt+i] together
x can be annotated thus, m-command heads. \([\|]\) refers to coronals\{I\} (Tifrit & Voeltzel 2014) (7).

\[
(7) \quad /s/ \quad /t/ \quad /c/ \\
\quad x(1) \quad xO \quad xO
\]

CN is explained by pruning the first projection. Pruning is not required for fricatives: the resulting structure is well formed (8b).

\[
(8) \quad a. \quad /c/ \quad \rightarrow \quad [t] \quad b. \quad /s/ \quad \rightarrow \quad [t]
\]

In (9), /i/ gives the target consonant a non projecting onset \(i.e. [j]\). The intermediate structure /t/ is reduced to [c] by pruning of the first projection.

\[
(9) \quad /t/ \quad \rightarrow \quad [c] \\
\quad x(1) \quad xO \quad xO
\]

By showing how the representations naturally explain CN and Pal, we provide further evidence that the left word boundary \('#_\) is an initial CV reflecting complexity of tense consonants.

**Template: the interface of morphology and phono(tono)logy in Mandarin Chinese**

*Xiaoliang Luo, Université d'Orléans*

Assumptions have been made that Mandarin Chinese (MC) morphology is the juxtaposition of monosyllabic words. Somehow, phonetic data show that in a word or syntagm, the final syllable is twice as long as a non final syllable (Liu 2008). (Lowenstamm 1996; Scheer 2004), Charette (2005) considers that MC words have a template ending in a final CV unit, potential site of spreading and cliticization. Following her hypothesis, I will show that in MC, the word template ending in a final CV unit, which gives the syllabic size, is the interface of morphology and phonology (tonology). In this abstract, I will give the 3rd tone (T3 [L.H]) as example, which reveals the presence of the final CV: in monosyllabic words or in the final syllable of plurisyllabic words, T3 has two possible realizations (complete or incomplete), shown, respectively, in (1a) and (1b). In contrast, in non-final positions, the T3 is truncated and can only be incomplete (1c). In other words, in (1c) the floating H (underlined) cannot be realized. Finally, the comparison between (1d) and (1e) shows that the perfective morpheme la suffixed to a T3 lexical unit (cf. 1e) receives the floating H tone of the T3. In (1d), the realization of the floating H tone is optional:

\[
(1) \quad L \quad H \quad L \quad H \quad LH \quad HL \quad L \quad H \quad L \quad H \\
\quad a. \quad CV+CVfin \quad b. \quad CV+CVfin \quad c. \quad CV-CV+CVfin \quad d. \quad CV+CVfin \quad e. \quad CV+CVfin \\
\quad ma \quad ma \quad ma \quad ma \quad ma \quad ts \quad o \quad ts \quad o \quad la
\]

‘horse’ ‘horse’ horse-road ‘highway’ ‘to go’ go-perf ‘went’
The alternative realizations of T3 in final and non-final positions are conditioned by the template composed of root CV unit(s) and the final CV. It can be demonstrated that other phenomena, such as 3rd tone sandhi, truncated 4th tone, monophthongization of diphthong, are also conditioned by it. Assuming a syntactic approach to word-formation (Embick 2010), we propose that in MC, the final CV unit spells out the category-defining head, e.g. n/v/a.

(2) \[ √ v/n/a \] vP/nP/aP

\[ CV. \ C V_{\text{fin}} \]

The template, on the one hand, is the linearization of morphological information, shown in (2), on the other hand, it conditions phono(tono)logical materials, shown in (1), and becomes thus the interface of morphology and phono(tono)logy.

**Representing non-neutralization in Polish sandhi-voicing**

*Geoff Schwartz, UAM Poznań*

The realization of Polish laryngeal contrasts has been the subject of a great deal of phonological investigation (Cyran 2013 and many references therein). One persistent riddle in this area concerns a *sandhi*-voicing process at word boundaries, which has been described in terms of two dialectal varieties. In Central and Eastern dialects (Mazovian), regressive voice assimilation is observed at word boundaries only when the second word starts with a voiced obstruent. In Southern and Western dialects (Lesser and Greater Poland), voicing is observed additionally before word-initial sonorant consonants and vowels.

