The Fifteenth Manchester Phonology Meeting

ABSTRACTS BOOKLET

Thursday 24th - Saturday 26th May 2007

Held at
Hulme Hall, Manchester

Organised by phonologists at the **University of Edinburgh**, the **Université de Montpellier-Paul Valéry,** the **University of Manchester**, the **Université de Toulouse-Le Mirail**, and elsewhere.

This booklet contains the abstracts for all the papers presented at the **fifteenth Manchester Phonology Meeting**, held at Hulme Hall, Manchester, in May 2007.

The abstracts are arranged in alphabetical order by the surname of the (first named) presenter.

The abstracts for the **oral paper sessions** are presented first, followed by the abstracts for the **poster paper sessions**, and the booklet concludes with abstracts for the **special session**.

All sessions for papers listed in this booklet will take place in either the **Old Dining Hall,** the **Seminar Room** or the **bar area** in Hulme Hall. The opening and closing addresses and the special session will be held in the Old Dining Hall. The parallel sessions for the oral papers will be held in the Old Dining Hall and the Seminar Room, and the poster sessions will be held in the bar area.

The Old Dining Hall is in the main Hulme Hall building, upstairs, and just through the bar area and the area where the meals are held. The Seminar Room is in the new building which is opposite the entrance to the main Hulme Hall building. It takes about a minute to walk from one to the other. The **final programme**, included in your registration pack, gives the details of which papers are in which room, and at which times.

Oral papers

Perceptual Bias Based on Morphology of Korean Palatalization

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Previous researches have shown that phonotactic constraints cause perceptual biases. Massaro and Cohen (1983) and Pitt (1998), for instance, show that English listeners are biased to perceive a token ambiguous between [li] and [ri] as [ri] after [t] (since [tl-] is not allowed in English), and as [li] after [s] (since [sr-] is not allowed). We show in this paper that higher-order structure, such as morphology, also results in such biases. Specifically, we study the perception of [ti] and [ci] sequences in Korean. Both of these sequences are phonotactically well-formed. However, there is a morphological restriction on the distribution of [ti] – it does not occur across a morpheme boundary.

Korean tolerates both [ti] and [ci] sequences inside of a morpheme, resulting in minimal pairs like [ci] 'an inch', and [ti] 'a particle'. However, across a morpheme boundary, the sequence [t-i] is not tolerated. In this context, /t/ palatalizes to [c] resulting in a neutralization of the phonemic contrast between /t/ and /c/ (/pat+i/ → [paci], *[pati] 'field + NOM'). The presence of the morpheme boundary is crucial, since /t/ does not palatalize before /i/ within a morpheme (/kunti → [kunti], *[kunci] 'a small flaw'). The constraint against [ti] sequences is hence not a purely phonotactic constraint, but one that makes crucial reference to morphological structure. If morphological structure causes perceptual biases in the same way as phonotactic constraints do, then a token ambiguous between [ti] and [ci] should be perceived differently by Korean listeners based on the morphological context in which the token appears. We conducted a phoneme identification experiment to test this.

We created an 11-step continuum between [t] and [c], and inserted the steps on this continuum before [i] in two contexts: (a) *Monomorphemic*: [_ipa], and (b) *Heteromorphemic*: [ni_-ida]. None of the possible percepts corresponded to actual Korean words. Since Korean does not have a suffix of the form [-ipa], the (a) context can only be interpreted as a monomorpheme, so that both [tipa] and [cipa] would be well-formed percepts in this context. On the other hand, [-ida] is a very productive suffix in Korean, and it is very likely that listeners will "perceive" a morpheme boundary before [-ida]. In this context, only [nicida] is hence well-formed. If morphological structure causes perceptual biases in the same way that phonotactics do, then we expect a bias against [t] in the second context. If only phonotactics can cause perceptual biases, then we do not expect such a bias, as there is no purely phonotactic constraint against the sequence [ti].

We presented the continua to six Korean listeners in a phoneme identification experiment. The following figure shows the percent [t]-responses averaged across subjects for the two continua. The shift from [t] to [c] happens earlier on the hetero- than monomorphemic continuum. There are also overall more [t]-responses in the mono- than heteromorphemic context. This difference was confirmed by a one-tailed paired-samples t-test on the % [t]-responses by subject ($t(5) = 8.9$, $p < .001$). This is clear evidence of a bias against a [t]-percept in the heteromorphemic context. [t]-palatalization is a phonological process that is crucially morphologically conditioned, and the fact that this process had an influence on the responses of our subjects, shows that our listeners perform a morphological parse on the percepts, and that this higher-order morphological structure had an influence on their phoneme identification.

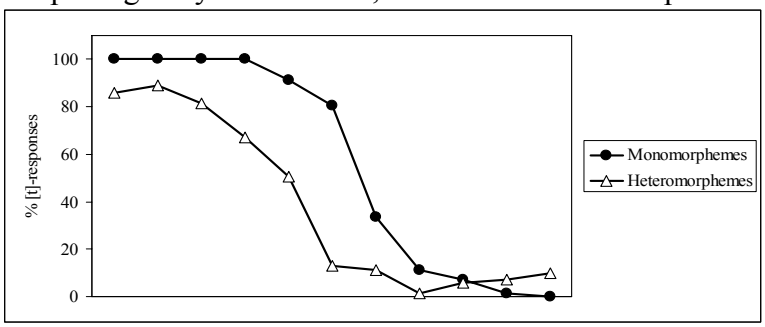

Figure 1.
[t] and [c] responses in mono- and heteromorphemes

In sum, this paper shows that grammar, both phonotactics and morphology, influences perception. We consider the implications of this for models of linguistic perception, arguing that such models must formally incorporate grammar.

References

Massaro D. W. and Cohen, M. M. (1983) Phonological constraints in speech perception. *Perception and Psychophysics 34*, 338-348.

Pitt, M. A. (1998) Phonological processes and the perception of phonotactically illegal consonant cluster. *Perception and Psychophysics 60*, 941-951.

On the ambivalent representation of the Korean liquid

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This paper reanalyzes the morpho/phonological aspects of the Korean liquid in light of the internal geometric organization of the segment. Specifically, I propose an ambivalent status for the [continuant] property in the Korean liquid, according to which both [+cont] and [-cont] specifications are posited. This seemingly controversial proposal not only leads to resolution of the controversial issue of the so-called irregular verbal conjugation but also provides satisfactory accounts of the *n* ~ *l* alternation in compounds as well as so-called initial avoidance in Sino-Korean words.

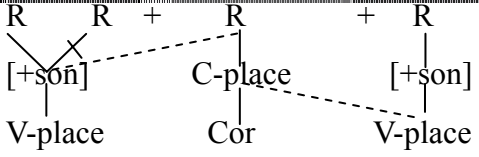
The discussion starts with the idiosyncratic patterns in verbal conjugation in (1) showing the multiple *t*~*l*~*r*~*n*~∅ alternations. Here the so-called *t*- (or *r*-) irregular (i.e., shaded) stem 'ask' shows various neutralization relationships with three different types of verb stems. The question arises then as to the underlying representation of the stem-final consonant in 'ask', i.e., whether /r/ or /t/ (Kim 1971, Ahn 1998, etc.). In this paper, it is argued that the [+sonorant] property of the so-called *t*-irregular stem-final consonant is transferred from the preceding (previously) long vowel because of its excessive sonority, while the [+cont] property is shared with the following suffix vowel. As shown in (2), therefore, a liquid emerges from the transferred properties of sonorancy and continuancy, in conjunction with the specification of [-continuant] in the C-place. And the reduction of the excessive sonority in the preceding long vowel results in a short vowel before a vowel-initial suffix. That is, as (3) shows, the loss of vowel length is compensated for by the realization of a liquid.

Various pieces of data, both synchronic and diachronic, support the current proposal for ambivalent representation of the Korean liquid. First, the blocking of resyllabification (or the [l]~[g] dialectal variation) of a liquid in Middle Korean can be attributed to the internal organization of this segment, which is more complicated than those of other consonants. Second, the deletion of the stem-final liquid before a non-labial consonant in Middle Korean can be explained in terms of dissimilation in the adjacent [-cont] properties. Third, synchronically, this account is also compatible with the claim (Iverson & Sohn 1994) that the Korean liquid is represented as having [-cont] since all syllable-final consonants are unreleased in Korean. That is, the default specification for [cont] fills in the negative value syllable-finally, producing an unreleased liquid. Moreover, this account of liquid representation extends to the liquid/nasal alternation in the so-called initial avoidance of /l/ in Sino-Korean words, in which the liquid shares [-cont] with the nasals. Finally, if time permits, I will add an opacity issue occurring in *l*-deletion and *n*→ *l* assimilation, which shows a drawback of the current OT (McCarthy & Prince 1995, Yip 2004, McCarthy 2006, etc.).

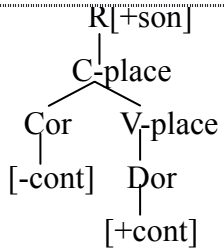
(1)

	'bury'	'ask'	'bite'	'be soft'	Suffixation
a.	[mutta]	[mu(:)tta]	[mulda]	[murɨda]	*-ta* Declarative
b.	[mudəsə]	[murəsə]	[murəsə]	[mulləsə]	*-əsə* Connetive
c.	[mudɨni]	[murɨni]	[murɨni]	[murɨni]	*-ɨni* Causal
d.	[munni]	[munni]	[muni]	[murɨni]	*-ni* Interrogative

(2)



(3)



Long V+ [-cont] C]$_{\text{V-stem}}$ + V$_{\text{suf}}$

A Universal Typology of Truncation

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There exist two divergent claims in the literature about the structure of truncated words. Many descriptive studies emphasise the structural variability of outputs of word truncation. On the other hand, however, patterns of word truncation have come to provide some of the key evidence for *Generalised Template Theory* (GTT, McCarthy & Prince 1995, 1998), which makes profound predictions about the structure of truncated words. Whereas there exists a large number of studies that deal with (selected) truncatory processes in individual languages, no attempt has been made yet to systematically test the predictions of GTT against the findings of these studies. In this paper we set out to remedy this situation.

On the basis of available studies as well as our own empirical research, we present a crosslinguistic typology of truncatory patterns. Two structural aspects will be considered: (a) the structure of the truncation template (i.e. number of syllables and metrical structure) and (b) *Anchoring* (i.e. the question which part of the base form survives in the truncated form).

As to (a), GTT claims that the structure of truncatory templates emerges under the pressure of prosodic markedness constraints determining the metrical structure of a language. When these constraints dominate process-specific faithfulness constraints (MAX$_{BT}$: preserve as much material of the base word as possible in the truncation morpheme), they act as size restrictor constraints (SRCSs) and a templatic form emerges. In addition to the SRCs proposed in the literature generating foot-templates, we propose one more SRC responsible for the generation of the typical monosyllabic template of truncation patterns. We will show that the most fundamental claims made by GTT are borne out by the data. Thus, the overwhelming majority of truncatory templates in our sample corresponds to a foot compatible with the metrical structure of the respective language, or to a single syllable; furthermore, there is no language in which the structure of truncations obviates its metrical structure.

With respect to (b), we will show that anchoring in truncation is surprisingly uniform across languages. The vast majority of truncated forms anchor to either the initial, or the main-stressed syllable, with some additional relevance of word-final material, a fact that we will express with a family of ANCHOR-P constraints sensitive to prominence.

When we examine the factorial typology of MAX$_{BT}$, the various SRCs and ANCHOR-P constraints, we find that they generate the following typology of truncation:

(1) SRC >> ANCHOR-P, MAX$_{BT}$

Italian name truncation (Alber 2007):	*Francésca – Fránce*
English name truncation (Lappe 2005):	*David – Dave*
Japanese hypocoristics (Mester 1990):	*Midori-Mido-tyan, Mii-tyan*
Spanish (Piñeros 1998, 2000a,b):	*Armínda-Mínda*

(2) ANCHOR-P >> SRC >> MAX$_{BT}$

Southern Italian vocatives Alber (2007):	*Páola-Pá, Francésca-Francé, Antonélla–Antoné*
English clippings(Lappe 2005):	*celébrity-céleb*
German clippings (Wiese 2001):	*Verstécken-Versték+i, Elegánter-Elegánt+i*

Since truncation arises only if some SRC dominates MAX$_{BT}$, the factorial typology amounts to the rankings in (1) and (2). (1) illustrates the classic truncation pattern, where a truncation morpheme of templatic shape (foot or syllable) is generated. The ranking in (2) generates an even more interesting truncation morpheme of variable length, so far neglected in the literature. It is the result of the dominant position of ANCHOR-P constraints favoring the preservation of prominent material of the base (mainly first and stressed syllables).

