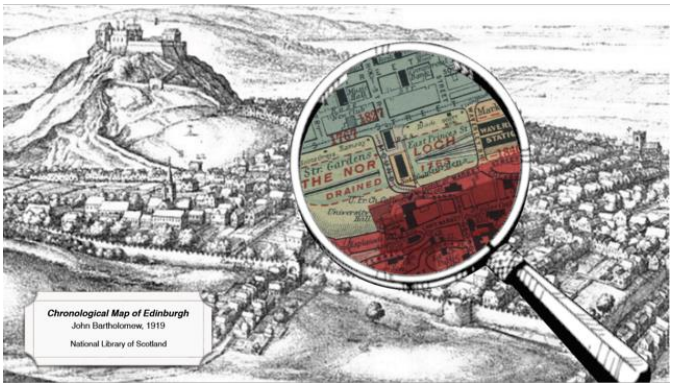
The Third Edinburgh Symposium on Historical Phonology



ABSTRACTS BOOKLET

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TALKS

The FOOT-STRUT vowels in Manchester: synchronic evidence for the historical trajectory of the split?

Maciej Baranowski (University of Manchester) and Danielle Turton (Newcastle University)

This study presents a large-scale investigation of synchronic sociolinguistic variation in the phonetic realisation and phonemic status of FOOT and STRUT in Manchester English, with the aim of interpreting synchronic variation as a key to diachronic change. As a Northern dialect of English, Manchester speakers typically lack the distinction between the FOOT and STRUT vowels, such that *stud* and *stood* are homophones. The data in the present study reveal that, despite the vast majority of speakers having no difference in production and perception, there is variation both in the phonemic status and the phonetic realisation of the two vowel classes within the speech community.

The study is based on a sample of 123 speakers stratified by age, gender, socio-economic status, and ethnicity, recorded in sociolinguistic interviews, supplemented with wordlist reading and minimal-pair tests. Formant measurements of the informants' complete vowel systems are obtained in Praat by hand for 25 speakers and in FAVE (Rosenfelder et al. 2014) for 98 speakers (including 7653 tokens of STRUT and 4057 tokens of FOOT). The results are analysed in a series of mixed-effects linear regressions in R (lme4), with social (age, gender, ethnicity, social class, style) and internal factors (phonological environment and lexical frequency) as independent variables, and speaker and word as random effects. We consider multiple measures of social class, including occupation, education and a multi-level socio-economic index, exploring which option results in the most robust statistical model.

Our approach to the analysis considers the vowel classes both as one phoneme, and as the two split lexical sets. The acoustic measurements reveal that tokens in the STRUT category show a monotonic pattern of social class stratification, with higher social classes showing higher F1 values, i.e. having a lower tongue position (Fig. 1).

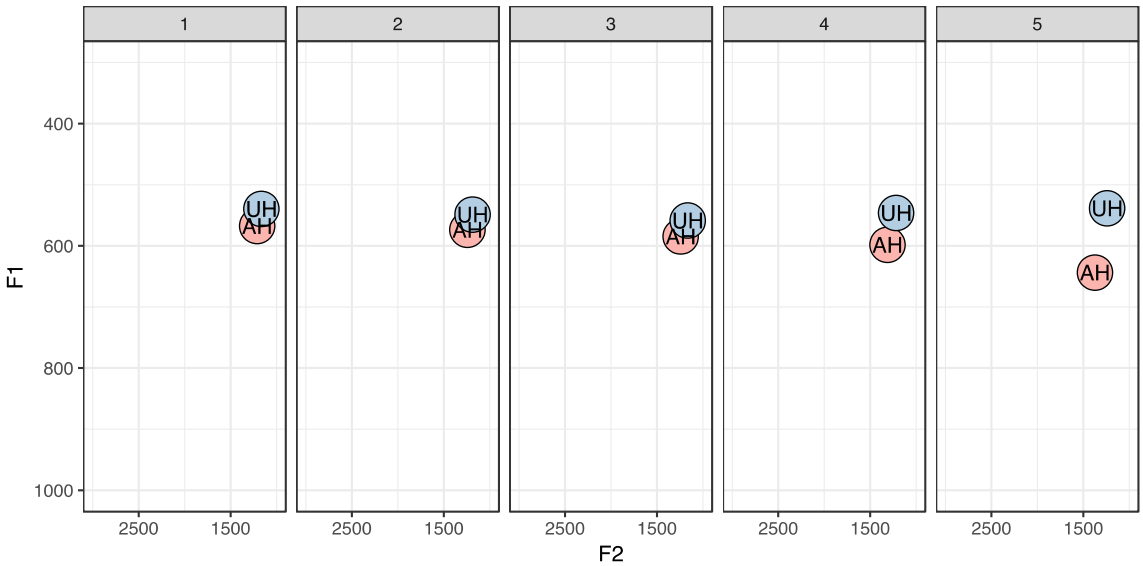

Figure 1: Vowel plots for speakers across five socio-economic classes (1 –lower working, 5 - upper middle). Arpabet codes show UH for FOOT words and AH for STRUT words.

Interestingly, even when removing upper middle class speakers with a true split from the sample, regression analysis shows that vowel category (i.e. STRUT vs. FOOT) continues to have a significant effect, with STRUT tokens having a higher F1 mean (lower tongue position). This holds in cases where there is complete overlap between the two vowels in phonetic space. We explore the possibility that this may be due to the different phonological environment in which the two vowel classes tend to be found and that it may shed light on the underlying mechanisms of the historical split between the two vowel classes in the south of England.

The *Anatolian Dissimilation Rule* Revisited

Paul S. Cohen (Independent Researcher) and Adam Hyllested (University of Copenhagen)

The *Anatolian Dissimilation Rule* (*ADR*) was first introduced in an oral presentation (Cohen & Hyllested [2006]) and first published—with much less associated detail—in Cohen & Hyllested (2012), though it had been partially prefigured in, e.g., Hart (2004) and Olsen (2006). As given in Cohen & Hyllested (2012), the *ADR* expresses the following sound change(s): Proto-Indo-European **h₃*[1] > {Hittite *š*; Luvian *t/d*; Lycian, Milyan *t*; Lydian *s*} / ## _ X labiovelar[2] Y, where X and Y are arbitrary (possibly null) phone strings and X does not contain #.

There are five[3] PIE roots that are subject to the *ADR*, and all of them exhibit the appropriate outcomes in Anatolian:

- PIE **h₃ok*^{w}- 'eye' > Hitt. *šākui-*, *šākuwa-* 'id.'; Luv. *tāwa/ī* 'id.'; Lyc. *tewe-* 'id.'; Mil. *tewe-* 'to face'; Lyd. *saw-* 'to see'
- PIE **h₃ēh₂u̯r* 'urine' > Hitt. *šēḫur* 'id.'; Luv. *dūr*(/*dūn*) 'id.'
- PIE **h₃n̥g*^{h}*w-* 'fingernail, toenail' > Hitt. *šankuwai-*, *šankui-* 'id.'; Luv. *tammūga* 'nails' or 'nail-clippings'
- PIE **h₃óng*^{w}*n̥* 'fat, butter, salve' > Hitt. *šagan* 'oil, fat'; PIE **h₃n̥g*^{w}*ēn* 'id. (collective)' > Luv. *tāīn* / *tāin* 'oil, fat'
- PIE **h₃*(*o*)*rh₂u̯ent-* 'innards; intestine(s)' > Hitt. *šarḫuwant-* 'belly, innards, womb; fetus' (cognate with Gk. *ὀρύα* 'intestine, gut; sausage')

The *ADR* covers all the relevant items very well. Moreover, it has two other salutary effects:

1. It eliminates the need for the *ad hoc* invoking of *s*-mobile in the Anatolian forms.
2. It explains the otherwise anomalous correspondence of Hitt. *š* and, e.g., Luv. *t*/*d*.

Nevertheless, the *ADR* has not been widely accepted. Potential reasons, to be discussed, are, *i.a.*,

- Whether the change of a voiced, labialized faucal fricative into a voiceless apical or palatal obstruent is a "possible sound change" (cf. Blust [2005], Honeybone [2016]), and, if not, what intermediate stage(s) would be required.
- Whether exceptionless sound changes involving dissimilation-at-a-distance are "possible".
- What influence a language's synchronic phonological system has on the outcome of a phonemic change.
- Whether the phonetic complexity of **h₃* and (thus) its relative infrequency in the PIE lexicon affect the range of possibilities it can change into.

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[1] In keeping with the *communis opinio*, we take **h₃* to have been a voiced, labialized, faucal (i.e., non-glottal post-velar) fricative.

[2] The PIE class of (phonological) labiovelars is comprised of *k*^{w}, *g*^{w}, *g*^{wh}, *u̯*, and *h₃*—though there are no generally-accepted roots that instantiate the sequence *h₃* … *h₃* (…).

[3] In addition, some authorities reconstruct the PIE 'bird'-word as **h₃eu̯is*, and, in the past, the Hittite hapax *šuwais*, glossed as 'bird', was assumed to be derived from it. The *ADR* would yield the Hittite form straightforwardly; however, Kloekhorst (2008: 795) argues strongly that *šuwais* actually means 'rejection', and thus it is probably irrelevant to our discussion.

Phonologisation in the history of Latin: case studies

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The presentation focuses on certain sound changes in early Latin and in the prehistory of Latin as well as on the emergence of certain phonological patterns in the same periods. In particular, consonant changes at prefix–stem boundary, various types of assimilation, and the phonological properties of reduplicated forms are analysed in detail.

The theoretical challenges that these phonological changes and patterns present are manifold. We concentrate on issues that pertain to the architecture of the phonological component and the interaction between phonology and morphology. More specifically we seek answers to the following questions:

- How do these phonological phenomena interfere with morphological patterns?
- Do they corroborate hypotheses about the organisation of the phonological component (specifically its articulation into stem level, word level and phrase level)?
- Do they corroborate hypotheses about the life cycle of phonological processes? (Bermúdez-Otero & Trousdale 2012, Bermúdez-Otero 2015)
- Do they provide evidence of a difference between analytical listing, non-analytical listing and lack of listing? (Bermúdez-Otero 2013)
- What evidence do we have for domain narrowing?

In the case of prefixed forms (Prinz 1949, 1953) opacity, lexicalisation and the varying degrees of transparency observed render the analysis particularly challenging, but the possibility of recomposition shows that prefixation may not necessarily belong to one single level. In the case of perfective reduplication (Cser 2009) it is argued that a diachronic transition between levels is evident not only because of a radical loss of productivity but also because the phonotactic properties of reduplicated forms differ greatly in Latin vis-à-vis what is reconstructed for Proto-Indo-European. Various assimilations that are in evidence (cf. Sen 2015) show rule loss in some cases but persistence in others; a close analysis of such processes also contributes to a better understanding of the relation between phonological change and the architecture of the phonological component.

In terms of data, the work is based on volume 1 of the Brepols Corpus (CLCLT-5 – Library of Latin Texts by Brepols Publishers, 50+ million words).