Previous phonological analyses of Polish *sandhi*-voicing have been concentrated on laryngeal specifications, and in particular the question of how sonorants and vowels, which are generally assumed not to be specified for laryngeal properties, may acquire laryngeal features and induce changes in the realization of neighboring obstruents. Strycharczuk (2012) performed a rigorous acoustic phonetic analysis of Polish *sandhi*-voicing. She found that voicing before obstruents is optional, and when it occurs it is categorically sensitive to the underlying laryngeal specification of the obstruent. That is, the voicing process before sonorants does not neutralize laryngeal contrasts, in stark contrast to what is assumed in earlier studies.

It appears, then, that explaining Polish pre-sonorant voicing is not a matter of phonological assimilation, but rather it is a question of how segmental specifications such as laryngeal features interact with prosodic boundaries. In the Onset Prominence framework (Schwartz 2013), segments and prosodic constituents are built from the same representational materials allowing for a unified view of segmental representation and boundary formation. Certain positional phenomena are built into in segmental representations, allowing for an insightful perspective into the question of contrast and neutralization. Importantly, Strycharczuk’s findings may be given a phonological interpretation, reflecting their categorical nature.

Relevant representations are shown in (1). Polish, as a voicing language, assigns laryngeal specifications at the VO level of the OP hierarchy (Schwartz, forthcoming). At the same time, however, the VO node is not active in obstruent representations in Polish (Schwartz forthcoming), so laryngeal features need the ‘help’ of a following VO-specified vowel to be phonetically realized (left pair of structures in (1)). Thus, the representation of an obstruent contains a latent (unary) VO node that houses laryngeal specifications. When no following vowel is present, the latent VO and its laryngeal specification may be eliminated. The categorical distinction in Polish obstruents as individual segments (or allophones if you will) is between structures with and without a latent VO that houses a laryngeal specification (right pair of structures in (1)). Speakers therefore have the option of ‘choosing’ the form with the laryngeal feature and maintaining the contrast, which is
nonetheless phonetically weak and not reliably perceptible, since the vowel that aids in its realization is missing.

The other question that needs to be addressed is why voicing occurs before obstruents across the board, but only optionally before sonorants. Stated briefly, the explanation is that sandhi-voicing before sonorants and obstruents is in fact two different phenomena, as suggested by Strycharczuk. In accordance with the phonotactic mechanisms of the OP environment (Schwartz 2013), the pre-sonorant position is less likely to be associated with ‘finality’ since the obstruent and initial sonorant may join into an onset cluster. In this case, dialect speakers may choose the non-neutralized allophone and maintain the laryngeal contrast even in the presence of context-induced spontaneous voicing. By contrast, the pre-obstruent position is more likely to be ‘final’ than the pre-sonorant position. Consequently, the neutralized ‘allophone’ of the final obstruent appears and undergoes voice assimilation.

(1) Pre-vocalic realization of laryngeal feature (leftmost pair of trees); Neutralized and non-neutralized ‘allophones’ of Polish stops (rightmost pair of trees)

References
Schwartz, G. Forthcoming. All gradience is not created equal. Available at: https://www.academia.edu/9320733/All_gradience_is_not_created_equal_-_chapter

Whistled Moroccan Tamazight at the interface between phonetics and phonology

Julien Meyer* and Rachid Ridouane**
*Laboratoire sur le Langage la Cognition et le Cerveau (L2C2), CNRS, Lyon
**Laboratoire de Phonétique et Phonologie (LPP), CNRS, Paris