We will show that once the types of SRCs and ANCHOR-P constraints are spelled out all the systems predicted by the factorial typology outlined above are in fact attested in some language. Furthermore, so far we did not find any truncation patterns contradicting the constraint system we propose. Thus, GTT, if spelled out in detail, generates only and – at least considering the data available to date – all the attested patterns of truncation.

Natural classes are not enough: Biased generalization in novel onset clusters

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A fundamental source of evidence that speakers internalize phonological knowledge is the fact that they can generalize this knowledge to novel items. For example, English speakers tend to agree that *blick* is relatively acceptable/plausible, whereas *bnick* is quite impossible (Halle 1974). Although this oft-cited comparison shows that speakers know something about English phonology, it is not particularly revealing as to the form that this knowledge takes. In fact, given just this datum, we might hypothesize that **bnick* is bad simply because word-initial *#bn* is unattested i.e., a purely statistical difference between the strings *#bl* and *#bn*. What is more telling and important is that speakers also show preferences for certain unattested sequences over others: *bwick* > *bnick* > *bzick*. I present experimental data documenting a number of such preferences in onset and coda clusters, as seen both in repetition accuracy and acceptability ratings for novel words (example in Fig. 1). Unlike *#bl* > *#bn*, such preferences cannot be explained by the string frequencies of the clusters involved, since they are all zero (unattested).

The central question, then, is what kind of knowledge do speakers use to make these distinctions. I compare four possible accounts: (1) a strictly word-based account (*bwick* is very similar to *brick*, while *bnick* has no close neighbors), (2) an account based on perceptual distance (*bw* is very similar to *br*, while *bn* is less similar to any attested cluster), (3) an account based on generalization over natural classes ([—sonorant][—consonantal] sequences like *#bw* are well supported, while [—sonorant][+sonorant] sequences like *#bn* are less so), and (4) an account that incorporates markedness biases (*bw* intrinsically and universally preferred over *bn*). I present computationally implemented models of all four accounts, and compare their ability to model the experimentally obtained ratings of 335 nonce words.

The results, in brief, are as follows: an account based solely on similarity to words is easily defeated by accidental gaps in the lexicon, which lead it to bizarre and incorrect predictions like *bwick* > *bnick* (similarity to *brick*), but *bneese* > *bweese* (similarity to *niece, lease*). An account based on perceptual similarity of clusters fares better, but suffers from the fact that featurally dissimilar sounds can be perceptually rather similar (e.g., [z], [r]), leading the model to overestimate the goodness of words like *bzick*. A model that employs natural classes does much better; it provides a good match to ratings of words with attested sequences (r = .76), and a moderately good match to words with unattested clusters (r = .49, Fig. 2). When the results are viewed in detail, however, we see that the model still fails to capture the preferences in Fig. 1, generally preferring *bn* > *bw*. We find that this preference is captured only when the model is augmented with a markedness bias parallel to the sonority sequencing generalization. These results support the view that phonological knowledge must be encoded with a grammar that combines both learned and inherent preferences.

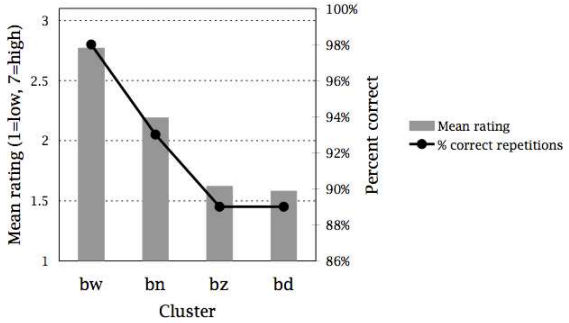

Fig. 1: Preferences among unattested clusters

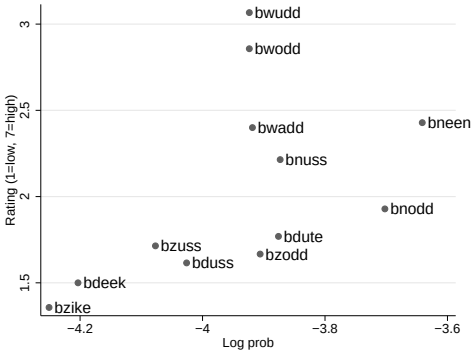

Fig. 2: Natural class-based model

Coda Licensing and the Mora in North Saami Gradation

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North Saami has a complex system of vowel length and consonantal grade alternations which accompanies certain morphological distinctions such as nominative vs. accusative. This paper gives an overview of the relevant facts, and we show that the varied manifestations of gradation submit to a very simple analysis. An inflectional morpheme is added, which is realized almost exclusively as the addition of a free mora at the right edge of the stem, and the mora associates to the coda of the head syllable in the stem. General principles of the language then determine how the mora (or its lack) gives rise to the complex gradation pattern.

Part of the complexity of the system arise from gradation's involvement in vowel and diphthong length alternations – vowels and diphthongs can be long vs. short, and vocalic length alternations are central to the gradation system. Like Estonian, North Saami also presents a three-way difference in consonant length between short, long, and overlong consonants, which alternate in the gradation system, and which cause changes in vocalic length under certain circumstances. Gradation alternations – exemplified by acc. sg. ~ nom. sg. pairs where the second form (the nom. sg.) shows the effect of mora addition – include preaspiration (*čiega ~ čiehka* "corner"), lengthening of preaspiration (*geahču ~ gĕahhču* "surveillance"), overlengthening (*cuumma ~ cummma* "kiss") and ordinary lengthening (*roaði ~ roaðði* "redness"), nasal glottalization (*loana ~ loaʔna* "loan") and glottal-shift (*bieʔmu ~ bĭemʔmu* "food"), and coda strengthening (*gaaḟti ~ gaakti* "jacket").

We show that the overlong consonant grade (triply-long C, long preaspiration, interrupted nasal) contrasts with the simple long grade (long C, simple preaspiration, preglottalized nasal), in that consonants of the overlong grade exhaust the second mora of the syllable, whereas consonants of the plain-long grade share a mora with the preceding vowel. The two longer grades thus have in common that the consonant is moraic, but are distinguished by whether the mora is also shared with a vowel. Assuming a maximally bimoraic syllable, the grade alternations and concomittant vowel-length alternations are described naturally in terms of an alternation in moraic association. In the consonantally-longer nominative (*gĕahhču*, *bĭemʔmu*), the root-medial consonant /hč, ʔm/ is underlyingly moraic, and the nominative mora links exclusively to the medial consonant /hč, ʔm/. This means that /hč/ manifests the entire duration of that mora so the preaspiration is longer ([hhč]) and glottalization appears within the coda nasal, giving an interrupted nasal ([mʔm]). Because of the dimoraic limit on syllables, the two vowels of the diphthong must share a mora, so the diphthong is short. In the accusative (*geahču, bieʔmu*) the diphthong and the consonant share a mora, the consonant is shorter (preaspiration is short, glottalization consumes all of the consonant's coda duration), and the diphthong is long since the vocalic elements are each linked to a mora.

A further aspect of gradation is the alternation between laryngeally-marked versus plain short consonants, observed in stems with non-moraic laryngeally-marked consonants. All laryngeally-marked consonants in Saami must be licenced by a mora in coda position — a surprising fact given that laryngeal features are most commonly lost, not licensed, in the coda — and when a consonant with laryngeal features is exclusively in onset position, it loses laryngeal specification. In the nominative (*čiehka, loaʔna*), the inflectional mora links to the laryngeally-marked consonant /hk, ʔn/, which therefore licenses aspiration or glottalization. In the accusative (*čiega, loana*), the consonant is non-moraic so it only syllabifies as an onset, and must lose aspiration or glottalization. Surface voicing of the obstruent results from a general rule of implementation, phonetically voicing all plain singleton stops between sonorants.

Revisiting Onset Faithfulness Constraints: Evidence from Catalan Voice Neutralization

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In Wheeler's (2005) analysis of Catalan voicing, he compares the *licensing by prosody* approach (Beckman 1998), which refers to onsets, to the *licensing by cue* approach (Steriade 1997), which specifically rejects any role for syllable structure, onset or coda. Wheeler concludes that the voicing behavior of obstruents provides support for the prosody approach, since the data cannot be accounted for in a licensing by cue approach; but he rejects the constraint that preserves voicing in onsets, suggesting that in Catalan, it is necessary to make direct reference to *codas*. While we agree with Wheeler that the data cannot be handled with licensing by cue, we argue that once the onset constraint of Beckman is supplemented with a constraint requiring presonorant faithfulness (Petrova et al. 2006; Beckman, Jessen & Ringen 2006), the Catalan data can be described without reference to codas (c.f. Wheeler's coda constraint: "A coda obstruent and a following segment must agree in voicing").

At the word level, Catalan voicing contrasts are neutralized in word-final position (*sap* [ˈsap] 'knows' vs. *sabem* [səˈβɛm] 'know 1st SG PRES IND' ; c.f. *tip* [ˈtip] 'fed up M' vs. *tipa* [ˈti.pə] 'fed up F'). Onsets are maximized: obstruent+liquid and obstruent+glide clusters form complex onsets whenever possible (e.g., *tecla* [ˈte.klə] 'key', *obliqua* [u.ˈβli.kwə] 'oblique F'), so NoCoda » *Complex. In addition, laryngeal specifications need not be shared within a consonant cluster—a voiced/voiceless contrast is maintained on onset obstruents in pre-sonorant position (e.g., *prou* [ˈpɹɔw] 'enough' vs. *brou* [ˈbɹɔw] 'broth').

These facts can be captured by the interactions of constraints sketched in (1) and illustrated in (2); crucially, either Id-Onset[voi] or Id-Preson[voi] must dominate Agree[voi] ("An obstruent agrees in voicing with a following consonant").

(1) Onset, NoCoda » *Comp; Id-Onset[voi] >> Agree[voi] >> Id-Preson[voi]

(2) Crucial case: Word-internal onset obstruent+sonorant clusters need not agree

Te/kl/*a*	NoCoda	Id-Onset	Agree[voi]	Id-Preson	*Complex
☞ *te*.[kl]*a*			*		*
te.[gl]*a*		*!		*	*
te[k.l]*a*	*!		*		

At the phrasal level, onsets are *not* maximized: word-final obstruents do not resyllabify to create a complex onset with a following word-initial sonorant consonant (thus *Complex » NoCoda). Instead, they take on the voicing of a following consonant (e.g. *sap riure* [ˈsab.ˈriwɾə] 'knows how to laugh'), suggesting that Agree[voi] » Id-Preson[voi]. Hence, the facts of Catalan apparently require a reranking of constraints at the phrasal level (see (3))–as in Stratal OT. However, when the following word is vowel-initial, the word-final obstruent resyllabifies (due to undominated Onset)—*and it surfaces as voiceless* (e.g. *sap ajudar* [ˈsa.**p**əʒuˈða] 'knows how to help'), showing output-output faithfulness to its word-level correspondent, $Id_{Wd\text{-}Phr}$[voi], as proposed by Wheeler (2005) ("The value for [voice] in an element of a Phonological Phrase is the same as that of its correspondent in a Phonological Word"). The positional faithfulness analysis of these facts is sketched in (3)-(5) below.

(3) Ons, *Comp » NoCoda; Agree[voi] >> $Id_{Wd\text{-}Phr}$[voi] >> Id-Preson[voi], Id-Onset[voi]

(4) Phrasal: /voiced/ # V

/b#a/ [p#ə]	$Id_{Wd\text{-}phr}$	Id-Ons	Id-Preson
.ba	*!		
☞ .pa		*	*

(5) Phrasal: /voiced/ # sonorant C

/b#l/ [p#l]	*Comp	Agr	$Id_{Wd\text{-}phr}$	NoCoda	Id-Ons	Id-Preson
.bl	*!		*			
.pl	*!	*			*	*
☞ b.l			*	*		
p.l		*!		*		*

Wheeler's generalization that only coda consonants agree with the following consonant in voicing is correct, but we have demonstrated that this is the result of the interaction of independently-motivated constraints, rather than a special coda constraint.

A Government Phonology Analysis of Syllabic Consonants in Coptic

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These last years, the phonological representation of syllabic consonants has been largely discussed in Government Phonology (henceforth GP). According to this framework, the syllabic consonants must be represented as being associated to both consonant and vocalic position. Nevertheless, interpreting the syllabic consonant as a segment linked both to a C and V slot raises an interesting question : are syllabic consonants left or right-branching ? Actually, both alternatives exist. Right-branching configuration is argued by Rowicka (2003), Blaho (2001, 2004) and Rennison (1999) and left-branching configuration is argued by Harris (1994), Hall (1992), Wiese (1986, 1996), Szigetvári (1999), Toft (2002) and Scheer (2004). The most valuable evidence regarding syllabic consonants' branching representation come from the complementary distribution of Ç and əC accross languages. This widespread pattern leads us to claim that left-branching structures must be favoured over right-branching structures. Broadly speaking, the presence or the absence of a schwa determines the syllabic status of the consonant on its right.