The phonetics of NCh in Tumbuka and implications for diachronic change

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As Kerremans' (1980) thorough survey shows, a wide range of reflexes of Proto-Bantu *NT are found in modern Bantu languages. While voicing of the post-nasal obstruent (*NT > ND) might be the most well-known (see, e.g., Pater 1995), it is also extremely common for the post-nasal obstruent to undergo aspiration: *NT > NTh. (See Hamann & Downing 2017 for detailed discussion.) In a number of Bantu languages, either the nasal or the stop portion of the NT(h) sequence is deleted, in both cases leaving behind an aspirated or breathy voiced consonant: NTh > Th OR NTh > Nɦ > ɦ, as illustrated in the table below:

Synchronic outcomes of Proto-Bantu *NT; words in Class 9/10 (nasal class)

Proto-Bantu	Chichewa	Central Shona	Venda	English
*-pada	m-phalapala	m-ɦara	phala	'gazelle'
*-kuni	ŋ-khuni	ɦuni	khuni	'(piece of) firewood'
*-ntu	mu-nthu	mu-nɦu	mu-thu	'person'

Work like Givón (1974), Hinnebusch (1973) and Kerremans (1980) has argued that these developments motivate the following historical scenario. First, neither NT > Nɦ nor NT > Th is the result of a one-step change. Rather, these outcomes have developed from a phonologization "seriation": NT > NTh > Nh **or** Th. Further, it is crucially assumed that the nasal in the intermediate NTh sequence must be voiceless, in order to motivate the further developments (to Nh or Th), in particular the loss of the nasal. However, phonetic studies of modern Bantu languages, like Ladefoged & Maddieson (1996), Maddieson (1991) and Huffmann & Hinnebusch (1998: H&H) fail to support these scenarios. In the languages investigated, nasals in an NTh sequence are only variably voiceless. As a result, Maddieson (1991:152) concludes by stating categorically that: "… diachronic development of aspirated nasals did not involve any stage in which the nasal portion became devoiced…"

Maddieson (1991) proposes that gestural realignment can account for the post-nasal aspiration (NT > NTh) step in the diachronic seriation: if the laryngeal [-voice] gesture of a voiceless stop is delayed, aspiration is the straightforward result. As H&H point out, though, aspiration is considered to require an additional gesture. It cannot result simply from realigning [-voice]. (See Hamann & Downing 2017 for discussion.) Further, it is unclear how gestural realignment alone could account for the deletion of the stop or the nasal portion of NT in languages where NTh > Nh or NTh > Th. Neither Maddieson nor H&H discuss these further developments of NTh.

Stanton's (2016) recent survey of the distribution of NCs cross-linguistically also sheds no light on why NTh might undergo further historical change. Both the nasal portion and the release of an NTh are in the optimally perceptible position when they occur intervocalically. Stanton's survey of phonetic studies of NC sequences (and there are surprisingly few of them) suggests, in fact, that ND should be more unstable than NT(h), since the nasal and obstruent closure phases are more balanced in duration for NT(h) than for ND.

In this talk, we present a careful phonetic study of NC sequences in Tumbuka, a Bantu language (N.21, Malawi) where NT > NTh. We will show how the acoustic and perceptual properties of these sequences plausibly motivate the loss of the nasal or stop portion of the NTh sequence found in related languages.

Situating Sylheti phonology in Eastern Indo-Aryan

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The Sylheti language is spoken in eastern Bangladesh, and by emigrant communities in the US and UK. It is considered by Bengalis, including its speakers, to be a dialect of Bengali, used by the rural and uneducated; the medium of education in Bangladesh is Standard Bengali (Bangla), and the Sylheti writing system, Sylhoti Nagri, is defunct. But Sylheti is distinct from Bangla in many ways, including vocabulary, syntax and phonology.

I examine the phonemic inventory of Sylheti, and compare it to Bangla, to Assamese (spoken in neighbouring Assam) and to Middle Indo-Aryan. I look at repair strategies for syllable structure from Old Indo-Aryan, and the mismatch between Sylhoti Nagri and modern Sylheti.

For example, the most striking feature of Sylheti as an Indo-Aryan language is its absence of contrastive aspiration. Bangla has lost the aspiration contrast in final and pre-consonantal position (Pattanayak 1966, Masica 1991: 204). Sylheti, along with other East Bengali dialects (Masica 1991: 103), has extended this merger to all positions.

The Indo-Aryan palatal stops are produced in Bangla as affricates. In Sylheti, as in Assamese these have fully spirantised to alveolar fricatives. This gives rise to a voicing opposition in the alveolars, not commonly found in Indo-Aryan. Affricates are retained in post-nasal position, and in geminates. Despite the historically parallel treatment of voiced and voiceless affricates, loan items are treated differently. Voiced affricates – e.g. from Bangla items – are fully spirantised, whereas voiceless affricates tend to be retained.

Unlike both Bangla and Assamese, Sylheti does not have nasal vowels. Despite the general ban on homosyllabic CC sequences, reflexes of VNC sequences in Sylheti retain the nasal-stop cluster from Middle Indo-Aryan. Unlike the differences described above, this is reflected in Sylhoti Nagri, and seems likely to be an exception to the mainstream development, rather than an innovation through nasal vowels back to oral vowel – nasal sequences.

Sylheti employs several strategies to repair illegal onset sequences of consonants: metathesis, anaptyxis and prothesis. Anaptyxis is employed where metathesis would give rise to complex codas. Prothesis is employed for loan words with an initial sT cluster, regardless of whether metathesis was possible. Anaptyctic vowels vary in quality, perhaps determined by vowel harmony, a feature of both Bangla and Assamese. Prothesis uniformly uses [ɪ], perhaps because of vowel harmony being blocked by the coda consonant.

Sylheti phonology lacks innovations common to both Bangla and Assamese, whilst incorporating other innovations found solely in Bangla, solely in Assamese, and in both. Overall, its phonology more closely resembles Bangla-Assamese than Oriya, but the complex pattern of shared innovations defies its easy categorisation as an offshoot of Bangla.

The phonetic realization of Proto-Basque stops and the reconstruction of laryngeal contrasts

Ander Egurtzegi – University of Munich (LMU)

Modern Basque shows an opposition between two stop series: voiced /b d ɟ g/ vs. voiceless /p t c k/. This opposition is described as voiced vs. plain voiceless, with non-contrastive voiceless aspirated variants of the plain voiceless stops in some eastern dialects (Hualde 2003). Nevertheless, most authors (cf. Martinet 1950; Michelena 1977; Trask 1985; Hualde 1999; Lakarra 2013) reconstruct a different system for Proto-Basque, which lacks the segments /p c ɟ/ and whose opposition doesn't necessarily involve voicing.

The classic reconstruction of the Proto-Basque stop system was first proposed by Martinet (1950) and then accepted and expanded by Michelena (1977). According to Martinet, there were two series of stops (fortis and lenis) and these had different phonetic realizations according to the position of the word in which they were located. The fortis series was produced as voiceless aspirated in word-initial position and as devoiced or plain voiceless word-medially, preceding an unstressed vowel. The lenis series was realized as devoiced in word-initial position and as voiced fricatives or approximants word-medially. This reconstruction was based on Martinet's hypothesis that Proto-Basque had word-initial demarcative stress, a proposal that has been rejected in the recent literature (Egurtzegi & Elordieta 2013, Egurtzegi 2014). In order to check whether Martinet's proposal is still convincing after the dismissal of his hypothesis for the stress system, we explore the evidence for the different realization of each stop series in each position of the word. The evidence internal to Basque that will be presented includes the distribution of aspirated stops in the modern language, different processes of devoicing, intervocalic stop loss and word-initial debuccalization of aspirated stops. In addition, evidence from the oldest attested stage of an Euskarian language, namely Aquitanian (cf. Gorrochategui 1984), will be presented to show the distribution of the stops in this language. We will present evidence for aspirated stops and unpredictable word initial variation in the unaspirated series.

In this paper, we present a new approach to the problem of the phonetic realization and the nature of the opposition between the Proto-Basque stops. We reconstruct two series of stops: a voiceless aspirated series (specified for [spread glottis]) and an unaspirated series (laryngeally neutral) that is realized as unaspirated voiceless stops word initially and passively voiced in medial position, undergoing intervocalic spirantization in later times (tentatively, in the early Middle Ages). Following the analysis provided by frameworks such as laryngeal realism (Iverson & Salmons 1995; Jessen & Ringen 2002; Honeybone 2005; Beckman, Jessen & Ringen 2013, etc.), we reconstruct the Proto-Basque stop opposition as contrasting in [spread glottis] instead of [voice], which is the relevant feature in modern Basque, a true voice language, as the Romance languages historically in contact with it (Castilian Spanish, Gascon, French, etc.).

In short, this paper presents new evidence to determine the phonetic realization of the Proto-Basque stops and relies on these phonetic reconstructions and on frameworks such as laryngeal realism to propose that the relevant feature in the Proto-Basque stop opposition was [spread glottis], instead of [voice] as in modern Basque, a change that could have been due to the Romance languages that have been in contact with Basque for the last two millennia.

The Big Bang, individual differences, and the community grammar

Josef Fruehwald – University of Edinburgh

In this paper, I will explore emerging evidence regarding the development of phonologization, specifically how its naturalness, regularity and coherence is to be grounded. The conventional wisdom regarding how new regular phonological processes enter into the grammar is through a process of "phonologization," whereby phonetic pressures in either production or perception are reinterpreted as being generated by the phonology (Ohala, 1981; Bermúdez-Otero, 2007; among others). The phonological distribution of allophones is assumed to be isomorphic with the distribution of phonetic variants that gave rise to the original phonologization (Hyman, 1976). In this way, the phonetic naturalness and regularity of phonological processes is anchored in the putative history of its origins (Blevins, 2004).

However, recent work on a phonologization in progress in a number of dialects (pre-voiceless /ay/ raising) has called this model into question. Fruehwald (2016) argued that this phonologization was better accounted for by a "Big Bang" model (Janda & Joseph, 2003), because it appeared at all points phonetic conditioning mischaracterized the distribution of variants, which appeared to be phonologically conditioned from the outset. Recent work in Fort Wayne, Indiana, by Berkson, Davis & Strickler (2017) casts the phonologization of /ay/ raising in a much more chaotic light. There appears to be a broad mixture of speakers with both phonetic and phonological conditioning of the allophony. Even within speakers who have phonological conditioning, it is not uniform across mono- and bi-syllables (cf. Bermúdez-Otero, 2017), raising the question of why it is that none of these phonetically conditioned or syllabically restricted systems are attested in *any* dialects with fully phonologized raising. It appears that phonologization reorganizes the distribution of variants, breaking the isomorphism between phonetic motivation and phonological processes.

The chaotic mixture of systems in Fort Wayne, together with the observed regularity of fully phonologized /ay/ raising should be reminiscent of the attack on the idiolect as a coherent object of analysis in Weinreich et al (1968) and Labov (1966). They argued that the only coherent unit of linguistic analysis was the Speech Community Grammar. Recent inquiries suggest that many interesting things about language are to be learned from studying individual idiolects (reviewed in Tamminga et al , 2016). However, other evidence suggest that the Labovian outlook could well be correct that regularity and coherence could well be the *product* of the speech community (Kirby et al, 2008; Mielke et al, 2016).

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Differential cue perception in plosive onset words after a tone-split in Tamang (Tibeto-Burman, Nepal)

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Modern Risiangku Tamang (Tibeto-Burman, Nepal) has a system of four tones, two high tones and two low tones, which results from the two-way split of an earlier two-tone system linked to the disappearance of an older voicing contrast on initial consonants (Ci). The voicing contrast has fully disappeared in sonorant and fricative Ci, thus phonologizing the tone system, and partially disappeared in plosive Ci. In the latter case, three cues are used in production: F0, voice quality, and some residual voicing of Ci (Mazaudon & Michaud 2008). To summarize, (1) low tones are produced with breathier voice than high tones; (2) ~20% of the low tone syllables (vs. 0% of the high tone syllables) are produced with prevoiced Ci.