This study reports the results of a phonetic study of whistled Moroccan Tamazight. Whistled speech is an ancient traditional and natural practice that consists in a phonetic emulation and transformation of the spoken signal into a simple melodic line made up of frequency and amplitude modulations of a whistled signal. It is primarily used for long distance communication because whistles are well
suited for propagation in natural environments and resist well to background noise. We recorded four Moroccan Tamazight speakers in the High Atlas producing this non-standard speech register. Given its particular characteristics, namely the extensive presence of words and syllables without vowels, the opportunity Tamazight affords for the execution of whistling may be particularly challenging. Here, we examine how speakers whistle a selected set of words and sentences and discuss the results from phonetic and phonological perspectives. We focus more specifically on syllable structure and how it relates to the vocalic and consonantal system of the language. As far as full vowels are concerned, we show that they are whistled in intervals of frequencies that follow the same pattern as was observed for other non-tonal languages (e.g. Spanish, Turkish, and Greek). This whistled behavior contrasts with Tamazight schwa-like elements [@] that are found to be whistled within a much larger frequency range that greatly overlaps with the three full vowels. This is probably due to the absence of a specific target for [@] and we observe that the presence and the whistled frequency levels associated to this optional element depend largely on the gestural timing configuration of the surrounding consonants and therefore on their locus of articulation: coronals modulate towards high frequencies; labials, labiodentals and uvulars modulate towards low frequencies. Another particularity of whistled Tamazight contrasting with whistled Turkish, Greek or Spanish concerns consonant clusters in which the different consonants are not only maintained but are over articulated making schwa elements within clusters highly discernible. We argue that the way Tamazight consonant clusters are whistled probably reflects the underlying syllable structure of these sequences (partitioning of consonant-only syllables, light and heavy syllables quasi systematically rendered differently). All together, these results show new perspectives opened by whistled speech to analyze to what extent abstract cognitive abilities of native speakers of a language influence their realization of the phonemes, with, here, the striking case of single consonants or sequences of two consonants that constitute well-formed syllables.

A dichotic listening study of Cypriot Greek initial consonant clusters

Faith Chiu, University College London

This paper presents preliminary experimental results in Standard Southern British English and Cypriot Greek initial consonant cluster perception. Word-initial clusters in Cypriot Greek can be divided into two main types: rising sonority clusters such as – /pr/, /tr/, /kl/ – can be considered as a branching onset (TR), and falling sonority coda-onset sequences such as /st/, /tt/, /rk/ (RT). With the exception of /sC/ clusters, English does not possess any other falling sonority coda-onset sequences at the beginning of a word.

This study uses a dichotic listening paradigm to probe consonant cluster representation. We follow in general and modify experimental methodology presented in Dumercy, Lavigne, Scheer and Ziková (2014), inspired by Cutting (1975). With different audio input presented in the left and right ear, we expect the production of a percept from possible fusion – e.g. in English ‘pay’ and ‘lay’ given to different ears can produce ‘play’ – which is not different from the McGurk effect (McGurk & McDonald, 1976). We measure the fusion rate and investigate if the perceived sequencing of consonant clusters in a dichotic listening paradigm is bound by phonotactic rules in a language like Cypriot Greek where there are variations to licit coda-onset sequences initially.

In addition, we present a list of acoustic manipulations which can be made to speech stimuli to fine-tune the acoustic input in dichotic listening experiments. These adjustments such as splicing techniques and normalization further develop Dumercy et al.’s paradigm.

Data collection is currently in progress.
Section B

An articulographic analysis of the retroflex character of Polish post-alveolar sibilants

Radosław Święcinski* and Anita Lorenc**
*University of Amsterdam, **Maria Curie-Skłodowska University

The goal of the study was to verify experimentally claims that Polish post-alveolar sibilants are articulated in a retroflex manner (e.g. Hamman 2003, Žygis & Hamman 2003). Articulographic recordings of words pronounced by 20 native speakers of Polish were analysed. The tokens subjected to measurements contained intervocalic post-alveolar consonants that constituted onsets of stressed syllables (e.g. kaszanka ‘black pudding’).

The framework for analysis was based on four articulatory properties of retroflex sounds, as described by Hamman (2003); namely, apicality, posteriority, sublingual cavity, and retraction. Also tongue-mid lowering was taken into consideration. The obtained results show that all of the five characteristics are attested in standard Polish articulation and that phonological accounts of this group of consonants should reflect their retroflex properties.