Complementary distribution of Ç and əC is also attested in Coptic, an extinct Afro-Asiatic language in which three dialects among the five – Sahidic (S), Lycopolitan (L) and Akhmimic (A) – present syllabic consonants. According to some (Worrell 1933, Polotsky 1934, Nagel 1966, Vycichl 1990), all the consonants of these dialects could have a syllabic counterpart. Among those, only the sonorants could be accented.

Three Coptic facts support the double association hypothesis. First, the syllabic consonants of the dialects S, A and L correspond regularly to a sequence əC in the Bohairic (B) and Fayyumic (F) dialects:

(1)

S/L/A	**B/F**	
n̩ʃɔ́t	**ən**ʃɔ́t	'to be hard'
ʃ**ḿ̩**ʃə	ʃ**ə́m**ʃə	'to serve'
ʃɔ́lm**s̩**	ʃɔ́lm**əs**	'mosquito'

Second, Ç ∼ əC alternation is frequent inside the same dialect. In S, for example, the same word could appear with or without schwa: **əβ**ʃə ∼ **β̩**ʃə 'thoughtlessness', hoβ**əs** ∼ hoβ**s̩** 'lid'. The absence of the schwa then conditions the syllabic status of the consonant. Third, syllabic consonants in S, L and A diachronically emerge from the loss of a preceding reduced (unaccentuated) vowel: *əC > ØC > Ç.

These Coptic facts will be analysed under Strict CV Phonology framework (Lowenstamm 1996, Scheer 2004). In this talk, we will show that the dialectal correspondence of Ç and əC, the intra-dialectal complementary distribution of Ç and əC and the emergence of syllabic consonants not only lead us to interpret these last as being doubly associated, but also to consider that this association must be left-branching (Harris 1994, Toft 2002, Scheer 2004, *in press*). Moreover, nasal homorganicity will be used as an additional argument in favour of this representation and we will explain why, in A and L, the sonorants – syllabic or not – are prohibited in final position when they are preceded by an obstruent or a long vowel. Finally, we will see that the resolution of this restriction by a schwa insertion to the right of the consonant (^{A,L}**sotmə** 'to hear' but ^{S}**sotm̩** and ^{B,F}**sotəm**) does not necessarily constitute a counter-argument against the left-association assumption.

Are there universal principles determining prosodic word size?

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Prosodic words are defined by phonological patterns ('p-patterns'), e.g. assimilation or stress placement, which reference morphological structure, e.g. stems, affixes and clitics. Prosodic Phonology (Nespor & Vogel 1986) assumes that, in each language, a set of p-patterns clusters on a single prosodic domain "word", intermediate between the foot and the phonological phrase. This assumption has been challenged by a detailed study of 60 languages (Schiering et al. 2006). However, the absence of a unique domain on which p-patterns cluster does not preclude the possibility of cross-linguistic trends in clustering: it may well be that certain kinds of p-patterns reference similarly-sized domains across languages, different from what other p-patterns reference.

To find out, we measured relative domain size by dividing the number of stem and affix types (prefix, suffix, etc.) included in a domain by the total number of stem and affix types available in the language. Taking this measure in a sample of 70 languages, we then searched for possible clusters of similarly-sized domains using Multidimensional Scaling. The analysis suggests that domains referenced by stress rules tend to form similarly-sized domains, but no other p-patterns show any clusters of similarly-sized domains; tone, for example, does not side with stress but targets domains of various sizes, just like any other p-pattern.

The over-all dataset suggests that stress patterns target larger domains (μ=.74, *sd*=.28) than other p-patterns (μ=.52, *sd*=.24) and have a strong frequency increase of large domains (approximating the maximum) not found with non-stress patterns. In order to test whether this difference is independent of areal and genealogical confounds, we performed a factorial analysis of variance on a sample of 40 Sino-Tibetan (17), Austroasiatic (11) and Indo-European (12) languages from Europe (9), South/Southwestern Asia (14), and Southeast Asia (17). The analysis shows that both stress and genealogical stock, but not area, have a significant main effect on size (both p<.0001, using Janssen et al.'s 2006 randomization methods). These effects are independent of each other (interaction p=.23). (When evidence from lexically-specified phonological patterns is also considered, the stress effect dissappears from Austroasiatic (p=.8), but not from either Indo-European (p=.0001) or Sino-Tibetan (p=.0003).)

This suggests that there is a universal (i.e. area-independent and family-independent) principle for stress rules to reference larger domains than other rules. The difference between stress and other rules that we find supports models of prosodic structure that strictly separate stress-based domains (i.e. genuinely 'prosodic' domains) from those of other p-patterns (Pike 1945) or at least allow defining domains relative to phonological tiers (Hyman et al. 1987).

Grassman's Law in Greek: Allomorphy versus Aspiration

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Grassman's Law in Greek is traditionally seen as affecting di-aspirate roots. Two examples involving verb roots are given in (1) (roots are underlined):

(1)		*Aorist passive*	*Aorist active*	*Supposed root*	
	a.	e-**t**á**p**^{h}-ee-n	é-**t**^{h}a**p**-s-a	**t**^{h}a**p**^{h}	'bury'
	b.	e-**t**rú**p**^{h}-ee-n	é-**t**^{h}ru**p**-s-a	**t**^{h}ru**p**^{h}	'crush'

The pattern in the aorist forms under (1) is constrained by the /s/ following the root-final consonant; /s/ can be preceded by unaspirated stops only.

However, verb (and noun) roots exhibiting this 'mobility' of aspiration are quite rare. It would be desirable if their behaviour could be forecast from other, more normal cases. Very regular is the derivation of reduplicated perfect forms of verbs with initial aspirates, as in (2a) (the example in (2b) involves straightforward, complete reduplication of a non-aspirated consonant):

(2)		*Present*	*Perfect*	
	a.	**t**^{h}uú-oo	**t**é-**t**^{h}u-k-a	'sacrifice'
	b.	luú-oo	lé-lu-k-a	'loosen'

Here the unconstrained pattern in the perfect resembles the passive forms in (1): plain first, aspirate second.

In the case of aspirate-initial suffixes following single-aspirate roots, no consistent pattern is observed. Compare the form in (3a) with that in (3b):

(3)	a.	*Aorist passive*	*Aorist active*	
		e-**t**ú-**t**^{h}ee-n	é-**t**^{h}uu-s-a	'sacrifice'
	b.	*Present imp.*	*Present*	
		p^{h}á-**t**^{h}i	**p**^{h}ee-mí	'say'

The first case seems to display deaspiration of a stem aspirate before an aspirate-initial suffix, while the second case preserves the aspirate in the stem.

Finally, in (4) we observe that in the case of two successive aspirate-initial suffixes, it is the second that exhibits de-aspiration:

(4)		*Aorist passive*	*Aorist passive imp*.	
	a.	e-lú-**t**^{h}ee-n	lú-**t**^{h}ee-**t**i	'loosen'
	b.	e-leí**p**^{h}-**t**^{h}ee-n	leí**p**^{h}-**t**^{h}ee-**t**i	'leave'

Note that the form in (4b) shows that there is retrogressive *assimilation* of aspiration in stop clusters. This is mandatory unless the first stop is a coronal (in which case it changes to /s/).

The various patterns of allomorphy conditioned by Grassman's Law are shaped by the conflicting demands of assimilation, dissimilation, and faithfulness. In our talk, we will offer an account of these patterns in terms of Dependency Phonology and Optimality Theory. We will see that a crucial case is the Attic equivalent of /e-**t**rú**p**^{h}-ee-n/ in (1b), which is e-**t**^{h}rú**p**^{h}-**t**^{h}een (rather than *e-**t**^{h}rú**p**-**t**een or *e-**t**rú**p**^{h}-**t**^{h}een).

Allomorphic simplification and the regularisation of hiatus avoidance strategies in contact-induced Englishes

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Vernacular varieties of English have a complex system of resolving vowel-vowel hiatus and most have a range of strategies at their disposal. These strategies are determined by a number of linguistic contextual factors (such as the quality of the first vowel and the grammatical status of the lexical item containing that first vowel), which are often the result of relics and residues of (often unconnected) historical processes that have been underway in the varieties in question for centuries.

For example, the definite and indefinite articles have different allomorphs – [ðɪ] and [ən] before vowels and [ðə] and [ə] before consonants respectively. Similarly, a large number of function words can also be variably but systematically allomorphic (but in a range of different ways). For example, *to* is routinely [tuː] before vowels but [tə] before consonants; *you* is routinely [juː] before vowels but [jə] before consonants; *I* is often [aɪ] before vowels and [ə] before consonants; of is often [ə] before consonants and [əv] before vowels.

In contexts of V [+ high] # V, a glide – either [w] if the high vowel is back and/or rounded or [j] if the high vowel is unrounded and front – eases the transition from vowel to vowel (as in examples (1) and (2) below). Cruttenden (2001:289) calls this "intrusive [j w]".

(1) Go inside [gʌuʷɪnsaɪd]
(2) Jelly and ice-cream [dʒɛliʲənɑɪskɹiːm]

In contexts of V [-high] # V contexts, most non-rhotic vernacular varieties of English insert [r]. This phenomenon is often called linking [r] (if the first vowel is the consequence of the historical loss of rhoticity) or intrusive [r] (if there are no etymological traces of <r> in the word). The phonological status of [r] insertion has, of course, been subject to a very rigorous debate in the theoretical phonological literature (Halle and Idsardi 1997, McCarthy 1993, 1999, McMahon 2000, Orgun 2001, Sebregts 2001, Uffmann 2007).

In this paper we present findings from an empirical study of vernacular London speech and also examine other varieties that have undergone sociocultural and language contact to demonstrate that changes are taking place in the traditional hiatus breaking system. These varieties appear to be moving the language towards a regularised system which is shared by diverse (and demographically unconnected) varieties of English, and can be considered as an example of the emergence of the unmarked.

Enhancement of contrast and the origins of Consonant Gradation in Finno-Saamic

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When presented with ultranormal stimuli, animals and humans alike show enhanced perceptual responses, but it is only recently that phonologists have begun to study the relevance of this general cognitive phenomenon for phonology, where it may be seen at work in the enhancement of contrast (Gussenhoven 2004). Two general points about enhancement are made here. First, enhancement operates at the (language-specific) systemic level by making adjustments to *either* member of the contrasting pair. Second, adjustments may be made either directly to the exponent itself or displaced onto the exponent's immediate environment. In many languages, for example, the voicing opposition in plosives is enhanced by the duration of the stop closure (voiceless $>_{dur}$ voiced). This secondary feature may itself be enhanced by varying the duration of the preceding vowel (shortening and/or lengthening in complementary environments), e.g. /bet/ [bɛ̆ʔtˑ] • /bed/ [bɛˑɾ].

The Finno-Saamic languages are well known for their intricate systems of quantity contrast. Most of these languages have contrasts V • VV and C • CC and allow hypercharacterized VVCC rhymes. In addition, Saami also has 'overlong' geminates (C:C). For this reason they provide an excellent opportunity for studying the ways in which durational enhancement, followed by reanalysis, may give rise to unusual phonological patterns. It is no accident that the same languages also have complex quantity alternations. The best known of these is Consonant Gradation (CG), which was conditioned historically by the presence or absence of a coda in the unstressed syllable of the foot, e.g. Proto-FS: **(ka.lˑa) ~ *(ka.l̆am)* 'fish NOM.SG ~ ACC.SG' > Modern North Saami: *(kuol.lii) ~ (kuo.lii)*. So far it has remained a mystery as to what the link is between syllable structure and foot-medial quantity. The answer, I will argue, lies in durational enhancement. CG is not the only alternation conditioned by this environment, and an examination of these gives us some important clues as to the nature of the link. In the Deatnu variety of East Finnmark Saami (Sammallahti 2006), closed unstressed syllables undergo nuclear lengthening, while open unstressed syllables remain unlengthened, e.g. /kiehtɑ/→ *(kieh.tɑ)* 'hand', /kiehtɑ + n/→ *(kieh.tɑɑn)* (essive). In other dialects (e.g. Skolt), it is the closed unstressed syllables that remain unaltered, while the vowels of open unstressed syllables are reduced — an asymmetry also known from languages like English (reduction to schwa blocked in closed syllables) and Arabic (medial syncope in 'double-sided' open syllable VCVCV environment). The origin of both of these asymmetries is that closed syllables are more salient than open syllables: they are longer in duration and evince greater modulation of the signal. At some point in the history of Deatnu Saami, speakers enhanced the intrinsic prominence of the closed syllable by lengthening the nucleus. I argue CG arose as an enhancement of the same contrast, except it worked like the English example by making adjustments to adjacent segments. Here too, adjustments may in principle be implemented on either term of the contrast. Importantly, Balto-Finnic and Saami targeted different terms of the contrast. In Balto-Finnic, a lenition strategy was applied which enhanced the unstressed closed rhyme by decreasing the duration of the foot-medial consonant(s), e.g. **kota-n* 'hut (gen.sg)' > **kŏtan* (> **koðan* > MFi *kota ~ kodan*). In Saami, however, a fortition strategy was used that enhanced the unstressed open rhyme by increasing the duration of the foot-medial consonant(s), e.g. **kota* 'hut' > **kɔɔtˑaa* (> **kɔɔʰtˑɛɛ* > MNS *koahtii ~ koaðii*). I will show how these different choices explain striking asymmetries between the two groups in the nature of the alternations, the targets and the domain of application. In Saami, CG affects all consonants, but in Balto-Finnic it only affects plosives. Also, in Saami CG applies only foot-medially, but in Balto-Finnic CG may also occur at foot boundaries, e.g. *(am.mat).ti ~ (am.ma).tin* 'job NOM.SG~GEN.SG'.