Variation in cue weighting has been reported for a number of languages where tone is still incipient like Korean (Silva 2006) or Afrikaans (Beddor 2015; Coetzee, p.c.). In Tamang, tone is phonologized; however, old features/cues, i.e., Ci prevoicing and breathy voice, are still present in production, although Ci prevoicing is marginal. This study explores how old and new features/cues are used in the perception of tones in Risiangku Tamang.

We conducted a four-alternative forced-choice identification test on Risiangku listeners living in Nepal with a quasi-quadruplet: /[1]pa-pa/ 'be liquid', /[2]pa:-pa/ 'be harsh', /[3]pa-pa/ 'bring', /[4]pa:-pa/ 'pile up'. All stimuli were synthesized with equalized segmental duration and intensity contour. The following five parameters were manipulated: degree of breathiness (modal, breathy, or super breathy); Ci prevoicing (present or absent); F0 of V_1 onset (115, 130, 145, or 160 Hz); F0 slope of V_1 (rising or falling); F0 slope of V_2 (rising or falling). The resulting 96 stimuli were presented in a carrier sentence to 28 listeners individually.

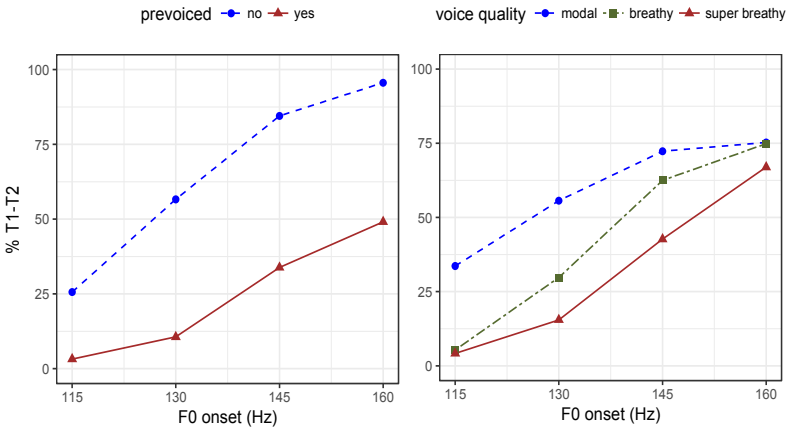

Figure 1. Identification rate of high tones according to F0 onset, and Ci prevoicing (left panel) or voice quality (right panel).

Concerning the difference between high and low tones, results show that F0 onset, Ci prevoicing, and voice quality are all in play. As shown in Figure 1, the identification rate of high tones (T1-2) increases with the F0 onset. However, the slopes of all the identification curves are less steep than what we would expect of a sharp categorical perception. Listeners also rely heavily on both Ci prevoicing and voice quality: prevoiced Ci stimuli yield low tone identification in 50% of cases even with the highest F0 onset; and the high tone identification rate is lower for breathy than for modal stimuli, and for super breathy than for breathy stimuli. Statistical (GLM) and classification (J48 tree, SMO) analyses confirmed a preponderance of the F0 onset cue in high vs. low tone identification, followed by reliance on the prevoicing of the Ci when present. The use of voice quality comes in to resolve conflicting cues: i.e., a high F0 with Ci prevoicing or a low F0 without Ci prevoicing. Moreover, when cues are conflicting, response times increase.

Our study shows a predominance of F0 as an identification cue, which is consistent with the historical evolution. However, the old features/cues of [voice] and [breathiness] continue to be used in perception as in production. The substantial role of [voice] in perception in spite of its reduced role in production might suggest that its progressive disappearance is production-driven.

Diachronic changes in loanword adaptations are due to differences in the adaptors' perception grammars

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Several recent studies on loanword adaptation (e.g. Kim 2017; Martin et al. 2017) have shown that a borrowing language can change its adaptation strategies over time, and that this diachronic development is linked to a change in the language contact situation of the borrowing language (with more input from English leading to an increased acceptance of English-like phonotactics in recent loans). Kim (2017) claims that this sociolinguistic factor is incompatible with formal loanword models, which are restricted to the phonetic and/or phonological adaptation of loans.

In the present study I illustrate that this claim is incorrect, and that the formal account of auditory borrowings via a perception grammar (Boersma & Hamann 2009) *is* sensible to language contact: A perception grammar, i.e. the ranking of cue and structural constraints, is acquired on the basis of the auditory input that the learner receives. Younger speakers with greater exposure to English therefore automatically acquire different perception grammars than their parent generation. I provide examples for this change in auditory input and consequently in perception grammars from three languages.

In **Hong Kong Cantonese**, new loans violate the formerly strict requirement for minimally bisyllabic words (MINWORD; Silverman 1992), see the loan doublet from English in (1):

(1) a)	*cream*	[kejliːm]	'bakery cream'	borrowed before 1945
b)	*cream*	[kʷʰiːm]	'facial/drinkable cream'	borrowed after 1985

While MINWORD was ranked high in the perception grammar of older HK Cantonese speakers, cf. older borrowings like (1a), younger speakers seem to have a lower-ranked MINWORD constraint, cf. recent borrowings like (1b) (Hamann & Li 2016), because they received more auditory input from English, a language that allows monosyllabic words.

Japanese used to have a restriction on monomorphemic /ti/ sequences, as can be seen in older loans like (2a). For younger loans this restriction does not seem to hold, cf. (2b) (Itô & Mester 1995; Crawford 2008).

(2) a)	*team*	[t͡ɕimɯ]	old loanword
b)	*teen(ager)*	[tiːN]	recent loanword

Again, I argue that the perception grammar of younger borrowers differs from that of older borrowers (*/ti/ is ranked lower) because younger borrowers had more contact with English.

In **Dutch**, older generations adapted loanwords from French with nasalized vowels, while younger speakers replace these by native vowel-nasal sequences, cf. the example in (3).

(3) a)	*entrecôte*	[ɑ̃trəkot]	older speakers
b)	*entrecôte*	[ɑntrəkot]	younger speakers

The Dutch case illustrates that younger speakers nativize the French loan phonemes because they received less input in the source language French (see Nagy 2008).

The present proposal shows that sociolinguistic factor of language has direct implications for the perception grammars of the borrowers and hence for the adaptation of loanwords, and that a formal account of perceptual loanword adaptation with a perception grammar automatically includes a change in language contact.

Gradient dissimilation in Mongolian: implications for diachrony

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Overview. Based on a new corpus from Halh Mongolian, we investigate the phonetic properties of *gradient dissimilation*, and explore the hypothesis that it may be the precursor of the complete long-distance dissimilation patterns attested in other branches of the language family.

Dissimilation in the typology of sound changes. Long-distance dissimilation is a process whereby two non-adjacent similar segments become less similar: e.g. Ancient Greek **tʰrikʰos* 'hair' > *trikʰos*. Since the Neogrammarians, it is usually set apart in the typology of sound change: it is often considered to be phonetically abrupt (one feature is deleted at once), lexically irregular (Hock 1991), and is thus attributed to a specific mechanism (e.g. hypercorrection, Ohala 1981; speech errors and/or motor planning, Garrett & Johnson 2013).

Gradient dissimilation. In contrast to these assumptions, two languages have been recently reported to display *gradient* long-distance dissimilation. In Aberystwyth English (Wales), Jatteau & Hejná (2016) show that the pre-aspiration feature of /t/ in *pa̲t̲ter* is both shorter in duration, and less likely to appear, than the pre-aspiration feature of /t/ in *la̲t̲ter* or *ba̲t̲ter*: the aspiration feature of C_2 is affected by the aspiration feature of C_1. The gradient dissimilation holds for all fortis stops and /h/. In Halh Mongolian, Svantesson & Karlsson (2012) find that the post-aspiration feature of /t/ in *t̲atax* ([tʰaʰt-]) and *t̲os* ([tʰɔs]) is shorter (resp. 50 and 49ms) than the one of *t̲al* ([tʰaɮ], 72 ms). There is thus evidence for a phonetically gradient dissimilation of aspiration in these two languages. The Mongolian case, however, is based on little data: it was investigated for only one speaker and few words.

Implications for sound change. Yet the Mongolian case may have particularly interesting implications for diachrony: for Garrett (2015), this gradient dissimilation is "obviously" a precursor of *complete* dissimilation. Dialects of Mongolian can be roughly divided into "non-dissimilating" dialects, such as Standard Halh, and dissimilating dialects, such as Chahar (Svantesson et al. 2005). In the second group, the first aspiration feature in *CʰVʰC- sequences has been completely deleted. Dissimilation is triggered by fortis stops as well as /s/, and does not apply if the medial nucleus is complex, as in the word for 'old' (*x* is the expected reflex of **kʰ*).

Old Mongolian	**tʰatʰa*	>	Halh *tʰatʰ*	Chahar *tʰat*	'to pull'
	**kʰautʃʰin*		*xʊʊtʃʰəŋ*	*xʊʊtʃʰəŋ*	'old'

Is gradient dissimilation, as in Halh, the precursor of complete dissimilation, as in Chahar? If so, we would expect it to be triggered by all fortis stops and /s/, and be blocked by complex nuclei (Q1). On the other hand, Svantesson et al. (2005) report that another Mongolic language, Monguor, has undergone complete *progressive* dissimilation: **tʰatʰa* > Mgr *tʰita*. Could gradient dissimilation be the precursor of both regressive and progressive dissimilation? The question thus arises whether the second stop of *ta̲t̲ax* is also affected by gradient dissimilation (Q2). If it is the case, then what determines the direction of dissimilation (Q3)?

Corpus. The goal of this study is to investigate these questions based on a newly collected corpus from Halh Mongolian. 12 speakers were recorded reading a list of 58 words repeated 3 times, first in isolation, then in carrier sentences of the shape *pii __ gisəŋ* (about 340 tokens per speaker). The corpus was limited to the fortis stops /tʰ/ and (marginally) /pʰ/, as well as the fricative /s/; non-aspirated segments includes the stops /p, t, tʲ, g, ɢ/ and the sonorants /m, ɮ, r/ and /rʲ/. The vowels in the first syllable are the low vowels /a/ and /ɔ/, both long and short.

Analysis. At this stage, only preliminary analyses are available. They first confirm the existence of a gradient dissimilation pattern in Halh Mongolian with more reliable evidence. This pattern may indeed be a precursor of complete dissimilation, since it involves both the fortis stops and /s/, similarly to Chahar complete dissimilation. Interestingly however, the gradient dissimilation is not only anticipatory: in words such as *tatax*, both C_1 and C_2 aspiration features are reduced and/or less likely to apply. This suggests that gradient dissimilation may be a precursor to both regressive and progressive dissimilation patterns. We expect further analyses to provide more complete answers to the questions we ask.

Reconstructing Dorsal Fricative Assimilation in Old English

Andrew Kostakis

Researchers have not yet reconciled the fact that the <h> grapheme, which triggers Old English Breaking (OEB), patterns *differently* from the <h> involved in Anglian Smoothing (AS). In OEB, <h> famously patterns with pre-consonantal <r> and <l> to condition new diphthongs (<ea>,<eo> and <io>) out of the pre-literary front vowels *[æ], *[e] and *[i] (from West Germanic *[a], *[e], *[i]). Due to OEB, the digraphs in Old English forms like *eald* 'old', *feohtan* 'fight', and *liornian* 'learn' correspond to monophthongs in other Germanic languages, e.g. OHG *alt* 'old', *fehtan* 'fight', and *lirnēn* 'learn' (which retained the West Germanic vowels). In AS, <h> patterns with <c> and <ȝ> as triggers of monophthongization. Resulting from AS, Anglian forms like *þēh* 'thigh', *ēc* 'also', and *flēȝ* 'flew' have a monophthong that corresponds to the respective West-Saxon dialectal variants, *þēoh, ēac,* and *flēaȝ*.