References

Acoustic properties of fricative and affricate geminates in Polish

Arkadiusz Rojczyk, and Andrzej Porzuczek, University of Silesia

Double consonants letters in written Polish regularly refer to geminates, which are phonetically realised by relatively longer duration or, less frequently, rearticulation. Double consonant letters have no other function than to indicate two phonemes, since in hyperarticulated speech rearticulation is frequently observed. Polish has both true geminates, with a phonemic distinction between singleton and geminate consonants, e.g. leki ‘medicines’ - lekki ‘light’ (Adj.), as well as fake geminates, derived through morphological processes (Pająk 2009; Rubach 1986; Rubach and Booij 1990; Sawicka 1995; Thurgood 2002; Zajda 1977). Although it is suggested that rearticulation of geminates becomes more and more common in contemporary Polish (Kozyra 2009), a recent study on Polish nasal geminates reported only 3% of rearticulation, with a vast majority of geminate productions characterized by single articulation with extended duration (Rojczyk and Porzuczek 2014).
In the current study, we investigated the production of Polish fricative and affricate geminates. A group of native speakers of Polish produced words with target geminates in isolation and in sentences. The properties of investigated geminates were analyzed in waveforms and spectrographic displays. We measured the rate of single and double articulation. We also looked at duration of single-articulated geminates and the length of preceding and following vowels. The results were expected to show if single articulation is a widespread phenomenon in contemporary Polish and what durational properties characterize single-articulated geminates.

References

Focus marking and Pitch Register modification in Boro

Kalyan Das and Shakuntala Mahanta, Indian Institute of Technology Guwahati

This paper describes the prosodic aspect of the expression of prominence in Boro. The results have been collected from the data from four production experiments investigating the phonological properties of Boro words occurring in various context of prominence like wide focus, contrastive focus, corrective focus, ex-situ focus and narrow focus with emphatic particles. Boro belongs to the Tibeto-Burman group of languages, and forms a branch along with Dimasa, Tiwa and Kokborok. Boro lexically distinguishes L and H tones, and the H tone is pronounced with a rising contour and the L tone with a falling contour. Tones in Boro follows the pattern of right alignment (Sarmah, 2004) both in non-derived and derived disyllabic words. In a detailed study of narrow focus marking in Boro, Mahanta, Das and Gope (forthcoming) show that this kind of prominence is expressed by post-focal compression. The experiments discussed here involve two monosyllabic and two disyllabic target words with the first one in each group having H specification and the other one with L specification. The target words were placed in carrier sentences to elicit the various focus conditions discussed here. Wide focus was elicited by recording the same sentences in out of the blue situations without any context. Ten speakers of Boro were asked to produce scripted sentences containing the following target words: [bɔ̀n] ‘firewood’, [zɯ̀o] ‘ricebeer’, [daodɯí] ‘egg’ and [bedòr] ‘meat’. 30 tokens for each of the sentence expressing the focus conditions mentioned above (3 tokens x 10 speakers) were examined. F0 normalized pitch curves and durational values of the target words were extracted with the aid of Prosody Pro (Xu 2013) in Praat. The pitch contours of the Intonational Phrases (IP) suggest that the global intonation pattern of Boro clauses undergoes significant modification with the presence of contrastive focus. On the other hand ex-situ focus is
expressed by intermediate phrase boundary marking. Focus marking with emphatic particles results in two distinct prosodic modifications. An H* is associated to the particle itself and the pitch-range of the whole IP is raised. Both contrastive focus and corrective focus are expressed by compression of the duration of the focused words. A second prosodic means used for contrastive and corrective focus is the phonological feature of lowering the register of the IPs expressing these two kinds of focuses.

References
Mahanta, Shakuntala, Kalyan Das and Amalesh Gope (forthcoming): The Phonetics and Phonology of Focus and Intonation in Boro.

Stress shift across empty categories in Brazilian Portuguese: Experimental results

Raquel Santos, University of São Paulo

Nespor & Vogel (1986/2007) claim that prosody does not take into account empty syntactic categories in its parser. However, Santos (2003) and Nunes & Santos (2009) have analyzed the context Transitive Verb – Empty Category – Adverb in Brazilian Portuguese (henceforth BP) and shown that speakers allow stress shift between a Verb and an Adverb when the empty category is a trace, but not when it is pro. Here, I discuss further data on stress shift in BP which could potentially support one of these approaches.