Understanding enhancement promises to bring greater insight into the ways in which (morpho-)phonological systems reflect the activity of general cognitive strategies, even though the resulting patterns themselves, once phonologized, may be limited to perhaps a handful of related languages.

When a Feature is Metrical: Vowel Harmony in Two Romance Dialects

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Among the Romance languages metaphony, i.e. assimilation of the stressed vowel to the word-final one, is a widespread phenomenon (Hualde 1989, Maiden 1991 among others), while the opposite situation (assimilation of word-final vowels to the stressed ones) is much less common and studied. Nevertheless, such vowel harmonies were reported to exist in some dialects of Northern Italy and were described by nineteen-century dialectologists; although restricted to very small areas, traces can still be found among older speakers. In a few villages, that is Piverone (where a variety of Piedmontese is spoken, cf. [Flechia 1896]) and some villages between Southern Switzerland and Lombardy (speaking a variety of Lombard, cf. [Salvioni 1894]) there are vowel harmony systems possessing interesting, somehow unique features, which have not hitherto been studied. From a theoretical point of view, they seem to support an analysis of vowel harmony in terms of metrical spreading, and of unary features.

Piverone: word-final vowel is high [i u] if the stressed vowel is high [ɪ i u y], both in paroxytones and proparoxytones: [ˈskrivu] 'I write' [turˈtifuli] 'potatoes'. Otherwise the final vowel is non high [a e ɔ] if the stressed vowel is non high [a ɛ e ɔ ø]: [ˈkantɔ] 'I sing' [ˈmandule] 'almonds'. Also clitics assimilate: [da-me] 'give me' [mus-mi] 'show me' [pɛrd-lɔ] 'lose it' [rump-lu] 'break it'. In proparoxytones the penultimate vowel is transparent, i.e. unable to be affected by, block or trigger harmony: [ˈmandule].

Ticinese: what is word-final [a] in most Lombard dialects, in some villages is a copy of the stressed vowel. [nø ˈbarba ˈkurtu e ˈnegre] 'a short and black beard' [nø ˈpɛrlɛ ˈfini la ˈkøstø] 'a refined pearl is expensive'. Also clitics are affected: [ˈpiki-li] 'beat her' [ˈbyty-ly] 'put her'. The other final vowels do not undergo harmony.

These harmonies defy several fundamental properties of the vowel systems of their dialects, since they actually create vowels otherwise unlicensed in unstressed position: unstressed [ɔ] is impossible in Piedmontese, [ɛ ø y] are not licit final unstressed vowels in Lombard. The skipping of the penultimate vowel in proparoxytones is a problem for locality.

These problems can be accounted for if the spreading, whatever the model adopted (copying, correspondence, etc.), is not segmental, but metrical: if the spreading feature is seen as a suprasegmental, Piveronese word-final [ɔ] is not to be equated with any stressed /ɔ/, but it is the phonetic result of segmental /u/ + a metrical lowering feature instead. Also assimilation of clitic vowels is better accounted for taking into consideration metrical structure.

Formally, the low feature of a stressed vowel spreads to the immediately lower node in the metrical tree to its right. In oxytones from penultimate to final vowels; for proparoxytones I adopt a parsing with a degenerate and a iambic foot: e.g. [ˈmandule] is (x)(. x). A iambic foot, although seldom used for Romance languages, is in my opinion independently motivated by theoretical and empirical reasons, which include reduction of unparsed syllables and motivation for the tendency towards antepenultimate stress in trisyllabic words, common to most Italian dialects, and Italian as well. This representation accounts for the transparency in proparoxytone words of the penultimate vowel, which in this way is not the node immediately dominated by the stressed vowel. Alternatively, a ternary foot could be assumed.

While describing the spreading in Piveronese in terms of binary features would not capture its asymmetric nature (non high vowels lower high vowels, but high vowels do not raise [a]), it is easily expressed with unary features (Anderson & Ewen 1987). The three segments allowed in final position are simply {a} {i} {u}, and the metrically spreading feature is {a}. [ɔ] and [e] after a non high vowel are the phonetic result of {i} + suprasegmental feature {a} and {u} + suprasegmental feature {a} respectively.

Perception of contrast between clusters & their simplified counterparts correlates with Final Cluster Simplification

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This paper demonstrates a correlation between a phonological pattern, the presence or absence of Final Cluster Simplification for particular clusters in Trinidad English (TE) and Quebec French (QF), and the perceptibility of C_2 in a word final cluster. It has been reported that TE and QF do not release C_2 in clusters while non-simplifying Standard French and Standard American English (SE) do (cf. Archambault & Dumochel 1993; Albright 2007; me 2007). Perhaps release of C_2 is the factor that distinguishes simplifying from non-simplifying languages. This paper shows that when release is made unavailable as a cue to C_2 via editing people are more likely to perceive clusters that are preserved in TE and QF than clusters that are simplified. Simplified cluster types are shaded in tables (1) – (3):

(1) Trinidad English: Pattern of Final Cluster Simplification

Cluster Type VC_1C_2#	VN_1T_2#	VN_1D_2#	VN_1F_2#	VL_1T_2#	VL_1D_2#	VL_1F_2#
	ant /ænt/	and /æn/	once /wʌns/	welt /wɛlt/	weld /wɛl/	elf /ɛlf/
Cluster Type VC_1C_2#	VL_1N_2#	VL_1B_2#	VT_1T_2#	VF_1T_2#	Vs_1p_2#	T_1F_2#
	elm /ɛlm/	bulb /bʌlb/	act /æk/, apt /æp/	lift /lɪf/ past /pæs/	lisp /lɪsp/	box /bʌks/

(2) Quebecois French: Pattern of Final Cluster Simplification

(2) QF Cluster VC_1C_2#	VN_1T_2#	VN_1D_2#	VN_1F_2#	VL_1T_2#	VL_1D_2#	VL_1F_2#
	cent /cẽnt/	bande /bæ̃n/	benz /bẽnz/	palpe /pælp/	solde /sol/	golfe /golf/
TE Cluster VC_1C_2#	VL_1N_2#	VL_1B_2#	VT_1T_2#	VF_1T_2#	Vs_1p_2#	T_1F_2#
	film /fɪlm/	bulbe /bʏlb/	acte /æk/	poste /pos/, lift /lɪf/	crispe /krɪsp/	éclipse /eklɪps/

Nonce stimuli were recorded from a native SE speaker representing all the cluster types shown in (1) and (2). For clusters with a final stop, releases were deleted from C_2. Native SE speaking subjects then had a forced choice task where they had to determine if what they were hearing was VC_1C_2# or VC_1#. The perceptual difference between stimuli types was quantified using the sensitivity measure d' which takes into account both hits and false alarms. For results shown in (3), simplified clusters are highlighted. Sensitivity measures are given for each VC_1C_2# − VC_1# contrast.

(3) Contrast	sp# − s#	st# − s#	sk# − s#	ft# − f#	lt# − l#	lb# − l#	ld# − l#	nt# − n#	nd# − n#	T_1T_2# − T_1#
d'	1.2	0.38	0.31	0.13	1.1	2.0	0.35	2.9	0.31	0.61

In (3) we see that the contrasts between simplified and non-simplified clusters shown are likely rooted in perception. The d' values for preserved clusters in TE and QF are larger than for non-preserved clusters. Evidently lack of release as a cue in SE, due to editing, causes people to be more likely to perceive clusters that are preserved in TE and QF than clusters that are simplified. Additionally, for clusters that are preserved there must be cues besides release that cause C_2 to be perceived. I have posited elsewhere (2007) that these cues include frication noise, transitions into and out of neighboring segments and vowel shortening (cf. Wright 2004). Simplification in TE and QF seems to occur where there is not sufficient contrast between VC_1C_2# and VC_1#. If TE and QF speakers' grammars take into account somehow that certain contrasts of VC_1C_2# and VC_1# are more perceptible than others then this corroborates the P-map hypothesis (Steriade 2001).

On the phonotactics of liquids in Latin

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(either oral paper or poster)

Certain questions of liquid phonotactis in Latin (most notably the *-alis/aris* allomorphy) figure prominently in the phonological literature (Steriade 1987, 1995, Kenstowicz 1993 etc.), though the nature of the data and the patterns they display are usually not fully appreciated. A corpus-based analysis of the distribution of liquids (based on the BREPOLS corpus CLCLT5–Library of Latin Texts) reveals large-scale asymmetries between **r** and **l** (some of which have been known earlier) and also important differences in repetition patterns (**r**V**r**, **r**VCV**r** etc.), which have been only sporadically studied so far.

For **l** the constraint appears to be that within a word, its occurrences must be separated by at least one non-coronal consonant (as in *labilis, plectilis*), or the two occurrences have to be as close to each other as possible, i.e. separated only by a short (close) vowel, as is amply attested in the productive diminutive formation of the type *puellula* 'little girl', *sellula* 'stool'. The case of the *-alis/aris* dissimilation falls, in fact, under this constraint: contrary to the commonly held view, liquid dissimilation is not only blocked by an intervening **r** (*floralis*) but also by any intervening non-coronal consonant (*glacialis, pluvialis, umbilicalis, glebalis*). This prompts a reconsideration of the arguments pertaining to feature geometry which are based on the assumption that it is the feature [lateral] or possibly [liquid] that is affected in the first place.

The case of **r** is different in many respects. On the one hand, it is much more frequent than **l**, on the other it is subject to a completely different constraint on repetition, namely in final syllables only **r**V**r**, in non-final syllables only **r**VV**r** occurs (*loquerĕr, errŏr* vs. *loquerēris*, *rūre, rārus, errōre*). While this receives a partial diachronic explanation in the well known prehistoric sound change VV > V / _**r**# in polysyllables, the interesting and non-obvious fact is that Latin word forms generally conform to this pattern even where this is not warranted diachronically, i.e. the prefix *re-* never attaches to stems beginning with *r*, and *r*-initial verbs also never display perfective reduplication, thus no non-final *rĕr-* sequences emerge even where they in principle could. The two types of exception to this generalisation, i.e. subjunctive preterites of the few *r*-final verbs like *morĕrĕr* and prefixations with *per* like *perurbanus* are explained with reference to the phonological asymmetry of paradigm uniformity and syntactic analogy, respectively.