Based on the two patterns of behavior, it is claimed that <h> represented a dorsal fricative phoneme with two allophones: [ç] and [x]. The [ç] ~ [x] alternation falls out straightforwardly from historical facts. Front vowels were the only input to OEB. The second elements of the diphthongal inputs to AS were always non-front vowels. Accordingly, [ç] is the expected allophone after front vowels (and thus the trigger of OEB); [x] is the allophone that occurred after all other vowels (and thus the trigger of AS). One dorsal fricative allophone shifted automatically to the other due to a process of dorsal fricative assimilation (DFA).

When [ç] is understood as a trigger of OEB, a new perspective on the sound change comes about: OEB was a process of frontness dissimilation (and not backness assimilation, as argued by Lass and Anderson 1975, or consonant vocalization, as put forth by Howell 1991). In a pre-literary word like *[feç] 'cattle' (reconstructed with [ç] to reflect DFA), both the vowel and final consonant are front sounds. That contiguous sequence of front sounds is marked by the Obligatory Contour Principle (OCP). To repair the OCP violation, a back element (non-crucially assumed to be [u], following Hogg 1992) was inserted between the two front sounds. With the insertion of the new back element, DFA caused *[ç] to shift automatically to *[x], resulting in OE *feoh* [feux] 'cattle'. The [ux]-sequence indicates that, despite the dispreference for adjacent front sounds, West-Saxon tolerated the adjacency of back sounds.

Further implications of this analysis shed light on the phonology of the coda liquids insofar as they also pattern as front sounds. A front rhotic may be internally reconstructed from present-day English [ɹ], which retains phonetic correlates of frontness (Zhou et. al. 2007). It may also be externally reconstructed from rhotics in other Germanic languages. For example, in Old Norse, <r> (from *[z]) regularly fronted all back vowels to a corresponding front vowel. The frontness of Old English <l> is both less clear and less regular. It is argued that the frontness feature associated with <l> is emergent, in the sense of Mielke (2008), and thus may not be revealing of its phonetic nature.

AS, in turn, is a process of backness dissimilation. Anglian no longer tolerated the adjacent back sequences that were permissible in West-Saxon words like *feoh* [feux] 'cattle'. The emergently marked sequences of adjacent back segments in Anglian were repaired by deleting the second element of the diphthong. As a result of that deletion, [feux] shifted to Anglian [feç] (with automatic DFA). Anglian differed from West Saxon in that contiguous front sounds were more harmonic than contiguous back sounds. It follows from this analysis that backness dissimilation also transpired before <c> and <ȝ>, as these graphemes represented the only other velar obstruents in Old English, namely, [k] and [ɣ].

What this research indicates, is that the ambiguous patterning of a grapheme may sometimes reflect allophony. If that allophony can then be identified, a pattern that appears to obscure our understanding of historical phonology may actually come to enrich it.

The vowel */əː/ in Irish, Scottish Gaelic and Manx

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This paper examines the development of the Old Irish diphthongs */ai/, */oi/, */ui/ in later varieties of the Gaelic languages. These had merged as a single phoneme by the end of the Old Irish period (c. 900). In all modern varieties the reflex of this phoneme is a long monophthong. It is generally assumed that the old diphthong was monophthongized to something like */əː/ in the Middle Irish period (c. 900–1200) (O'Rahilly 1932: 31, McCone 1994: 92, Breathnach 1994: 233, Shaw 1971, Ó Maolalaigh 1997: 204), later represented orthographically as <ao>. In modern varieties three main developments can be discerned: a) in southern Irish varieties <ao> has merged with /eː/ and/or /iː/; b) in northern Irish, southern Scottish and Manx <ao> remain a mid central vowel, may be fairly fronted and may perhaps have weak rounding; there is a tendency for merger with /eː/ and/or /iː/ in parts of Ulster, Man and Arran and Kintyre, and in Man and southern Scotland there is merger between /əː/ representing <ao> and reflexes of earlier */aɣ/, c) in northern Scottish varieties <ao> is realized as a high back unrounded vowel /ɯː/, which is contrastive with mid back unrounded /ɤː/ representing earlier */aɣ/.

It is argued that it is the anomalous position of */əː/ in the phonological system of earlier varieties of Gaelic, and its interactions with the consonant system, which explain its development across the dialects. Because of the systematic distinction between palatalized and non-palatalized consonants, the contrastive load borne by the vowel inventory is reduced, especially in Irish where, unlike in Manx and Scottish Gaelic, the palatalization contrast extends to labials (Jackson 1967, Ternes 2006: 27). Hence an instance of */əː/ preceded by a non-palatalized consonant could be taken as an allophone of /eː/ or /iː/, since only palatalized consonants can precede historical /iː/ or /eː/. This would explain the development in southern Irish. The earlier monophthongization can also be explained with reference to palatalization: */əi/ could be reanalysed as /əː/ plus a glide associated with a following palatalized consonant, and this reanalysis could be extended by analogy to */əi/ + non-palatalized consonant.

The vowel inventory was disturbed by the phonemicization in Ulster, Man and Scotland of a backed and raised allophone of /a/ preceding /ɣ/ upon the disappearance of this consonant. If /əː/ <ao> was mid central and the new vowel was mid back unrounded, this would create a three-way backness contrast, which tends to be dispreferred and reduced cross-linguistically (Ladefoged and Maddieson 1996: 290–1). In southern Scottish Gaelic and Manx the new vowel merges with /əː/ <ao>, giving rise to ahistorical spellings such as *aobhar* for *adhbhar* (earlier */aɣvər/). In northern Gaelic and Ulster the suboptimal situation is resolved by the raising of */əː/ to /ɯː/, while /ɤː/ from earlier */aɣ/ remains a mid vowel (Ó Maolalaigh 1997: 204–5). This seems to involve the introduction of a roundness contrast in back vowels, as suggesed by Shaw (1971). The new structure of this vowel inventory would explain the stability of /ɯː/ and /ɤː/ in northern Scottish dialects, in contrast to southern Scottish, where /əː/ retains the historical situation of wide variation in the height dimension, and vulnerability to merger with the front vowels /iː/ and /eː/ (as in some varieties of Arran and Kintyre, cf. Scottish Gaelic Dialect Survey, Holmer 1957, 1962 and O'Rahilly 1932: 33).

A degree of rounding of southern Scottish /əː/ has been reported, but the evidence is somewhat doubtful (O'Rahilly 1932: 29, Holmer 1938, 1957, 1962, Grant 1987, Jones 2010). This rounding, if present, is probably facultative and serves to accentuate the contrast between /əː/ and the front vowels /iː/ and /eː/. *Pace* Ó Maolalaigh (1997: 133–4), rounding here does not seem likely to be a result of contact with Scots. Jackson (1952: 91, 1955: 47) and Ó Maolalaigh (2007: 206) are likely correct in positing that different treatment of <ao> in northern and southern varieties of Gaelic/Irish is an early dialect division, but it is proposed that the structural considerations presented in this paper provide a better motivation for these developments than the suggestion by these authors that they reflect different treatments of the Old Irish merger between /ai/ and /oi/ in terms of the backness or roundness of the resulting single phoneme.

The origins of epenthesis in liquid+sonorant clusters in Mid-Ulster English

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Epenthesis in liquid+sonorant clusters (e.g. in *film* [fɪləm], *farm* [faɹəm]) is one of the most well known features of Irish English (IrE), including Mid-Ulster English (MUE, spoken in a band across northern Ireland, from Belfast in the east to Dongal in the west). Epenthesis is one of the phonological features of IrE most commonly explained as a result of contact with Irish, which has an extensive system of epenthesis in clusters involving sonorants (O'Rahilly (1932), Ó Siadhail (1989), Ní Chiosáin (1999; 2000)). Almost every previous description of the phenomenon in IrE assumes such an origin (e.g. Adams (1948), Barry (1982), Hickey (1986, 2007), Ó hÚrdail (1997), Ó Baoill (1997), Corrigan (2010) and Cunningham (2011)), with only occasional comments (e.g. Braidwood (1964) and Harris (1995)) suggesting a possible connection with similar patterns of epenthesis in English and Scots.

None of the previous accounts of epenthesis in IrE describes the phenomenon in detail, nor do they compare it systematically to epenthesis in Irish, English or Scots. In this presentation I seek to remedy this situation, describing epenthesis in traditional MUE, and making a systematic comparison of it with patterns of epenthesis, past and present, in Irish, English and Scots. This is imperative since the dialect has its origins in the Plantation of Ulster in the 17th century, which led to intense and prolonged contact between speakers of English, Scots and Irish (Robinson 1984). My analysis reveals that epenthesis in MUE is obligatory in /lm/, variable (and recessive) in /rm/, and rare in /rl/ and /rn/. It occurs only in morpheme-final position, being retained (though rarely in the case of /rm/) word-internally before morpheme boundaries (e.g. *fil*[ə]*ming*, *far*[ə]*mer*). The patterning of epenthesis is not only similar to the patterning of epenthesis in other varieties of IrE, but also to the patterning of the phenomenon in traditional and historical varieties of English and Scots. Crucially, however, this is not particularly similar to Irish, which has epenthesis in a range of clusters (e.g. /lb/, /lv/, /rb/, /rg/) that do not have it in MUE, and where it is not restricted to morpheme-final position (it also occurs morpheme-internally across syllable boundaries in words such as in *airgead* 'silver, money'). Indeed, epenthesis in MUE and in Irish only overlap minimally (in the clusters /lm/ and /rm/ in morpheme-final position).

In view of the widespread assumption that Irish did play an important role in the development of epenthesis in IrE, I explore possible ways that such influence could have affected its development in MUE, and how the dissimilarities between epenthesis in Irish and in MUE might be explained. However, given the close similarity of epenthesis in MUE (and indeed other Irish Englishes) with epenthesis in English and Scots, I argue that the feature has most likely been inherited from the input English and Scots dialects in the 17th century rather than being the result of contact with Irish. That this most Irish-like of MUE features appears to have its origin in English and Scots has important consequences for our understanding of the formation of the dialect and of the role played by Irish in the phonological development of this and other varieties of Irish English.

In rhymes we trust, or not: what counts as evidence for change in early Middle English?

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The reconstruction of the earlier stages of the phonology of English draws primarily on orthographic, comparative, and loanword-adaptation evidence, though sometimes rhyme evidence is sought and cited as a confirmation or rejection of a particular analysis. My project's aim is to mine the rhyme evidence in LAEME and broaden the empirical base for the for the study of patterns of identity and similarity in ME.

In rhymed compositions it is the phonological identity or similarity at the end of the line that organizes and holds the verse units together. The recognition of identity is part of our basic linguistic competence: it is "internalized", no special training required. In that sense evidence from earlier verse should be our closest approximation to the speakers' intuition about linguistic structure. It has long been recognized that rhyme is a technique requiring experimentation, rejection, selection; that "normally rhyme must prove a taskmaster" (Sapir 1919). Poets vary in their creativity about rhyme, medieval scribes, though usually respectful of authorial rhymes, may insert their own dialectal bias into the original matching, the boundary between a perfect/full rhyme and an imperfect/partial rhyme can be fuzzy (Hanson 2003), and a phonological rhyme is not co-extensive with a poetic rhyme, whose scope is wider, including the unstressed portion of feminine rhymes. These are some of the multiple theoretical challenges of using rhyme as evidence for the reconstruction of a dead language.