In BP, stress shift is an optional process that occurs inside Phonological Phrases, involving syllables that carry primary stress (Abousalh, 1997). Stress may move to the first syllable to its left which carries secondary stress inside the relevant domain or, alternatively, no movement occurs and the syllable with secondary stress gets lengthened.

Here I examine the results of a production experiment on stress shift in four types of sentence: (i) with trace in long sentences, (ii) with trace in short sentences, (iii) with pro, (iv) with no empty syntactic category. 32 informants read 144 sentences (in clash and no-clash conditions). Three measurements were taken: the first syllable in the context, the whole context of stress clash, and the syllable that carries secondary stress.

The findings reveal a puzzling pattern. First of all, the statistical results show that the syntax-phonology interaction (p<,0001), the presence of stress clash in the sentence (p=0,0016), and the informant (p=,0001) were significantly relevant in all three measurements. It was also found that the size of the sentence (trace/short vs. trace/long) is not relevant (p=0,3579 for the whole context). Interestingly, the sentences without an empty category presented a different pattern from the sentences where there was an empty category in the context (either pro or trace) (p=,0001 for all cases, in the whole measurement context). However, there was no significant difference between pro and traces.

What emerges from this picture is that informants mark in some way if there is or there isn’t an empty syntactic category between the verb and the adverb, which goes against Nespor & Vogel’s proposal that the prosodic parser does not take empty categories into account. On the other hand, these results also seem to be at odds with Santos (2003) and Nunes & Santos (2009), for the kind of empty category was not statistically significant. I will however show that these apparent contradictory results can in fact be explained due to the optional nature of stress shift in BP and the different tasks involved in the aforementioned studies.
The Variable Raising of Mid Vowel in Brazilian Portuguese:  
the case of a Polish-Italian descendant community

Cláudia Regina Brescancini and Ivanete Mileski, PUCRS, Brazil

In Brazilian Portuguese (BP), mid vowels /e/ and /o/ are variably raised to [i] and [u] in pretonic position (as in pepino ~ pipino (‘cucumber’) and coruja ~ curuja (‘owl’)) and in postonic position (as in leite ~ leiti (‘milk’) and bolo ~ bolu (‘cake’)). In pretonic position, the process is triggered by contiguous high vowels (as in pipino and curuja above) in a variable regressive assimilation process (Bisol, 1981) called vowel harmony (VH). In postonic position, although it is not the trigger, the precedent contiguous high vowel is pointed (Vieira, 2002, 2010 and Machry da Silva, 2009) as one of the conditioners of the variable raising (as in filme ~ filmi, (‘movie’) and milho ~ milhu, (‘corn’)), characterizing a variable progressive assimilation process.

These two processes are examined in this study in the light of the Sociolinguistic Quantitative Theory (Labov, 1972) in two samples of Brazilian Portuguese spoken by a southern Brazilian community of Polish and Italian immigrant descendents (Vista Alegre do Prata, Nova Prata and Nova Bassano) where three different linguistic systems are in contact: Polish, in which mid vowels /e, o/ are not present; Italian, in which they are present in final position, but are not variably raised, and Brazilian Portuguese, as described above. The speakers considered are all adults from 18 years old on, men and women, descendants of Polish immigrants.

The results show that in general the raising tax is lower in this community than it is in other southern Brazilian communities (as registered by Vieira, 2002, 2010, Machry da Silva, 2009 and Casagrande, 2003). Concerning the postonic position, the statistical results show that the preceding high vowel is a stronger conditioner for /o/ vowel, but not for /e/ vowel and consequently /o/ vowel raising tax is higher than /e/ vowel raising tax. Differently, Vieira (2002, 2010) and Machry da Silva (2009) show the role of the preceding high vowel for both /o/ vowel raising and /e/ vowel raising. In relation to the pretonic position in which the precedent high vowel is the trigger of the process, /o/ vowel raising tax is also higher than /e/ vowel raising tax.

In conclusion, these results suggest that the variable assimilation processes related to mid vowels, although present in this bilingual community, do not follow the same conditioning found in other southern monolingual Brazilian Portuguese varieties, what can be understood by crosslinguistic influences.

References