The Word-final [t] Problem in Korean

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One of the most intriguing questions in Korean phonology comes from the observation that English loanwords that end in (unreleased) coronal stops are lexicalized in Korean as if they ended in /s/. Consider the data in (1) below. The fact that [s] appears before the vowel-initial locative suffix /-e/ in the 3rd column of (1) suggests that the [t] has been lexicalized as /s/, otherwise the [s] would be phonologically unexpected; when the word occurs unaffixed as in the second column of (1) the /s/ undergoes the process of coda neutralization, being realized as [t]. The question that arises is why the English word-final coronal stop would be lexicalized as /s/ in Korean given that there is nothing in the English speech signal to suggest a fricative and given that /t/ is a phoneme of Korean. The oddity of the borrowing of English word-final coronal stops as /s/ in Korean has engendered much debate. A common view suggested by Albright (2002) and Y. Kang (2003) makes the observation that no Korean noun stems end in lexical /t/ and references an anticorrespondence analysis based on frequency. (See Hayes 1999 for anti-correspondence in the analysis of Yidin^{y}.) The idea of the anticorrespondence analysis is that, given that noun stems in Korean do not end in a lexical /t/, the [t] in (1) is forced to alternate with [s] (and not some other coronal) because /s/ is the most frequent coronal obstruent in Korean that is found lexically at the end of noun stems. However, this argument based on frequency is in one sense odd since on the surface most Korean nouns appear unaffixed; so any noun that ends in a final coronal obstruent would most often be heard with word-final [t] (due to coda neutralization of coronal obstruents to [t].) Further, the frequency argument does not explain why lexical /s/ in final position is more frequent than other word final coronals in the first place. Middle Korean did have nouns that ended in lexical /t/, but all of these have been reanalyzed as ending in /s/ regardless of word frequency. Both Albright (2002) and Y. Kang (2003) mention that an anti-correspondence analysis is related to the observation that Korean displays a strong tendency toward paradigm uniformity in its nominal paradigms as seen in the example in (2) where the lax (non-coronal) stop is generalized throughout the paradigm in the common forms. Neither, though, offer an analysis that formally connects the anti-correspondence in (1) with paradigm uniformity in (2). We do so in this paper. We develop a detailed anti-correspondence analysis which not only accounts for the borrowing in (1) and the paradigm uniformity effect in (2), but also accounts for the data in (3) where Korean nouns which end in a lexical coronal obstruent other than /s/ have optional forms with [s]. Further, our analysis accounts for the observation in Y. Kang (2003) that all Korean nouns that historically ended in lexical /t/ have been reanalyzed as ending in /s/. The variation in (2) and (3) will be accounted for by a partially ordered constraint ranking analysis as in Anttila (1997). In sum, we show that it is the same analysis that connects the tendency to eliminate alternations of nouns ending in noncoronals (2) with the extension of a specific alternation ([t]-[s]) in nouns ending in a coronal obstruent (1) and (3). The English loanwords in (1) are shown to be completely integrated into the Korean system.

(1)

	English	Korean unaffixed	Locative form	Lexicalized Form
a.	market	[mak^{h}et]	[mak^{h}es-e]	/mak^{h}es/
b.	cabinet	[k^{h}epinet]	[k^{h}epines-e]	/k^{h}epines/

(2)

	Standard Korean	Common forms	Gloss
a.	[puEk] -- [puEk^{h}-e]	[puEk] -- [puEk-e]	kitchen
b.	[mulIp] – [mulIp^{h}-e]	[mulIp] – [mulIp-e]	knee

(3)

	Unaffixed	Locative	Optional Locative	Gloss
a.	[pat]	[path-e]	[pas-e]	field
b.	[pit]	[pic-e]	[pis-e]	debt

Quieter, faster, lower, and set off by pauses? Reflections on prosodic aspects of parenthetical constructions in Modern German

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Phenomenon: Parenthetical constructions are a fascinating way of interrupting spoken and written utterances; they are – more or less complex, and more or less independent – insertions into utterances, their anchor or host clauses. Considerable terminological vagueness is apparent in previous studies of the phenomenon: several phenomena are subsumed under the same term or different terminologies are used for similar phenomena. Thus, we find terms such as *parentheses, parenthetical structure/sentence/clause/insertion/construction, comments*, etc.

Analysis: This paper will focus on prosodic aspects of the analysis of such constructions in contemporary German. The investigation starts from prosodic features mentioned in the literature which are relevant to parenthetical constructions such as intensity, articulation rate, fundamental frequency, pauses, and intonation contour. The following three hypotheses constitute the starting point for the analysis:

1. Parenthetical constructions are quieter, faster, and lower than their surrounding anchor clauses.
2. Parenthetical constructions are clearly set off by pauses.
3. Parenthetical constructions have a clear intonation contour of their own.

Corpus and Methodology: For this investigation, authentic spoken data was extracted from around 35 hours of debates held in the German House of Parliament (*Deutscher Bundestag*) in 2004, 2005, and 2006. The current corpus – created from the database – consists of 330 potential parenthetical constructions. The initial choice of examples was based on auditory impressions only. These examples are phonological or intonational phrases which are perceptibly set off from the matrix sentence or anchor clause by interrupting the prosodic flow of the preceding utterance. Non-restrictive relative clauses and vocatives, also very frequent in this corpus material and behaving prosodically similarly, were then excluded. Finally, sentential and non-sentential phrases were studied separately.

Results: The results of the analysis show that future prosodic studies on parenthetical constructions should focus on what happens in the transition zone between the right boundary of the part of the anchor clause preceding the parenthetical construction (PAPPC), the potential pause, and the parenthetical construction.

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Social Information Shifting Phoneme Boundaries in Speech Perception

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It is well established that individuals vary their pronunciation depending on both their own social characteristics and the social attributes of the addressee. Recent research suggests that individuals also **perceive** sounds differently from one another. Predictably, some of this variation in perception can be attributed to social characteristics of the individuals themselves. More surprisingly, perception is also affected by social information attributed to the speaker (Strand and Johnson 1996; Hay, Warren, and Thomas 2006; Hay, Warren, and Drager 2006). The systematic socially-conditioned phonetic variation found in both production and perception requires us to revaluate the traditional notion of the phoneme, and more particularly, how its boundaries are defined. How exactly are social and phonetic information encoded within a phoneme? This paper pursues these issues by exploring the degree to which the perceived age of a speaker may affect the perceived boundary between two adjacent phonemes within the context of a chain shift in progress. The results are discussed within an exemplar model of phonemic representation.

The short front vowels have undergone a recent chain shift in New Zealand English (NZE). As a result, older speakers of NZE produce different variants of the vowels /æ/ and /Ɛ/ than those produced by younger speakers. It was hypothesised that New Zealanders may use information about the age of a speaker when perceiving these vowels. Two experiments were conducted in which participants took part in a forced choice task during which they were played words containing a resynthesised short, front vowel selected from a 10-step vowel continuum and were asked to identify each word as either *head* or *had*. The first experiment involved an older-sounding voice and a younger-sounding voice. In the second experiment, the age of the speaker was manipulated using photographs. Logistic regression modelling reveals that the placement of a perceptual phoneme boundary is affected by the perceived age of a speaker – based on either voice cues, as in Experiment 1, or on visual cues, as in Experiment 2.

Further, post hoc analysis of the results provides evidence that an individual's overall perception is biased toward variables produced by members who share similar social characteristics to the individual. The results also suggest that, while individuals use social information attributed to the speaker during the perception of speech, sensitivity to such information appears to depend on the social group to which the perceiver belongs, resulting in an in-group/out-group effect between the speaker and perceiver.

Taken together, these results lend support to socially-indexed exemplar-based models of representation in which encountered utterances are stored in the mind complete with acoustic detail and are indexed to speaker-specific social information. This social indexing leads the perceived age of a speaker to affect the perceived boundary between phonemes in the context of a chain shift in progress. Moreover, an exemplar model would predict a bias toward more frequently encountered variants. This bias may be responsible for the in-group/out-group difference we have observed.

Individuals do not have a single cognitive 'boundary' between two adjacent phonemes. The location of this boundary is fluid, and depends both on the listener's assessment of the speaker's social status (including age), and the degree to which the listener and speaker share social characteristics. The full implications for the phonetics/phonology boundary are not yet clear, but they are likely to be non-trivial.

Moraic Faithfulness: Evidence from Blackfoot and English

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The existence of moraic faithfulness constraints in Optimality Theory (Prince & Smolensky 2004) is generally undisputed: contrastive vowel and consonant length derive from faithfulness to underlying moras. However, several recent papers (Bermudez-Otero 2001, McCarthy 2003, Campos-Astokiza 2004) have drawn attention to the apparently incorrect typological predictions of such constraints. In particular, given the assumptions of Richness of the Base (ROTB, Prince & Smolensky 2004), ranking DEPμ above the weight-by-position (WBYP) constraint ('coda consonants must be moraic', Hayes 1989) predicts the existence of languages with contrasts in the weight of coda consonants, as well as contrasts in syllabification (/$pa_{\mu}k_{\mu}la_{\mu}$/→[$pa_{\mu}k_{\mu}.la_{\mu}$], /$pa_{\mu}kla_{\mu}$/→[$pa_{\mu}.kla_{\mu}$]). Such languages are not thought to occur.

Bermudez-Otero (2001) and Campos-Astorkiza (2004) propose reformulating DEPμ such that the satisfaction of WBYP by mora epenthesis does not violate DEPμ. However, I argue for retaining the non-restrictive form of DEPμ, and provide as evidence tautomorphemic syllabification contrasts in Blackfoot (Algonquian: Alberta & Montana) and contrastive final stress on English nouns. I show that both sets of data receive a coherent analysis when moraic faithfulness is taken into account, an insight that would not be possible if mora epenthesis in coda position did not violate DEPμ.

Blackfoot contrasts consonant length both intervocalically (/ninaː/ 'man' vs. /ninːa/ 'my father') and preconsonantally in two environments: /s/ before stops (/istawá?siwa/ 's/he grew' versus /isːtatánsiwa/ 's/he bragged') and stops before /s/ (/ipiksit/ 'flee' versus /ipíkːsit/ 'be anxious'). Phonotactics indicate that this contrast is moraic: long consonants add weight to the preceding syllable, while short consonants do not. In terms of phonetic duration, only preconsonantal long stops pattern as true geminates; preconsonantal /sː/ is discernibly shorter than intervocalic /sː/, suggesting that preconsonantal /sː/ is a simple, moraic coda consonant, while short /s/ is syllabified as part of the onset of the following syllable. Blackfoot, therefore, fills the gap in the factorial typology predicted by the constraints WBYP and DEPμ.

Other examples of contrastive coda weight are less obvious, but exist nonetheless. A case that I discuss here is a pattern of contrastive final stress in English nouns, first observed by Ross (1972), evidenced by pairs such as *máyhèm~ídiom* and *bóycòtt~póet*. The insight that is crucial to the analysis of these data is that while the stress contrasts must be considered to be lexically-specified in order to account for pairs like *bóycòtt~póet*, the contrast is phonologically restricted: non-coronal obstruents always receive final stress (e.g. *hándicàp*, *scállywàg*). By assuming that moras are the locus of contrast, phonological conditioning and lexical specification can be accounted for under a single theory.

Under ROTB, each word has two possible inputs concerning the moraicity of the final consonant: /$CV_{\mu}C$/ and /$CV_{\mu}C_{\mu}$/. Underlyingly moraic final consonants will always be preserved faithfully because CVC syllables are generally heavy in English and therefore the unmarked configuration; further, they receive stress because heavy syllables generally attract stress in English. However, [$CV_{\mu}C$] is a relatively marked structure in English, and tolerance for such a structure varies depending on the place features of the final consonant. Coronals can occur as weightless appendixes in English (e.g. Sherer 1994); [$CV_{\mu}C$] is tolerated for these segments, and the underlying moraic contrast surfaces as a stress contrast. Conversely, non-coronal obstruents cannot be syllabified as weightless appendixes: DEPμ is violated to fulfill WBYP, resulting in a final heavy syllable which attracts secondary stress. Sonorants, on the other hand, preserve the moraic contrast via their ability to act as the syllable's sonority peak (i.e. as syllabic). In final /$CV_{\mu}R$/, the vowel deletes and the final sonorant takes over the vowel's mora as [CR_{μ}]. This results not only in the satisfaction of DEPμ but also in the reduction of the perceptibility of the unstressed syllable. Alternatively, if DEPμ did not punish mora epenthesis in coda position, we would expect all final CVC syllables to be stressed in English. Apparent exceptions to the contrasts described above such as *Árab* and *sýrup* can be accounted for under the "Arab rule" (Hayes 1995).

Blackfoot and English provide evidence for a faithfulness constraint DEPμ that punishes correspondence violations for moras regardless of their position. This analysis opens up the possibility that other instances of lexically-defined prosody can also be explained with reference to contrastive moras.

Turbidity as "Legibility Conditions"

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The hypothesis of turbid representations brought forward in Goldrick (2001) has recently witnessed a renewed interest (Uffman 2006, Oostendorp 2006, Revithiadou 2006). Turbidity supposes that association lines between features and segments are non reciprocal and directional: they can go upwards (projection) or downwards (pronunciation). Van Oostendorp (2006) has proposed to use turbid representations to deal with non-categorical final devoicing, as in (1):

(1) a. k w a d b. k w a d

↕ ↑

[voice] [voice]

The representation in (1a) is interpreted by the phonetics as [kwad] (fully voiced) whereas (1b) is variably interpreted as [kwad̥] (partially devoiced) or [kwat] (fully devoiced).