The two ME case studies for this project are the loss of post-nasal [-g] and the emergence of a phonemic velar nasal [ŋ] (Mapyne : endinge l. 2347:2349; serpentyne : ending l.3171:3173), and the initial stages of pre-alveolar fricative /-r/ loss (e.g. bass 'perch' (<OE bærs) : wers : mess). I also want to test whether imperfect ME rhymes conform to observations about the invisibility of voiceless coronal obstruents in some rhyming styles (Zwicky 1976, van Oostendorp 2014). The reliability of the data and the question of where rhyme fails us diachronically will be discussed and analyzed in the context of broader theoretical issues concerning the phonological typology of rhymes (Katz 2015)

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Can excrescence be a regular sound change?

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In a recent article, Ostapirat (2016) has proposed a regular sound change *m.l(ˠ)- > mbl- as a development in the history of Hmong-Mien (Miao-Yao), one that accounts for the correspondences below (since the tones correspond, they have not been indicated here):

Rice plant	*m.l-	nɯ	na	mplæ	blau	blau	blau
Glutinous	*m.l-	nu	nə	mplu	blut	blot	blun
Tongue	*m.lˠ-	mjɑ	ɲi	mple	bjet	bjet	blin
Smooth	*m.lˠ-	mjɛ	--	mplein	bjaŋ	bjaŋ	--

These reconstructions are supported in part by resemblances to Old Chinese words for ‘rice plant’ and ‘tongue’ that are reconstructed by Baxter and Sagart (2014) as *[l]ˤuʔ and *mə.lat respectively.

Although excrescence of a stop between a nasal and, in this case, a liquid may be a common sound change, the question arises as to whether it is likely to have been a regular sound change in this or any other language family. The Hmong-Mien situation is complicated by the occurrence of NCL- onsets in other places of articulation, and the necessity of reconstructing a voicing contrast in the stop (*mpl- vs. *mbl-). This paper will review cases in the literature where “regular excrescence” has been proposed for a set of cognate forms of this type, if such cases can be found. In light of this information, the reconstructions of this set (and related sets) of words with *NCL- as given in Wang & Mao 1995 and Ratliff 2010 will be revisited.

Middle English Open Syllable Lengthening and statistical (mor-)phonotactics

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This paper attempts to complement extant accounts of Middle English Open Syllable Lengthening (see references) by looking – globally and in statistical terms – at the (mor-)phonotactics of Early Middle English word forms as attested in the Penn Helsinki Parsed Corpus of Middle English (PPCME).

OSL affected short vowels in open disyllables such as *name* /namə/ > /naːm(ə)/, *beaver* /bevər/ > /bɛːv(ə)r/, or *hope* /hopə/ > /hɔːp(ə)/. However, it is consistently reflected only in words whose second syllables ended in schwa and were lost (i.e words like *name* or *hope*). Words whose second syllable remained stable, reflect OSL only sporadically, and most lengthened reflexes are of a specific subtype: their second syllable begins with an obstruent, ends in a sonorant, and admits schwa syncope (as in ModE [biːvr̩] *beaver*). This has given rise to the view (Minkova 1982, Bermudez-Otero 1998) that the lengthenings compensated for weight loss in post-tonic syllables.

Although their descriptive adequacy is impressive, compensatory accounts of OSL would clearly be more satisfactory if there were a deeper reason *why* compensation should have occurred when words lost (weight in) their final syllables. Our study addresses that question.

We sample nouns, verbs, and adjectives in the PPCME to determine the frequency and the morphological structure of types such as CVC, CVCV, CVVC, CVVCV, etc.. Specifically, we are interested in (a) the relative type frequencies of morphologically simple CVC and CVVC forms during the period in which OSL is assumed to have unfolded, and (b) in the relative frequencies of simple CVCV(C) and CVVCV(C) vs. complex CVC+V(C) and CVVC+V(C). If, among morphologically simple major class words, CVVC types were significantly more frequent than CVC types, compensatory OSL could reflect a (semiotically plausible) bias against word-forms with non-canonical shapes. Similarly, if the majority of CVVCV(C) items were morphologically complex, it would be preferable – on semiotic grounds – for morphologically simple CVCV(C) items to retain their short vowels: their shortness would make it easier to identify them as simple.

Apart from potentially deepening our understanding of OSL, our presentation raises the more general question to what extent the likelihood of specific sound changes is affected by preferences for word form shapes to conform to canonical patterns, or to assume patterns that signal their morphological structure.

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Effects of Stop Laryngeal Features on Duration of Preceding Vowels: Implications for Winter's Law

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Introduction: Previous work has found that vowels are longer before voiced than voiceless obstruents in many languages (Chen 1970), though not all languages (Keating 1979). Studies on how this interacts with aspiration, all in Hindi, have varied results. Some found greater length before aspirated/breathy stops than unaspirated stops (e.g. Durvasula & Luo 2014), but others found no difference (e.g. Ohala & Ohala 1992); all found an effect of voicing.
Clarifying these effects can inform reconstruction: Winter's law proposes that short vowels in Proto-Balto-Slavic were lengthened before voiced stops but not before voiced aspirated stops (Winter 1978); it has been questioned whether the law is phonetically natural given these phonetic values of the PIE stop series (Shintani 1985, Kortlandt 1978).

Results: Three Hindi speakers and one Telugu speaker produced VC nonce words with long and short vowels (in Hindi, they also have quality differences) and each laryngeal configuration for bilabial, dental, retroflex, and velar stops. Telugu forms were realized with an excrescent final vowel, as word-final stops are not permitted.
Hindi vowels were significantly longer before voiced than voiceless stops ($p < 0.0001$ both for long and short vowels), see Table 1. There was no effect of aspiration.

Table 1: Hindi vowel durations (ms) by following consonant

	voiced	voiced aspirated	voiceless	voiceless aspirated
long vowels (iː, uː, aː)	254	256	206	215
short vowels (ɪ, ʊ, ə)	148	148	127	124

Telugu vowels were not significantly longer before voiced than voiceless stops (for long vowels, 338 ms vs. 312 ms, $p = 0.32$; for short vowels, 129 ms vs. 125 ms, $p = 0.71$). Vowels were shorter before aspirated than unaspirated stops, (for long vowels, 311 ms vs. 338 ms, $p = 0.30$; for short vowels, 116 ms vs. 139 ms, $p = 0.026$). See Table 2.

Table 2: Telugu vowel durations (ms) by following consonant

	voiced	voiced aspirated	voiceless	voiceless aspirated
long vowels	326	336	322	298
short vowels	159	132	147	138

Conclusions: This work replicates previous results in the effect of stop voicing on preceding vowels in Hindi, presenting new data on the weaker effect in Telugu. The results moreover add to the range of observed effects aspiration can have on duration of preceding vowels.
Effects of aspiration may help develop explanations of the effects of voicing. If vowel lengthening before voiced stops is a result of enhancement of the shorter stop closure in voiced stops (Kluender, Diehl & Wright 1988), listeners may be similarly influenced by the total duration of the stop closure + release, which is significantly longer in aspirated stops.
Understanding this process can also inform reconstruction. Though currently from a single speaker, the Telugu results suggest that lengthening only before unaspirated voiced stops is possible, and moreover illustrate the importance of drawing evidence from multiple languages, as even languages in contact and with similar phonological inventories can exhibit differences.

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Voice-induced vowel lengthening

Vowels are longer before sonorants and voiced obstruents than before voiceless obstruents. This pattern is found in many languages and by some is argued to be universal. In some languages it has been phonologized and gives rise to alternations. Three cases are examined: Western Slavic, English and German.

In all cases, I argue that the mechanism which modifies vowel duration in a voiced context is phonetic in kind (not phonological), and involves voice-induced lengthening, rather than so-called 'pre-fortis clipping'. Phonetic length can be phonologized by its inscription into the lexical recording of morphemes. Phonological processes such as (Canadian) raising in English or oo > uu raising in Western Slavic may then take this lexical length as an input.

This analysis allows us to keep spontaneous and nonspontaneous voicing truly separate: voicing in sonorants and vowels is never phonologically active, its spreading can only occur in the phonetics ('passive voicing' in Laryngeal Realism). A strong argument in favour of this view is the fact that cross-linguistically sonorants appear to always be among the triggers of voice-induced vowel lengthening: there are no cases where vowels lengthen before voiced obstruents, but not before sonorants. This is predicted if lengthening is phonetic, but unexpected if it were phonological: the phonologically active voicing of obstruents should at least sometimes be the only trigger.

Finally, it is argued that the pattern at hand is voice-induced lengthening, rather than shortening before voiceless obstruents (called pre-fortis clipping in the literature on the English pattern).

Stratal structure, dual morphosyntactic conditioning, and the life cycle: Latin iambic shortening

Ranjan Sen

Stratal OT (e.g. Bermúdez-Otero 2011) makes significant progress towards illuminating both the synchronic and diachronic angles of the nearly 150-year-old problem of 'iambic shortening' in early Latin (light-heavy = LH → light-light = LL), a process which has proved influential at pivotal junctures in the history of phonological theory. The philological tradition (e.g. Müller 1869, Fortson 2008) focuses upon the likelihood of this optional early Latin phenomenon occurring – considering rhythmical, morphosyntactic, and pragmatic factors with impressive results – but the precise synchronic metrical conditions of the process are not a concern. Conversely, the phonological tradition has identified necessary structural conditions, but a metrical structure sufficient to account for all four sub-types of the phenomenon (PRWD, cretic, word-initial, cross-word) remains elusive, e.g. Mester (1994) and Prince & Smolensky (2004(1993)) do not cover all the data and make incorrect stress/shortening predictions, and Jacobs (2003) contains inaccuracies (e.g. the denial of a specific iambic shortening process) and ensuing analytical difficulties.

A solution emerges from the observations that (i) iambic shortening (e.g. *légo:* → *légo* 'I choose') may occur across certain word boundaries (e.g. *se.d ŏs.ten.de.re* 'but to show') and is sensitive to phrasal stress, and that (ii) cretic shortening (e.g. *dícito:* → *dí:cito* 'let him say') and word-initial iambic shortening (e.g. *voluptá:tem* → *volŭptá:tem* 'desire (acc.)') must be triggered after lexical stress has been assigned. They are phrase-level developments which (i) are sensitive to stress clashes at the word level (CLASH), (ii) remain faithful to some (but not all) word-level stresses at the phrase level (MAX-FTHD), and (iii) place greater emphasis on parsing syllables into feet (PARSE-σ) and avoiding non-head heavy syllables (WSP) at the phrase level, repairing by lightening (MAX-μ violation). Optimality-Theoretic analyses of the four sub-types are presented, where the interaction of the same constraints differs at word- and phrase-levels.

Furthermore, the shortenings are sensitive not only to stratal computational procedure, but also prosodic representational structure, showing *dual morphosyntactic conditioning* (Bermúdez-Otero & Luís 2009). Iambic shortening occurs in phasal 'troughs': *within phonological phrases* which are *not heads of their intonational phrases*, in feet which are *not heads of the head PRWD* of that phonological phrase, e.g. [*(quò.d_ăc).(ce:).(pís).(ti:_a:)* [*(Chármide:)*]$_{\varphi}$]$_{\varphi}$ 'that you received from Charmides' (Plautus *Trin.* 964). The influence of morphosyntax on phonological phrase formation – such as focus-marking, Match(XP, φ) (Selkirk 2011) – explains the philologists' numerous observations on the sensitivity of iambic shortening to syntax/discourse-structure, e.g. focused elements do not undergo shortening as they bear phrasal stress, and neither L nor H can be followed by a pause.