I will raise a number of problems regarding this implementation of turbidity: first, it is not clear how we can maintain that the phonetics blindly interprets the output of phonology if some outputs (like 1b) and not others (1a) can have variable interpretations. If the null hypothesis is that the mapping from phonology to phonetics is as direct as possible, we expect [d], [d̥] and [t] to be different objects at the phonological level. Secondly, it is not clear at which level turbidity is to be defined: since turbidity is a very powerful device, we ought to make its domain as restricted as possible. The last problem is that it is not clear why there should be turbid relations at all: Goldrick (2001) defined projection as an "abstract, structural relationshi[p]", but it is legitimate to wonder how many such vague relationships one is allowed to include in one's theory of grammar.

To circumvent these problems, I propose, following advancements within the minimalist program, to reinterpret turbidity as the manifestation of interface conditions imposed on phonology by the phonetics. As suggested in Chomsky (2000: 9):

> The faculty of language is embedded within the broader architecture of the mind/brain. It interacts with other systems, which impose conditions that language must satisfy... We might think of these as "legibility conditions", in the sense that other systems must be able to "read" the expressions of the language and use them as "instructions" for thought and action.

As Chomsky makes it clear, the output of the grammar (the Phonetic Form, PF) must contain information and instructions for the articulatory-perceptual systems. I propose to reinterpret turbidity as those legibility conditions on PF, which I will recast as "projection" (grounded in production) and the traditional licensing (grounded in perception). Turbid relationships are limited to the infra-segmental domain: they happen between a feature and a root node. Building on this basis, I develop the notion of prosodic visibility (2):

(2) Prosodic visibility: a feature F is prosodically visible if and only if it locally satisfies both legibility conditions.

To illustrate this proposal, I will reconsider partial devoicing and will discuss phenomena of acoustic hiding of a consonant within a complex cluster (Browman & Goldstein 1989, Azra 1994), as in *west lake* (= [wes(t) leɪk]). The grammatical interpretation of this pattern is that the "hidden" consonant (/t/) is projected but is not licensed : hence it is not prosodically visible.

Perception of non-native phonological contrasts – evidence from and for featural representations.

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This paper examines the correlation between loss of perception of non-native contrasts and featural representations of sounds—an issue which was left for future research in a recent GLOW presentation (Hale and Kissock 1997). That paper focussed on providing a resolution of the 'paradox' presented by the existence of Infant Bilingual L2 Acquisition which initiates *after* the well-known 10-12 month period of language-specific reduction of phonetic sensitivity. It did not treat in detail the *phonological* specifics of the apparent reduced sensitivity itself. This paper thus has two main goals: 1) to explain why some non-native contrasts remain 'perceptable' after the 10-12 month 'reduction' period is reached, whereas others do not; and 2) to provide evidence from the loss of sensitivity for specific aspects of the featural representations of a variety of speech sounds.

It has been fairly clearly established in the literature on loss of perceptual sensitivity to contrasts during acquisition, by a wide variety of scholars but perhaps most compellingly by work emanating from Janet Werker's lab, that the reduced sensitivity is due to processing of input by the linguistic system, rather than to a decreased sensitivity in raw auditory processing. We follow this position, and draw conclusions from it based on the relatively straightforward assumption that a failure to 'perceive' due to linguistic processing is to be conceived of as a failure to parse a given feature or set of features. It is clear, *a priori*, that a failure to parse a given feature will lead inevitably to perceptual neutralization.

Our work differs from much of the work in this area in several ways, which are outlined in detail in the paper. These include our assumption that there is no 'phoneme inventory' as such in human languages (such an entity would do no computational 'work' in the generation of linguistic forms). This assumption grounds our focus on feature, rather than segment, sensitivity. In addition, due to an overreliance on 'phoneme' considerations by many researchers in this area, even those working with children at an age (10-12 mos.) when the presence of a lexicon phonemicized like an adult's can be safely precluded, it is in innovation of our approach that distinctions which are present only at the *allophonic* level—i.e., distinctions potentially dependent upon non-contrastive features in the target language—should have the same status for maintenance of sensitivity as contrastive features do in the early stages of acquisition.

It follows from a feature-based approach to these issues that loss of perceptual sensitivity to a wide range of universally present features (voice, coronal, continuant) would be counterpredicted. It is thus a particular set of features, those less widely attested in the lexicons of all human languages (e.g., lateral, or whatever precisely the relevant feature set for clicks is assumed to be), which will show sensitivity reduction, and concomitant neutralization of non-native contrasts.

Vowels appear to be dependent on fewer 'exotic' features than are consonants (though ATR may qualify), and thus should be expected to show more stable perceptual salience during the relevant period. However, the recent suggestion by Hale, Kissock and Reiss (2007) that vowels have in fact richer featural representations than has heretofore been assumed may give rise to interesting new research potential in this domain. In general, we point out that there has been little focus on exploiting the sensitivity decline for *phonological* purposes through the investigation of targeted contrast sets. To conclude the paper, we outline what experimental work is most critical.

[r]-dissimilation in American English

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This paper examines two types of sporadic [r] dissimilation in English: 1) long-distance dissimilatory deletion of [r], and 2) avoidance of the structure [rər] by various means. I argue that these are separate phenomena. The former is caused by perceptual errors, while the latter is driven by a grammatical constraint against [rər].

Many otherwise rhotic Americans delete one [r] from certain word containing two [r]s, such as *gove(r)nor*, *pa(r)ticular*, and *su(r)prise*. This synchronically active but little-studied process usually deletes the first of two [r]s. It can cross word boundaries, occurring in phrases like *he(r) heart*. It more common when the [r]s are in adjacent syllables. In more than 2/3 of the reported cases I have found, the [ər] or [rə] sequence that dissimilates to [ə] is flanked by exactly one labial and one coronal consonant.

This [r]-loss pattern is best explained by Ohala 1981's theory of dissimilation as perceptual hypercorrection. [r] has acoustic effects spanning several syllables, particularly strong in the anticipatory direction (Tunley 1999, West 1999, Heid & Hawkins 2000). These resonances can cause a listener to be unsure how many [r]s a word contains. Dissimilation occurs when one [r] is mistaken for anticipatory acoustic effects of an [r] later in the word. A local labial-coronal context can contribute to masking the local acoustic effects of the first [r], since [r] contains labial and coronal components itself.

It is also possible for listeners to make the opposite error and mistake the anticipatory resonances of one [r] for an earlier [r]. This leads to non-standard insertion of [r] in words like *perser̲vere*, *inter̲gral*, and *far̲miliar*. Under this view, both dissimilatory deletion and assimilatory insertion of [r] are not driven by the grammar.

It has been claimed that sound change through hypercorrection must always be structure preserving. This is not true for American [r]-dissimilation, because in some dialects it creates new vowel contrasts. When [r] deletes after a stressed vowel as in *o(r)der* [orrər], the result is [orər], with a vowel different than that of *odor* [oʊrər]. This [o] / [oʊ] contrast does not occur except as a result of dissimilation. This may be the first proposed counterexample to claims that dissimilation is universally structure-preserving (Ohala 1993, Kiparsky 1995). I argue that this is not a problem for the hypercorrective theory, because dissimilation can occur in learners who have not fully mastered the system of contrast.

Various English dialects also show sporadic short-distance dissimilation in the avoidance of [rər]. This is done by 1) haplology, as in George Bush's pronunciation of *terr(or)ist*; 2) 'hyperarticulating' final [-rər] as [-ror] in words like *juror*; 3) forming comparatives using *more* rather than *-er* for adjectives ending in [-r] (*more sour* is preferred to *sourer*); 4) the blocking of linking and intrusive [r] after [rə] in British, as in *an erro(r) in it*; and 5) the blocking of final [r]-insertion after [r] in Ozark English (*(po)tater*, *winder*, *yeller*, but *borrow*, *arrow*, *tomorrow*). At least some of these processes must be driven by the grammar, since choices like *more sour* for *sourer* cannot be a matter of misperception. I conclude that there is a constraint *[rər] which, although not very high ranked in English, exerts influence on some processes.

None of these five means is used to achieve long-distance [r]-dissimilation, although several in principle could. An [r] earlier in the word does not block the *-er* comparative suffix (*brighter* and *prouder* are fine), linking / intrusive [r] (*Rita*r̲ *is*), or Ozark [r]-insertion (*armadiller*, *tornader*). This gives further evidence that no constraint against multiple [r]s at a distance is active in English.

Inflectional paradigms have a base: Evidence from Southern German dialects

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In southern German dialects (SG) the contrast between /s/ and /ʃ/ is neutralized to [ʃ] before certain consonants (e.g. /t/) anywhere within a word (see 1a). A significant generalization is that neutralization is blocked before (inflectional) suffixes, as in (1b):

(1) a. stark [ʃtɔɐk] 'strong' b. ge-wuss-t [gvist] 'knew (PAST PART)'
Post [poʃt] 'mail' grüss-t [griəst] 'greet (3 sg)'

We follow Wiese 1991, Hall 1992 and Alber 2001, who argue that neutralization is an active phonological process (and not a static condition) because loan words regularly show its effects (e.g. English *stop* [stɔp] > German [ʃtɔp]). None of the aforementioned authors discusses the reasons why neutralization underapplies in (1b).

We argue that the underapplication of neutralization in (1b) is a Paradigm Uniformity (PU) effect (e.g. Benua 1997, Downing, Hall & Raffelsiefen 2005). This means that neutralization is blocked because the stem in a derived word (i.e. '[griəs]' in [griəs-t]) must be identical to the unaffixed base (i.e. [griəs]), which always corresponds to the first person singular and the imperative singular in SG. Our proposal is that the data in (1b) follow if there is an Output-Output (O-O) constraint faithful to a base – by definition a surface form – which in SG is the unaffixed stem, e.g. [griəs]. If the O-O constraint BASE-IDENT is ranked ahead of OCP (which penalizes sequences like [st] but not [ʃt]), then the underapplication candidate in (2a) is selected:

(2)

	Input: /griəs-t/ Base: [griəs]	BASE-IDENT	OCP
a.	→ [griəst]		*!
b.	[griəʃt]	*!	

The base-identity approach to inflectional paradigms is also endorsed by Albright 2006. By contrast, McCarthy's 2005 Optimal Paradigms (OP) model operates under the assumption that there is no base in inflectional paradigms. OP also predicts that PU effects in inflection mean that the 'overapplication' paradigm (see below) and not the underapplication paradigm will be selected. We argue that the SG data are problematic for OP because underapplication is correct.

In OP, O-O constraints (called OP constraints) are formalized so that each member of an inflectional paradigm must match every other member. If a phonological process requires the ranking Markedness > I-O Faith, then a PU effect implies the ranking OP Faith » Markedness » I-O Faith. An OP analysis of SG would list as the input each member of the paradigm and the outputs would include the underapplication paradigm, the overapplication paradigm and the paradigm in which the phonological process applies as expected. For example, the input for the *grüssen* 'greet' paradigm would be (in its abbreviated form) /griəs$_{1\ sg}$ ~ griəs-t$_{3\ sg}$ …/ with the three output paradigms in (3a-c). OP-FAITH is violated if one member of the paradigm has [s] and another has [ʃ]. IO-FAITH is violated if /s/ changes to [ʃ].

(3)

	/griəs ~ griəs-t…/	OP-FAITH	OCP	IO-FAITH
a.	[griəs ~ griəst…]		*!	
b.	[griəs ~ griəʃt…]	*!		*
c.	← [griəʃ ~ griəʃt…]			**

The intended winner is (3a) but the incorrect winner (←) in (3c) is selected. We argue that no conceivable high ranking constraint could be added which could select (3a) and that the SG data are therefore problematic for the OP model. Our conclusion: The base-identity approach is necessary to account for underapplication in inflectional paradigms.

Tree-cum-grids prosody can solve the Too-many-repairs Problem

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The phenomenon: In many Romance dialects a high post-tonic vowel triggers raising of a stressed mid vowel, a phenomenon known as metaphony. A few examples are given in (1). They are from the Ascrea variant of Italian (Fanti 1938, 1940).

(1) wédo-a ‘widow (f. sg.)’ wídu-u 'widower (m. sg.)’
metéss-e ‘reap (1 sg. impf. subj.)’ metíʃʃ-i ‘reap (2 sg. impf. subj.)’

Walker (2005, 2006) develops an OT-account of metaphony in terms of Licensing-by-Stress. She proposes that unstressed high vowels are marked because of their perceptual weakness. Hence they must be licensed by stress. That is why [+high] spreads to the stressed syllable.

The fundamental problem of this account is that it creates an instance of the Too-many-repairs Problem (de Lacy 2003). This is the observation that the attested ways of repairing a marked structure are sometimes limited. In the case of metaphony this problem takes the following form: the marked configuration (high vowels in unstressed position) might be repaired by moving stress to the high vowel. This predicts that high vowels can attract stress! This prediction is wrong. High vowels even tend to reject stress (de Lacy 2002).

The Too-many-repairs Problem touches the heart of OT, and many attempts have therefore been made to solve it: Targeted constraints (Wilson 2001), P-map theory (Steriade 2001), Fixed ranking (Pater 2003), OT-CC (McCarthy 2006) and the ICP (Blumenfeld 2006). These proposals either lack explanatory depth, or they are irrelevant in the case of metaphony.

My proposal attacks the source of the problem: Licensing-by-Stress. My claim is that no such constraint (family) exists. In a *tree-cum-grid* representation of prosodic structure (Halle and Vergnaud 1987, Hyde 2001 to name but a few) its effects can be derived from two (possibly) conflicting forces: (a) moras must be licensed *by a gridmark*; (b) moras have a preference for relatively high sonority (Zec 1988, 1995; Morén 1999). The latter is expressed as a condition on gridmarks, as in Hyde (2001). The two forces take the form of the following two constraints (Open characterizes mid or low vowels, as proposed in Morén 2003):

C(onstraints): (a) $\mu \supset *$ (b) $* \supset$ Open

In principle, the ranking C-(a) » C-(b) leads to a foot with a fully developed grid structure, as in F-(A) below. On the other hand, C-(b) » C-(a) yields a foot like F-(B), in which the unstressed mora (μ_2) has no mark, *if its vowel is of low sonority* (if it is high or schwa-like).

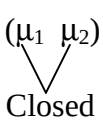
F(eet) (A) * * (B) *
(μ_1 μ_2) (μ_1 μ_2)

Analysis: In this theory we can account for metaphony with the following rankings:

Metaphony, Core rankings: (I) $* \supset$ Open, $\mu \supset *$ » NoBranching(Closed)
(II) NoBranching(F ≠ Closed) » NoBranching(Closed)

As a result of ranking (I) a high vowel avoids a gridmark. Yet, its mora can still be licensed *indirectly*, due to the fact that the spreading feature Closed creates a path from the unstressed mora to the gridmark of the neighboring syllable. The fact that only Closed can spread follows from ranking (II). The fact that the stressed syllable is the target of spreading, rather than the trigger also follows from (II). The effects of the Core rankings are as follows:

Indirect licensing of μ_2



In this approach there is no point in moving stress to the high vowel. High vowels tend not to have their own gridmark. Consequently, stress shift to a high vowel is an absurdity. Our account, then, does not suffer from the Too-many-repairs Problem created by Licensing-by-stress, because tree-cum-grid representations make this constraint family superfluous.

Phonological forms don't always add up – final and non-final schwas in non-rhotic British English

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The phonological form (PF) of a morphologically complex item is often assumed to be the sum of the PFs of its constituent items, e.g. the PF of *book* is taken to be the PF of *book* plus the PF of the plural suffix. This seems to work unproblematically most of the time, but there are circumstances where adhering to an additive assumption prevents what might be a better phonological analysis. In this paper I present a case for regarding final schwa in non-rhotic British English as a vocalized allophone of /r/ while non-final post-tonic schwas are either contextually determined, e.g. *abbot*, or can be explained as the phonetic exponent of an empty phonotactic position. For example, the difference between *lion* and *line* can be exhaustively accounted for by postulating that /n/ is in a different position in phonotactic structure in the two items as shown in (1). There is therefore no need to recognize a phonological function for schwa other than that of marking the absence of a phoneme in a non-final position.

(1)

	onset	nucleus	coda1	coda2
line	l	ai	n	
lion	l	ai	Ø	n

Ø = empty position

The issue of the additiveness or otherwise of the PFs of complex forms becomes important when suffixes are added to schwa-final stems, e.g. *actor* + 'plural'. If we value an analysis of the schwa in *actors* as contextually determined in the same way as the schwa in *abbot* (it has an anaptyctic function in separating rhyme obstruents that do not agree in voicing), and if we also value an analysis of the final schwa in *actor* as a realization of /r/, then we have a situation in which the PF of *actors* does not properly contain the PF of *actor*. I shall argue that anaptyctic schwas should not be regarded as part of PFs on the grounds that phonology should exclude from description whatever is predictable. I shall also argue that non-anaptyctic non-final schwas, as in *lion*, should not be regarded as part of PFs on the grounds that differential phonotactic analysis adequately accounts for all cases where they appear to be distinctive. Finally, I shall argue that the phenomenon of r-sandhi in non-rhotic British English means that indeed we should regard final schwas as allophones of /r/. The phonetic similarity of schwa and [r], the merger of *comm*A words with *lett*ER words, the continuous use of constrictive [r] in prevocalic contexts since the eighteenth century and the plausibility of multiple representations of the same lexical item in the mental lexicon, are used to justify why final schwa should be regarded phonologically as /r/ while non-final ones should not. Arguments against this analysis, such as have been put by Giegerich (1999: 176-7) on the basis of 'free-ride' derivations, and Uffmann (2003: 2) on the grounds that if all non-high final vowels have [r] then [r] cannot be distinctive, are shown only to be valid if the additive assumption is adhered to. Analyses of r-sandhi as hiatus-breaking (Broadbent 1991; Uffmann 2003, 2005) are countered by evidence that speakers with unusual realizations of lexical /r/ use the same realizations in r-sandhi. McMahon's (2000: 249-50) claim that the lower probability of r-sandhi in slower speech indicates it is a connected speech phenomenon, and therefore post-lexical, is countered by analogy with the effects of boundaries on final voicing.

Gradient Morpheme Structure and Co-occurrence Restrictions in Korean Monosyllabic Stems

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This paper reports the major results of a study of the statistical distribution of various phonological contrasts in the monosyllabic roots of contemporary Korean. The data is composed of 1,420 native (not Sino-Korean) roots drawn from an authoritative dictionary *Pyojun kugeo taesajeon*. Among the more interesting findings are the following:

(1) As in many genetically unrelated languages, Korean has an OCP-Place constraint that is statistically significant (χ^2= 40.39, $p < 0.001$). (Greenberg 1950, McCarthy 1986, 1988, 1994, Frisch et al. 2004, Mester 1986, Padgett 1995, Kawahara et al. 2006, Coetzee & Pater 2006)
(2) Korean has a gradient complexity constraint that restricts stems composed of more than one segment drawn from the following classes: aspirated/tense consonants, diphthongs, complex codas. (Cf. MacEachern 1997)
(3) Another novel finding is that the distribution of aspiration is predictable. It occupies the coda position as a rule, but moves to the onset position when the coda is either a segment which cannot bear aspiration or *-k*. *k*^{h} is highly underrepresented in the Korean lexicon.
(4) To place the extreme underrepresentation of Korean aspirated velar stops in perspective, we conducted a typological survey of language frequency for aspiration contrasts based on the data in Maddieson (1984). The implicational hierarchy is Coronal (64) >> Labial, Velar (57) >> Uvular (9) for place and Stop (63) >> Affricate (46) >> Fricative (4) for manner. The extreme underrepresentation of *k*^{h} in Korean is not due to the cross-linguistic dispreference for *k*^{h} but probably results from potential confusion with a velar/uvular fricative.
(5) In Korean monosyllabic stems, more varied codas appear in verbs (28) than in nouns (19) and hence verbs can potentially distinguish or encode more stems. Nevertheless, the size of stem inventory is more or less the same between Korean monosyllabic verbs (375) and nouns (444). This suggests that the density or the degree of dispersion in the inventory of stems/syllables is comparable regardless of disparities in the size of the coda inventories in the two word classes. This suggests in turn that Dispersion Theory (Flemming 1995) is operative in lexicon.

Thus the findings of this paper not only contribute new data to the literature on Korean phonetics/phonology, but also reveal a cross-linguistic hierarchy in the distribution of aspiration with respect to oral place.

Hybrids: Korean Loanwords from Japanese and English

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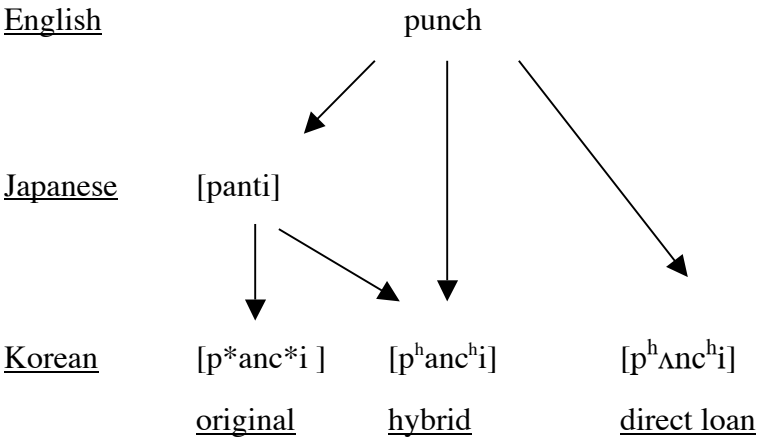
This paper presents an analysis of c. 270 Western Loanwords that have entered Korean via Japanese and compares them to contemporary direct English->Korean transmissions. Two Japanese-mediated categories are distinguished: "original" loans show correspondences that typify Korean adaptations of native Japanese words while "hybrids" (Haugen 1969) show traits of both adaptation patterns. We assume that hybrids are "original" Japanese -mediated loans that are modified with an eye towards English. Thus hybrids are shaped by faithfulness to two different models--the proximate Japanese source and the distal English source. Theoretically, we can ask if there are implicational relations among the substitutions motivated by faithfulness to the distal source. While our data are limited, the following hierarchy emerges: laryngeal features on consonants > vowel epenthesis site and quality > gemination of liquid > organic vowel. This correlates grosso modo with increasing saliency and supports a model of sound change (Steriade 2001) in which the relative perceptibility of a change is a critical factor.

(1)



(2)

English	Japanese	Korean:original	hybrid	direct loan
album	arubamu		alpam	ɛlpʌm
label	raberu		rapel	re.i.pɨl
file	hwairu		hwa.il	pha.il
slab	surabu		sɨrapɨ	sɨllɛpɨ
catalog	katarogu	katarok*u	kʰatharokʰɨ	kʰatʰallokɨ
brake	bureeki		pureekʰi	pire.i.kʰi
dash	dassyu	tass*yu	tas*i	tɛsi

All equal, all different

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In recent years, phonological research has been centered on constraint interaction, and not much attention has been given to representational issues, prominent in the years before the development of OT (e.g. Clements 1985, 1990, 1991, Dresher and Rice 1993, van der Hulst 1989). Phonological features continued to have phonetic (acoustic and/or articulatory) grounding, which is the concept of the SPE type of theories.

In the talk, I provide an analysis of two vowel systems (Budyšin Sorbian and Celje Slovenian) that have basically the same canonical 7 vowel system on the surface, and which look both remarkably similar phonologically (i.e. as composed of features in a traditional sense) and even phonetically.

Or so it seems. An investigation into segmental interactions is shown here to lead to a different conclusion. First, the segment inventories and phonological interactions in each language are presented. While both languages share a common Slavic development, the synchronic phonologies differ significantly. For example, both languages have morphologically conditioned Velar Palatalization (VP), which turns a dorsal into a coronal before a variety of environments (Sor. ˈpʲɛk-u ∼ ˈpʲɛtʃ-e ‘1∼3P.SG.PRES bake’ : Sln. ˈrɛk-a ∼ ˈrɛtʃ-en ‘river∼river-ADJ.’). On the other hand, Iotization turns a non-palatalized consonant into its palatal(ized) counterpart in Sorbian as well as in Slovenian, but in the latter, it differs from VP only in morphological conditioning (Sor. ˈwɔjak ∼ ˈwɔjaʦ-i ‘NOM.SG∼NOM.PL soldier’ : Sln. ˈjok-a-ti ∼ ˈjotʃ-em ‘INF∼1P.SG.PRES cry’, ˈvez-a-ti ∼ ˈveʒ-em ‘INF∼1P.SG.PRES tie’). Mid Vowel Fronting (ˈmoʒ-em : koˈrak-om ‘INSTR.SG husband : step’) and Velar Fronting (before /i/ only: ˈpek-ew ∼ ˈpɛʦ-i ‘M.SG.PPART.∼2P.SG.IMP bake’) appear only in Slovenian, while Low Vowel Fronting is found in Sorbian alone (ʁʲat ∼ w ʁɛʤ-e ‘NOM.SG∼LOC.SG row’).