Finally, the analysis also makes a theoretical contribution to diachronic phonology. In classical Latin, iambic shortening is mostly restricted to single disyllabic words, then becomes lexicalised in a handful of items (e.g. *bene:* > *bene* 'well'). This narrowing of the relevant domain (phrase → word) and ultimate lexicalisation is precisely the prediction of Stratal OT's model of the *life cycle of phonological processes*, where low-level phonetic effects become phonologised at the phrase-level, then undergo domain narrowing (Bermúdez-Otero 2007). The analysis presented therefore demonstrates the phenomenon's key contributions in three domains: synchronic phonological architecture, the syntax-phonology interface, and the diachronic life cycle of sound changes.

Liquid polarity, prosodic conditioning, and diachronic change: clear and dark /r/ in Latin

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Liquid polarity effects have been found to interact with prosodic position in dialects of British English: in positions where /l/ is clear, /r/ is dark, and vice versa (Carter & Local 2007). Whereas the clear/dark contrast in /l/, and notably its diachronic effects, is well-researched, it is relatively understudied in /r/. This paper demonstrates that liquid polarity and positional effects can be reconstructed for early Latin, gradually becoming eroded in imperial times: *coda* /l/ and *onset* /r/ were dark, whereas coda /r/ was clear and onset /l/ was underspecified for tongue body position.

Early Latin had dark /l/ in the syllable coda, clear /l/ in geminate /ll/, and an /l/ underspecified for tongue body position in the syllable onset, which varied in line with the backness of the following vowel: clear in /li/, dark in /la lo lu/ (Sen 2015, chapter 2). Diachronic colouring of a preceding vowel provides the main evidence for this, e.g. **welti* > *vult* 'wants', but *velle* 'to want' and *velim* 'I want (subjunctive)'. However, in a similar vein, /r/ also shows positionally varying colouring. Whereas open-syllable internal vowels became /i/ in most contexts in early times (Sen 2012), before 'dark' onset /r/ (also from intervocalic rhotacism of /s/) they all became /e/, e.g. /i/ **kinises* > *cineris* 'ash (gen.)', /a/ **peparai* > *peperī* 'I brought forth'. This development failed before 'clear' coda /r/, where the usual closed-syllable developments occurred (*a > e, *o > u), e.g. /i/ **komfirmō* > *confirmō* 'I confirm', /a/ **inarmis* > *inermis* 'harmless', /u/ Gk. *kóth^{h}ornos > *cothurnus* 'high boot'. Conversely, the development wo > we before coronal consonants (*voster* > *vester* 'your') includes in this environmental context 'clear' coda /r/ (*advorsum* > *adversum* 'against'), but not 'dark' onset /r/ (*vorō* 'I devour').

Darkness is usually inversely correlated with F2 (whose effects are seen in pre-/l/ conditioning above), but a correlation with F1 has also been reported, with dark liquids showing higher F1 (Sproat & Fujimura 1993); this way of implementing the contrast is/was especially useful in English/Latin, where onset /l/ can contextually have a low F2 (West 1999). Latin dark onset /r/ therefore showed F1 raising (vowel lowering) and F2 lowering (mild backing) in preceding vowels (*i > e), whereas clear coda /r/ patterned with other coronals in hypercorrective fronting (woT > weT), and the sporadic fronting/raising *e > i (**d^{h}ermos* > *firmus* 'strong'). Evidence from the related language Oscan further supports this distribution, with coronal palatalisation and /u:/-fronting failing precisely in/after onset dark /r/ only. Unlike in English where r-darkness is implemented through tongue body position in approximants, we hypothesise that selection of r-type was the key strategy in early Latin: approximant in onsets (higher F1, lower F2), and tap in codas (lower F1, higher F2). This can further explain the pre-1st cent. developments (i) intervocalic (onset) rhotacism *s > r, following the lenition cline 'fricative > approximant', (ii) dissimilatory (onset) *d…d > r…d, showing 'closure-closure' to 'no_closure-closure', (iii) the patterning of tap (coda) /r/ with obstruent coronals (above), (iv) the coda development d > r before /f w/, where articulatory anticipation of the labio-dental/-velar articulation impedes coronal closure, reducing its magnitude to a tap, and (v) sporadic consonantal assimilation /rs/ > /ss/, patterning with /ts ds/ > /ss/.

Finally, we see a diachronic development in Latin /r/. Early onset approximant and coda tap gave way first to an approximant in both positions by the 1st cent. BC. This can be seen in (i) late republican vowel lengthening before coda /r/ (*aarmeis* 'arms (abl.)'), more likely before an approximant than a tap (Kavitskaya 2002), and (ii) later imperial lowering e > a before both onset and coda /r/ (*itarum* 'again', *novarca* 'step-mother'). Finally, grammarians' descriptions of /r/ with vibration from the 3rd cent. AD imply a trill in at least some positions.

Merger and unmerger: continuous phonological change in Standard German

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The low mid front vowel /ɛ:/ or the BÄREN vowel in Standard German has been unstable for centuries. After the Old High German period in which the BÄREN vowel was contrastive with /e:/ (the BEEREN vowel), a period of merger of these two vowels occurred in most varieties of New High German. Currently, we observe a reversal of this BÄREN and BEEREN merger. This unmerger is catalysed by a phonological rue: pre-r vowel lowering which affects the BÄREN vowel more than the BEEREN vowel. What causes this instability of the BÄREN vowel? And how do we model the phonological change?

It has been observed for a number of languages that two vowels which are minimally contrastive, and of which one is very infrequent, this infrequent vowel is prone to merge with the vowel that similar to it. The BÄREN - BÄREN merger fits into this picture, ince the BÄREN vowel in German is clearly the least frequent among the German vowels, and it is most similar to the BEEREN vowel.

But how to explain the current unmerger? To investigate this, we analysed spontaneous speech of two age groups across Germany, Austria and Switzerland. Under the assumption that older speakers tend to largely maintain their pronunciation and younger speakers may have a more innovative variety, we observed an ongoing merger in Switzerland; but an ongoing unmerger in Austria; and a great amount of variation in Germany. A common pattern in most varieties of German is that a following rhotic triggers lowering of the BÄREN vowel. Moreover, *high-frequency* words are the first to undergo pre-r vowel lowering. Subsequently, lowering applies to the BÄREN vowel in other contexts. However, in these cases, *low-frequency* words are affected first.

Speakers can get the merger right only if they know which are the BEEREN and which are the BÄREN vowels. They probably are aware of this distinction because of orthography; contrast in local dialects (not necessarily the same vowels); and because the merger was not complete. Most likely, it is a combination of these factors.

The change of the BÄREN vowel is a change of the underlying form. Pre-r vowel lowering is a phonological rule, which applies to the BÄREN vowel more than to the BEEREN vowel. The change has five stages:

i. The underlying BÄREN vowel is /ɛ:/
ii. Change of underlying /ɛ:/ to /e:/
iii. The underlying form of the BÄREN vowel is /e:/
iv. Pre-r vowel lowering
v. The underlying BÄREN vowel is /ɛ:/

The phonological grammar in different stages can be accounted for in Optimality Theory. However, the underlying form changes gradually. The underlying form is not a grammatical function but is a lexical item. The observed frequency effects affect the underlying form which thus occurs in the lexicon. We will therefore model frequency effects in a lexical model (namely, Exemplar Theory). The OT and ET accounts are intimately related; we will show how the OT grammar can be derived from the lexicon and argue that combined modelling is particularly suited to account for phonological change.

t-flapping in present-day Northern English:
implications for sociophonological change

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This paper is a present-day analysis of t-flapping and voicing patterns found in intervocalic position in the accent of Blackburn, Lancashire. This process, whereby /t/ is realised as voiced, or as flap between vowels (e.g. *better* is realised as [berəɹ] rather than [betəɹ]), is found in speakers throughout the speech community. The paper's main aim is to present a quantitative apparent-time analysis of the t-flapping situation in present-day Blackburn English, in order to better understand the relationship of sound change over time in a variety where the process is still highly variable. A secondary aim is to link these patterns with other related phenomena such as the t-to-r rule and how the lack of which in Blackburn may be linked to the fact that the accent is still rhotic. The data, taken from sociolinguistic interviews with 12 local speakers, is auditorily coded, and the focus in this paper is on the three primary variants: fully realised [t], the flap or voiced variant, and glottal replacement.

Although t-flapping in English is almost always reported with reference to American varieties, it is clear that this variant as spoken in Lancashire has existed for a long time, and is certainly not an adopted innovation from outside. This is supported by historical data from Minkova (2014), who reports evidence of flapping/voicing in England as early as the 15th century. More recent studies of Southern British English have shown younger RP and near-RP speakers to be employing flaps more frequently as an alternative to the glottal stop (Jell 2016, Baugh 2017). However, the data from Blackburn demonstrates that, as in line with Minkova's evidence, this is not a new variant and, in fact, seems to be on its way out, with younger speakers flapping at much lower rates than older speakers (Figure 1). Instead, younger speakers are exhibited much higher rates of the glottal stop, as found throughout the UK. We also gain an insight into the contexts in which flapping cannot occur here e.g. after long vowels, giving us an insight into the potential progression it took in American English.

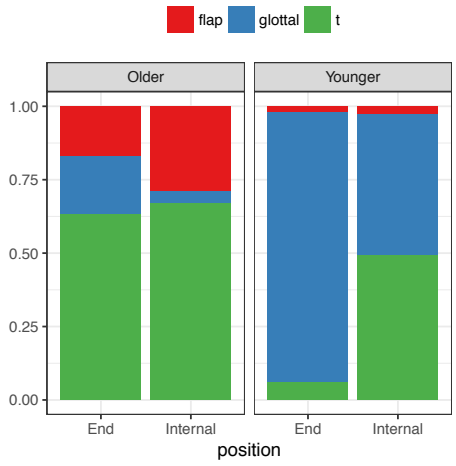

Figure 1: flapping at end of word and internal position across age groups

Under a framework in which synchronic and diachronic processes are entwined, such as the phonological life cycle (Bermúdez-Otero 2015) a process starts by applying at lower levels of the grammar, over time advancing to progressively higher levels. The life cycle makes opposing predictions the rates of lenition by glottalling, and the rates by flapping, should occur in different kinds of flapping environments. This is because of the levels of the derivation in which they occur. For flapping to occur, the /t/ must be intersonorant: in a word like *bet ter*, the /t/ is in the required environment at the stem, word and phrase levels, but in *got it*, the /t/ is in the required environment only at the phrase level, therefore we expect more flapping in *better* than *got it*. This point is underlined further in the data with intermediate category *getting*, whereby the /t/, which is intervocalic in the word and phrase levels, but not in the stem level, shows lower rates of flapping than monomorphemic *better* (Figure 2). This is borne out in the data from the older speakers, who exhibit the vast majority of their flapped tokens in monomorphemes, over intervocalic bimorphemic words. For glottalling, the prediction is the other way around. /t/-glottalling in British English affects /t/ in coda position in the first instance, including word-final instances such as *got.* In more advanced dialects and younger speakers, this advances to wherever /t/ is non-initial in the foot. Thus, glottalling in *better* is reported as occurring less frequently than in *got it* (Foulkes & Docherty 1999) and sociolinguistically is more stigmatised (Foulkes & Docherty 2007), which likely reflects that this is a more advanced stage of the change.

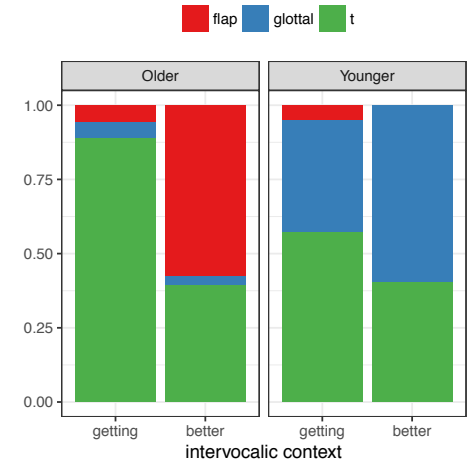

Figure 2: The distribution of word-medial /t/ variants in monomorphemes e.g. *better*, vs. suffixed forms e.g. *getting.*

The results are also analysed in light of reported sound variation in other Northern dialects, with a focus on the *t-to-r* rule (*gerroff* for *get off;* Honeybone 2014). This variant is reported in Liverpool (Clark & Watson 2011), Newcastle (Buchstaller et al. 2013), Yorkshire (Broadbent 2008) and Manchester. Blackburn speakers do not tend to exhibit this variant, and this is discussed in light of the variety also not showing a tapped-[ɾ] variant, which Honeybone (2014) states one of the driving forces behind the reanalysis of /t/ in such words to be realised as [ɾ]. This is also discussed in light of Blackburn being a rhotic dialect of English: speakers of all ages maintain post-vocalic /r/ in words such as *car, farm* (although this may be weakening in younger speakers; Turton 2015). The links between these potentially interconnected processes are discussed, as well as the implications for the phonology and possible micro-typologies of /t/ and /r/-related phenomena.

POSTERS

Sound change, lexical frequency, and ambiguous input: a computational implementation

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According to the Exemplar Theory of speech, single tokens of experience are encoded in memory as exemplars, and phonological categories are conceived as sets of exemplars in a phonetic space (Hintzman 1986, Nosofsky 1988, Pierrehumbert 2001). Exemplar Theory predicts that, in a sound change, high frequency words are affected first and that their rate of change is higher compared to low frequency words (Bybee 2002). This asymmetry follows from the frequency of exposure to the change, which is higher in higher-frequency words. Hay et al. (2015) studied the effects of frequency in the vowel shift that took place in New Zealand English (NZE). Contrary to expectations, *low frequency* words, rather than high frequency words, were ahead in the change and were changing at a faster rate. To account for this phenomenon, Hay et al. (2015) proposed an extension of the standard exemplar model which incorporates a mechanism that disregards ambiguous input if its lexical frequency is low, allowing low frequency words to change at a faster rate. I will present the results from several computational simulations of the extended model in support to the verbal arguments discussed in Hay et al. (2015), and show that indeed low frequency words change at a faster rate in the pushed categories, but that high frequency words do in the category that starts the chain shift.

In a model that assumes rich phonetic details in the mental representations like Exemplar Theory, the exemplar cloud of a vowel (like /a/) that moves towards the cloud of another vowel (like /æ/) creates a region of ambiguity where the values of the phonetic dimensions of the two categories overlap (in this case, the frequency of formants). Thus, an exemplar falling in the area of overlap could be categorised as belonging to either vowel, /a/ or /æ/. Ambiguous exemplars of low frequency words are less likely to be encoded in memory, so that, crucially, low frequency words are repelled more quickly from the pushing category than the high frequency ones. I implemented a series of increasingly more complex computational simulations to test the prediction that low frequency words lead in the change because of their disadvantage in the encoding process. A few deviations from the actual events of the NZE vowel shift were necessary to keep the models computationally manageable, although such differences did not interfere with the general working of the simulations. The most basic simulation included two vowels, /a/ and /æ/, values of the first formant, and a phonetic bias lowering the first formant of /a/ through time. In the most complex simulation, I added a third category, /ɛ/, and values for the second formant (in addition to the first).

A generalised additive mixed effect model (Wood 2006) fitted on the output of the simplest simulation indicates that the first formant of /æ/ was lowering at a faster rate in low frequency words, while high frequency /a/ words were faster. The simulation with three vowels (/a/, /æ/, /ɛ/), and two formants, replicates the results from the simple simulation: /æ/ and /ɛ/ were changing more quickly in low frequency words, while high frequency /a/ words were changing at a faster rate. To sum up, the simulations show that the extended model predicts a scenario in which (a) low frequency words change at a faster rate in the pushed category, while (b) high frequency words change at a faster rate in the pushing category. Interestingly, the observation in (b) is not discussed in Hay et al. (2015), and it thus lays the foundations for further research. Future work will also extend the simulations to other types of sound changes to test the generality of the claims made in this paper. For example, sound changes that do not generate overlapping categories could show constant rate effects, like in the case discussed by Bermúdez-Otero et al. (2016), where high and low frequency change at the same rate.

A reassessment of <h>-insertion in the history of English

Martina Häcker

The phenomenon of <h>-insertion in English texts has been most frequently interpreted as a side effect of /h/-loss (Milroy 1983, 1992, Mugglestone 1995). Scholars advancing this line of argument assume that speakers of an /h/-less accent of English strive to adopt an /h/-ful standard pronunciation and insert /h/ not only where it is etymologically correct but also in words which do not have an initial /h/. In writing this would then lead to the insertion of an unetymological <h>. This view, which appears intuitively convincing, does, however, not bear scrutiny. Firstly, not all texts with <h>-insertion also contain instances of <h>-omission, and it its hardly plausible that speakers of an /h/-less variety of English would not omit a single etymological <h>, while inserting numerous unetymological ones. Secondly, this hypothesis cannot explain shifts from etymologically correct spelling to <h>-insertion, as anyone who has acquired the standard use of /h/ and the corresponding use of <h> cannot be convincingly claimed to be linguistically insecure with respect to the use of /h/ and <h>. Thirdly, one of the main arguments for the view that /h/-insertion is a side effect of /h/-omission is the claim that it arose through contact with French, which has been refuted by Minugh (1985) Markus (2002), and Häcker (2004).

This paper challenges the interpretation of <h>-insertion as a side effect of /h/-dropping in speech. On the basis of a longitudinal study of the spellings of medieval letter writers it shows that <h>-insertions do not occur randomly but follow patterns. It also shows that <h>-insertion is not an isolated phenomenon, but co-occurs with other spelling changes, which suggests that the spelling changes reflect changes in the articulatory setting of speakers. Finally, on the basis of Richard Cely II's spelling, the paper questions the validity of the argument that <h>-insertion is based on linguistic insecurity. It concludes that <h>-insertion is typically a temporary phenomenon which reflects pronunciation, and one that it not restricted to the English language.

Towards a history of the tenseness contrast in Brythonic vowels

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Modern Welsh is similar to many modern Germanic languages such as English (Durand 2005, Harris 1994), German (Hall 1992) and Dutch (Smith et al. 1989, Botma & van Oostendorp 2012) in showing an association between 'tense' vowel quality and phonological length (Jones 1984, Ball & Williams 2001). Specifically, long vowels tend to be tense in quality and short vowels tend to be lax, with concomitant alternations:

(1) a. ['te͡:g] *teg* 'fair'
b. ['tɛ͡ka] *tecaf* 'fairest'

As in the Germanic case, there is some disagreement in the literature on whether quality or quantity (or both) is phonologically relevant in Modern Welsh (cf. Iosad 2017). In this paper I aim to add to this debate via an overview of the diatopic variation in the relationship between vowel quantity and quality in Welsh and more broadly in the Brythonic languages. I argue that tense/lax quality is likely to be diachronically secondary with respect to quantity, being derivable from prosodic contexts — primarily vowel length and syllable structure. One of the notable consequences of this is that even when tense/lax quality has been phonologized (as in, for instance, south-western dialects of Welsh), it is still partly conditioned by quantity and syllable structure; conversely, the distribution of quantity is not significantly determined by vowel quality, which supports the contention that quantity is synchronically active in Welsh phonology.

To support this case for a secondary development of tense/lax quality, I offer a reconstruction of its rise that starts with a tensing of word-final stressed vowels, perhaps initially only restricted to high vowels. This later undergoes rule generalization (e. g. Ramsammy 2015) to embrace both non-high vowels (as in most dialects with tense [e: o:]) and to syllable-final rather than word-final position (as in South Welsh dialects, where long vowels are allowed in penultimate stressed syllables). I show that intermediate stages of this development are attested across modern Welsh dialects. The secondary nature of the development is supported by the fact that Breton largely shares the quantity system of Welsh, but not the patterning of tense/lax quality.

I argue that the Brythonic languages present an interesting test case for theories that attempt to connect the 'transphonologization' of quantity as quality with the rise of vowel shifts (e. g. Kazmierski 2015): despite the long/short vowels undergoing a tense/lax split, much as in many Germanic languages, the Brythonic system neither became prone to vowel shifting (as in the case of English) nor underwent a further split where the new qualities fit into a new quantity system (as in many North Germanic varieties; e. g. Küspert 1988). I tentatively suggest that this may be due to the closer relationship between tense/lax quality and syllable structure rather than syllable quantity, which is itself related to the fact that Brythonic (and Welsh in particular) experienced less neutralization of vowel quality in unstressed syllables.

Grapho-phonological parsing: corpus annotation for historical phonology

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While electronic corpora have improved data access for historical linguists, they are rarely built with phonological questions in mind. Such methods typically focus on identification and labelling of units on higher levels of linguistic analysis, such as morphology, syntax and semantics, overlooking the phonic layer. One of the main reasons for this is that sound substance, if encoded at all, is mediated by a graphic system which may not be altogether transparent. That said, variation in non-standardised alphabetic systems, such as those of pre-modern Europe, has long been exploited to reconstruct diachronic and diatopic variation in phonological histories, so it is surprising no bespoke tools have been developed to assist in this painstaking process.

In this paper, we report on a corpus-annotation method developed for the *From Inglis To Scots (FITS)* project, which maps individual 15c Scots spellings onto their presumed sound values, allowing for a fine-grained examination of the phonotactic and morphotactic distribution of individual segments as well as variation in their values over time, space and text. This database of grapho-phonologically parsed forms is compiled on the basis of the *Linguistic Atlas of Older Scots* (LAOS – Williamson, 2008) which brings together c. 1250 local Scots documents dating from 1380 to 1500.

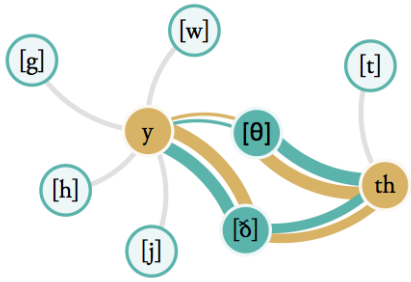

Figure 1: Overlapping sound-substitution sets for morpheme-initial consonantal graphemes <th> and <y> in FITS (line thickness = frequency)

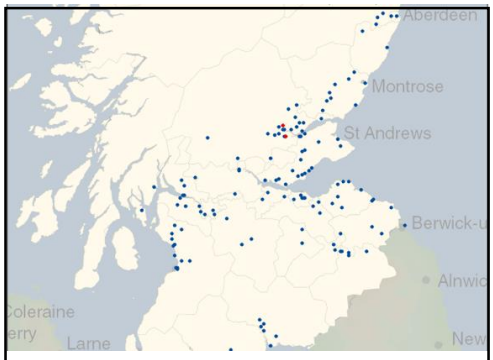

Figure 2: location of <y> for [θ] spellings (red) across all data points in the corpus (blue).

We assume that our source materials were set down by scribes "capable of sophisticated and subtle linguistic analysis" (Laing and Lass 2003: 258), so we expect there to be a systematic connection – albeit not necessarily a one-to-one match – between orthographic choices and underlying sound systems. As a result, we are able to reconstruct the array of spellings for individual sounds, and conversely, the array of sounds that can be represented by individual graphemes (see Fig.1) and can display the spatial and temporal distribution of individual sound-spelling pairings (see Figs. 2 and 3).

In addition, we link each Germanic root morpheme to its etymological source and propose a path for the development of its attested forms. The result is a corpus of detailed form histories, supported by a Corpus of Changes. This paper will discuss the technical and theoretical challenges of such procedures and exemplify the types of questions that such a quantitative yet dynamic approach affords researchers in historical phonology.

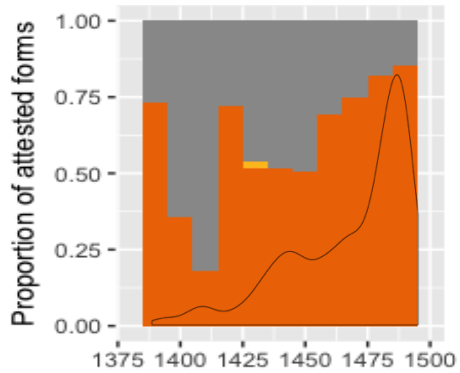

Figure 3: Proportion of medial <y> (orange), <th> (grey) and <þ> (yellow) for etymological [ð] by decade. Black line = data density.

Old Norse short *e*: one phoneme or two?

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In this paper I consider the variation in the representation of vowels in Old Norwegian writing, focusing on two interrelated classical problems in Old Norwegian phonology: the merger of short non-high vowels and the persistence of their distinctive vowel harmony patterns in post-merger manuscripts. On the basis of a corpus study of mid-13th- to mid-14th-century manuscripts and charters, I argue that traditional Old Norse phonological representations of non-high short vowels and their corresponding graphic correspondences are incompatible with the attested orthographic and phonological patterns. Specifically, I argue that what have traditionally been classified as short low vowels in Old Norse—normalized *æ*, *ǫ*—were in fact lax mid vowels—/ɛ, ɔ/—which lacked unique graphic correspondences in Old Norwegian orthography, where generally only prototypically low <æ, a> and mid <e, o> vowel graphs were used (1).

This one-to-many graphic/phonetic relationship necessarily resulted in variable spelling of lax mid vowels (2), which has complicated the study of Old Norwegian /e–ɛ/ and /o–ɔ/ vowel mergers. Since overlapping <e, æ> and <o, a> spellings like these are often cited as evidence of ongoing or completed mergers (Hreinn Benediktsson 1964), these patterns have led to a significant underrepresentation of mid vowel contrasts in Old Norwegian philological descriptions, and the geography and chronology of these mergers remain poorly understood.

(1) **Old Norwegian non-unique phonetic-graphic correspondences**

<	e>	[eː, e]	[oː, o]	<o	>
<æ	e>	[ɛ]	[ɔ]	<o	a>
<æ	>	[æː]	[ɒː]	<	a>

(2) **[ɛ]/[ɔ] spelling variation in Ivar Audunsson's (fl. 1320–35) original charters**

<sættí>	[sɛtti]	place-3.SG.PRET.	March 5 1325
<settí>	[sɛtti]	place-3.SG.PRET.	July 17 1326
<loghum>	[lɔɣum]	law-DAT.PL.	July 17 1326
<allum>	[ɔllum]	all-DAT.PL	March 5 1325

In the case of front vowels in East Norwegian charters (issued in Oslo), for example, Hreinn Benediktsson (1964: 134–36) has argued that there is no reliable evidence for an /e/–/ɛ/distinction even in the earliest texts (ca. 1207–25) since both <æ, e> spellings for historical **ɛ* are attested. But this kind of spelling variation is not evidence enough of a merger. As illustrated in Fig. 1, a finer study of the etymological distribution of [e]/[ɛ] spellings in East Norwegian charters reveals two distinct patterns: symmetric spelling variation—indeed indicative of a completed merger—and asymmetric variation—where a clear distinction is still maintained with only variable **ɛ*-spellings, as predicted in (1). These data illustrate that the tense/lax contrast was upheld by a subset of Eastern speakers more than a century later than traditionally assumed.

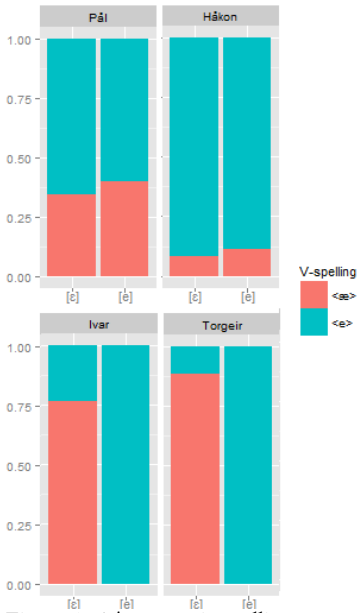

Figure 1: A/symmetric spelling variation in *e and * ɛ

A further argument for the graphemic model in (1) is provided by the maintenance of differing height harmony patterns in many reportedly post-merger manuscripts. In these texts, regardless their spelling, historically tense mid vowels trigger harmonic lowering of non-initial vowels while historically lax mid vowels do not: e.g. in the charters above, [-high]-harmonic <ſete> [sete] / *[seti] "seat" vs. [±high]-disharmonic <settí> [sɛtti] / *[sɛtte] "placed". This distinctive phonological behaviour despite often non-distinctive root-vowel representations has led many to assume overly complex and unlikely etymologically-rooted harmony rules (e.g. Hagland 1978, Kristoffersen & Torp 2017). But these patterns are consistent with the representations in (1), and I advocate a far simpler account of the variation in both Old Norwegian vowel contrasts and vowel harmony.

Beowulf and the Position of the Finite Verb:
Metrical and Phonological Demands on Clause Structure

Monique Tangelder

Despite an overwhelming body of scholarship analyzing linguistic aspects of *Beowulf,* the longest epic heroic poem in Old English (OE), the poem remains an enigma. The composer is unknown and though the single extant manuscript itself is dated at roughly 1000 AD, an actual date of composition remains a fierce subject of debate (Chase (1981), Neidorf (2014)). The special status of linguistic evidence comes with a warning, however, as archaic features of the poem should not be considered definitive proof of an early date of composition. (see e.g. Fulk 2007& 2014) There appears to be a long-standing assumption that the language of OE poetry is more archaic than that of OE prose (see e.g. Callaway's early explanation for the fact that *to*-infinitives as verb complement are practically non-existent in OE poetry (Callaway 1913: 65)), which could explain the apparently uneasy relationship between alliterative verse and verb-second (V2) clause structures, on the assumption that V2 is a Proto-Germanic innovation. Bliss (1980) and Getty (2002) observe that the metre in *Beowulf* fits some verb positions better than others, with the V2 position being to a large extent restricted to monosyllabic copulas or auxiliaries in unstressed positions. The present paper contributes to this debate by charting the positions of lexical verbs in the first 500 lines of the poem.

Lexical verbs form the core of the clause in that they license argument structures and semantic roles, expressed by accompanying NPs and APs. As a content-bearing, stressed element, the lexical verb can be expected to be metrically prominent, and hence appear in one of the two stressed positions of the half line. Unlike NPs and APs, of which the poet will have acquired a vast hoard of ready-made alliterating half-line shaped packages, the verb presents somewhat of a challenge: the meaning of the clause requires the selection of a specific verb, but this verb may compromise the demands of alliteration, as there is no stock of synonyms for verbs. However, the alliterative metre inherited from Common Germanic allows the element in the second foot of the b-verse to be stressed but non-alliterating, perfect as an escape-hatch for verbs, in a syntax in which the lexical verb is clause-final. In the following example *gifstōl* and *grētan* form the alliteration, whereas the finite verb *mōste* avoids the need to alliterate in clause-final position.

x x x x	/ \	/ x	/ x	
Nō he þone	*gifstōl*	*grētan*	*mōste*	(*Beowulf*. l. 168)

'He might not approach the gift-throne'

Clauses can of course straddle lines, and are not restricted to start at an a-verse; in spite of this, finite lexical verbs appear overwhelmingly in the non-alliterating stressed position of the b-verse. The metrical conservatism of Germanic alliterative metre apparently fits a non-V2, OV syntax like a glove, and might be argued to predate the V2 innovation in Proto-Germanic.

Deletion of the Phoneme /G/ in Word-Final Position in Standard Turkish

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The purpose of this paper is to analyse relevant historical phonological data and demonstrate how and under what conditions the voiced uvular stop /G/ is eliminated in the word-final position in Standard Turkish, which, resulted in one of the phonotactic rules of Standard Turkish. I will set out my data and conclusions in three stages.

I. The voiced uvular stop /G/ is a common phoneme in Standard Turkish as it was in its antecedent Old Anatolian (13^{th}-15^{th} c.) and Ottoman Turkish (16^{th}-19^{th} c.) periods. Within the Turkish vowel-consonant harmony rule, it appears either before or after the Turkish back vowels /a/, /ı/, /o/, /u/. Although it occurred in the word-initial, word-final, syllable-initial and syllable-final position in the early period (Stage I: Old Anatolian Turkish), it went through certain phonological changes in the word-final and syllable-final positions conditioned by the phonological environment in the following Ottoman and Standard Turkish periods.

II. Remaining the same in the word-initial and syllable-initial positions, the phoneme /G/ changes into the voiced uvular fricative /ʁ/ in final positions in Ottoman Turkish (Stage II). This has become a very wide-spread phonological development covering the majority of Anatolian dialects, which is still the case today.

III. The voiced uvular fricative /ʁ/ has gone a further change in the final positions which resulted in its deletion in Standard Turkish (stage III). This creates two phonological outcomes:

a) By deletion it creates a compensatory lengthening word-finally in all cases, and syllable-finally only before consonants:

$$/ʁ/ \rightarrow Ø \;/\; V\_\_\_\_ \begin{Bmatrix} \# \\ C \$ C \end{Bmatrix}$$

[length]

/dağ/ [daʁ] → [da:] ‘mountain’

/ağla/ [aʁla] > [a:la] ‘cry’

b) Further the compensatory lengthening disappears when a vowel immediately follows the lengthened vowel in all cases. This occurs word-finally and syllable-finally only before vowels:

$$/ʁ/ \rightarrow Ø \;/\; V\_\_\_\_ \begin{Bmatrix} \# \; V \\ C \$ V \end{Bmatrix}$$

I will also discuss historical, textual and dialectal issues around this phenomenon.

The Competing Sound Changes in the Dialects of Immigrant Communities in Linyi City

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Abstract

Hongqi, Dongfeng and Xiangyang immigrant villages in Linyi City, Shandong Province, China were formed in the 1960s as part of community relocation from Mengyin County of Shandong Province due to the building of Andi reservoir. Having identified the major differences between the immigrants' original dialects and their new surrounding dialects in syllable initials, finals and tones, this paper provides a comprehensive description of the sound changes in the Hongqi, Dongfeng and Xiangyang dialects. Drawing on the theory of lexical diffusion, the paper then explores the pattern of spreading of sound changes from the perspectives of word frequency, competing changes and residues. It is posited that the sound changes in Hongqi, Dongfeng and Xiangyan over a span of about 50 years are the results of the competition of the dual influence from their new surrounding dialects and Mandarin. The different cultural prestige and economic power represented by Mandarin and their new surrounding dialects have influenced the direction of sound changes in these three immigrant villages. The immigrants' language knowledge and attitude to Mandarin and their original and new surrounding dialects also play a role in the directions and rate of their sound changes. Lexical diffusion of the various types of sound changes is not only related to word frequency, but is also sensitive to word classes. The word frequency effects are significant only within word classes.

keywords

Immigrant dialect Language contact Lexical diffusion Competing changes and residue Word frequency and sound changes