Then, features are assigned that are the most consistent with the data. Our analysis follows feature assignment of the Parallel Structures Model of feature geometry (Morén 2003, 2006). An integral part of the model is that (privative) features are assigned economically, based on the positive phonological evidence. We propose the same number of features is needed to account for the data in both languages, while the corresponding segments have quite different feature specifications. For example, in Slovenian the distinction between front and back mid vowels is relevant with regard to Mid Vowel Fronting, requiring that the former set of vowels has a common V-place[cor] feature. The alternation is not found in Sorbian, where a faithfully surfacing feature C-place[lab] of back vowels establishes the contrast. V-place[cor] is also the feature that is involved in Iotization in both languages, while Slovenian has a C-place[cor] feature in addition to account for Velar Fronting. — The features may also be different. If one compares alternations involving the underlying yer vowel (the existence of which is also independently predicted by the model itself), the unmarked set of mid vowels is revealed. We propose that a V-manner[tense] feature is assigned to Sorbian high mid vowels, and a V-manner[lax] feature is associated with the low mid vowels in Slovenian. The assignment of two other V-manner features ([closed], [open]) is partly determined by the feature specifications of a substantially greater number of sonorants in Sorbian.

This analysis provides evidence that although cross-lingustically segments may result in similar phonetic and surface phonological systems, underlyingly this may usually not be the case. Traditional theories of representation, by which both segmental inventories appear roughly the same (specified by [high, back, round, ATR]), cannot capture phonologies at work. The present analysis offers a different view of features, one that is based in phonology rather than general phonetics.

An interface approach to prosodic recursivity

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In this paper, we revise the notion of recursivity (REC) of prosodic categories and argue that REC is restricted and arises from the morphosyntax-phonology interface. More specifically, we claim that the grammar requires recursive morphosyntactic (complex predicates, adjuncts, etc.) structures to be mirrored in phonology in the most parsimonious way possible. It is proposed that recursive structures are accommodated by extending an already existing prosodic constituent. Thus, a two-segment "extended" prosodic category is created. The conceptual advantage of this approach is that it restricts REC to those main prosodic constituents that participate in the morphosyntax-phonology mapping, namely the *Phonological Word* (PW) and the *Phonological Phrase* (PPh) (cf. Itô & Mester 2007). Accordingly, it explains why REC in the levels below the PW and above the PPh is unmotivated. We will demonstrate that inconsistent arguments have been put forward in support of REC in previous studies (e.g., Booij 1995, 1996, Selkirk 1995, Peperkamp 1997) where the burden of proof primarily falls on showing that an element is not part of a certain prosodic category rather than on establishing its REC status. Furthermore, REC has been argued to emerge through low ranking of NONREC, a negatively defined constraint which leaves room for different interpretations as to what actually constitutes recursion.

In the present study, we demonstrate that REC is not an inherent property of phonology, but rather the by-product of its interface with morpho-syntax as reflected in two types of structures: (i) Inherently recursive morphosyntactic structures such as complex predicates (1). (ii) Pieces of structure such as adjunct modifiers (i.e., elements that are assembled parallel to the main derivation at their own derivational workspace) (3), as well as certain types of clitics which adjoin to their host after moving from their base-generated position (Spyropoulos 1999) (2), and have to merge with the rest of the derivation at a later stage by means of a discontinuous application of Merge (Chomsky 1995, Uriagereka 1998).

(1)	[Y X] X → PW_{REC}	[[ka**hr**]$_{PW}$ [et-mek] $_{PW}$] $_{PW}$ *Turkish* grief do-INF 'to grieve'
(2)	adjunction to an X → PW_{REC}	[(màs tus)$_{Foot}$ [maɟirévi]$_{PW}$]$_{PW}$ (/mas tus/) *Greek* us-CL them-CL cook-3SG.PRES 's/he cooks them for us'
(3)	adjunction to an XP → PPh_{REC}	$_{PPh}$[Twènty-s**i**x $_{PPh}$[vèry n**i**ce $_{PPh}$[Jàpan**e**se constrúctions]]] (Gussenhoven 2005:189)

We show that the "extended" constituent created from the above structures exhibits ambiguous behavior because of its dual nature. First, it can inherit the properties of its mother (head category), and hence exhibit (a subset of the) rules that apply to its mother. For instance, in (1) resyllabification – a PW rule, e.g., [ka**h.r-ɨ**]$_{PW}$ 'grief-3SG – applies throughout the outermost PW as indicated by the non-application of vowel epenthesis into the consonant cluster /hr/, whereas vowel harmony is confined within the innermost PWs. We take this to constitute further evidence for the existence of innermost and outermost layers of the same category, hence recursive structures, where only a subset of innermost-specific phonological rules may apply. Second, the extended domain provides an additional layer of structure which may be exploited by metrical rules. Therefore, prominence building and rhythmic re-adjustment rules are observed as unique properties of the REC layer, e.g., the development of secondary stress in sequences of clitics in (2) above, and the multiple instances of the *Rhythm Rule* (signaling the left boundary of a PPh) in iteratively adjoined phonological phrases, as shown in (3). As such, the analysis provides a room for processes that have been claimed to take place between the PW and the PPh (e.g., the Clitic Group; Minor Phrase) without the necessity to invoke an independent prosodic category. Finally, we compare our analysis with that of Itô & Mester (2007) based on empirical coverage and theoretical simplicity.

Consonant-Vowel Interactions and Vowel Harmony in Huave

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It is well-known that secondary articulations on consonants, especially palatalization, can interact with vowel harmony systems. In many cases, e.g. Turkish (Clements and Sezer 1982) and Barra Gaelic (Clements 1986), features on the consonant block the spreading of incompatible vowel features, often instantiating a new domain where the consonant features propagate onto the following vowel(s). This kind of spreading and blocking can be modeled either in derivational autosegmental phonology or in Optimality Theory. In this paper, however, I analyze a previously unstudied vowel harmony system whose interactions with consonants cannot be handled within classic autosegmental theory. I propose instead that the phenomena can be understood within an optimality-theoretic framework using string-internal correspondence constraints (Hansson 2001, Rose & Walker 2004). The paper thus contributes to the empirical typology of vowel harmony while also arguing for a particular theoretical view of harmony.

Huave is a language isolate of Oaxaca State, Mexico (Suarez 1975, Stairs and Stairs 1981); the data in this paper are from the highly endangered San Francisco del Mar dialect. Huave has the five-vowel system /i e a o u/, and a range of consonants that (with minor exceptions) all occur as both palatalized and plain phonemes. In vowel harmony, the quality of a harmonizing vowel is determined by the rime of the preceding syllable, as illustrated in (1) in the format 'Preceding rime + Harmonizing vowel'.

(1)

Plain consonant (C)	Palatalized consonant (C')
Front V: iC + a, eC + a	Front V: iC' + i, eC' + e
Back V: uC + u, oC + o, aC + a	Back V: uC' + i, oC' + i, aC' + i

The following generalizations emerge: First, the harmonizing vowel always agrees with the preceding consonant for [±back]. Second, the harmonizing vowel is a copy of the preceding vowel if and only if the vowel and consonant of the preceding rime agree in their value of [±back]. Otherwise, default vowels are inserted: [i] in the [-back] context, and [a] in the [+back] context. The problem for classical models of spreading and blocking is this: an incompatible specification for [±back] on the intervening consonant blocks not only spreading of [±back], but spreading of height features as well. If the intervening consonant only blocked spreading of features for which it was specified, we would expect height harmony even when the segments in the preceding rime did not agree in [±back], e.g. *oC' + e. Furthermore, sequences of mid + high vowels like /e...i/ are permitted in morphologically comparable environments elsewhere in the language, so vowel copy cannot be attributed to a general prohibition against those sequences.

This problem disappears under a theory of harmony that uses ranked and violable constraints. Adopting Correspondence Theory (Hansson 2001, Rose and Walker 2004), I posit a constraint IDENT-CV-[back], which enforces agreement in [±back] between the preceding consonant and the harmonic vowel. Crucially, IDENT-CV-[back] is ranked above all IDENT-VV constraints, which enforce featural identity between vowels in adjacent syllables, so that none of them can be satisfied unless IDENT-CV-[back] is also satisfied. Lower-ranked markedness constraints ensure the insertion of the correct default vowels in cases where IDENT-VV is violated. The correct output forms thus arise from the interaction and relative rankings of independent constraints on vowel harmony and CV agreement.

Umlaut as default in Swiss German

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Umlaut in Germanic is traditionally and historically understood as the fronting of stressed back vowels caused by an unstressed high front /i/ or /j/ in the following syllable (e.g. Braune 1987, Hermann 1957). For example, in Old High German, the nominative plural of the words *gast* 'guest' and *hût* 'hide' were *gesti* and *hiûti*: the stem vowels /a u/ changed in quality to [ɛ y], partially assimilating to the frontness of the plural suffix [i]. This process was extremely regular in nominal declensions, comparatives and superlatives, as well as verb conjugation and depended entirely on the presence of the phonetic trigger. In today's Standard German, this trigger has either disappeared or become a schwa [ə] such that umlaut now is an alternation which is largely morphologically conditioned. Nevertheless, the generally accepted view still assumes that the stems with the non-umlauted vowels are more basic, and umlaut is a special process of fronting or of losing the feature [dorsal] (e.g. Kraehenmann 2003).

We challenge this assumption in this paper. Taking the ideas in Lahiri & Reetz (2002) one step further, we claim that in Swiss German a single stem containing a vowel without place features is lexically stored, and umlaut is its default realization. Lahiri & Reetz (2002) found that, in Standard German, words with the alternation pattern of type (1A) (non-umlauted singular, umlauted plural and diminutive) gave different results in a semantic priming experiment than words of type (1B) (non-umlauted singular and plural, umlauted diminutive). They proposed that the vowels in type A words are underspecified for the [dorsal] feature, while [dorsal] is specified in type B words. Based on their assumptions about lexical access, they have to posit a separate diminutive stem, since diminutives only rarely come with non-umlauted vowels, whether they are formed with the diminutive suffix *–lein* or *–chen*.

(1) Types of umlaut alternations in nominal number and diminutive in Standard German

	SG	PL	DIM		SG	PL	DIM		ALTERNATIONS
A	*Gast*	*Gäste*	*Gästlein*	B	*Tag*	*Tage*	*Täglein*		[a] ~ [ɛ]
	Stock	*Stöcke*	*Stöckchen*		*Stoff*	*Stoffe*	*Stöffchen*		[ɔ] ~ [œ]
	Hut	*Hüte*	*Hütchen*		*Uhr*	*Uhren*	*Ührchen*		[u] ~ [y]
	'guest; stick; hat'				'day; fabric; watch'				

We propose for Swiss German that only one stem must be stored in the mental lexicon, namely not the stem with the back vowel. In Swiss German, diminutive forms are much more common than in Standard German, and therefore forms with umlauted vowels are more frequent. In addition, umlaut in Swiss German is more regularized as well as more closely tied to morphological gender and the presence or absence of an overt plural ending: neuter nouns tend to have an ending and umlaut; feminine nouns tend to have an ending and no umlaut; while masculine nouns tend to have no plural ending and may or may not have umlaut.

Assuming underspecification, we claim that the vowels in stems with alternation must be stored in the lexicon with no place specification, i.e., for being neither back nor front, neither non-umlauted nor umlauted. They gain the feature [dorsal] in certain morphological constructions, i.e. become non-umlauted vowels (e.g. SG in type A, SG and PL in type B). Otherwise they receive default [coronal] insertion and become umlauted (e.g. DIM, PL in type A). Thus, umlauted vowels are the rule rather than the exception and are lexically and featurally the less marked vowels. Their regular occurrence and relative frequency falls out from the fact that [coronal] is the default place specification. Phonologically then, alternating vowels and all front vowels are represented without place features, only the non-alternating back vowels have the feature [dorsal] lexically. Morphology then decides where [dorsal] insertion, or "non-umlauting", occurs in production.

Return of the Living Dead: Attack of the Ghost Foot

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Introduction: In this paper, I examine a neglected aspect of Italian raddoppiamento fonosintattico, the overapplication of raddoppiamento in connection with stress retraction, and argue for an analysis framed in Optimality Theory (OT, Prince & Smolensky 1993, McCarthy & Prince 1995, 1999) that understands the pattern as the optimisation of a decapitated foot.

Data: Word-internally, consonants contrast in length in Italian, unlike vowels. At word junctures consonant doubling occurs under three conditions. Lexical or idiosyncratic doubling is triggered in a word-initial consonant by a handful of function words when these precede the consonant (1a). Phonotactic doubling occurs when a consonant-final word with final stress is followed by a vowel-initial word (1b). Rhythmic doubling is the doubling of a word-initial consonant in the context of a preceding stressed open syllable (1c).

(1)	Consonant doubling in Italian		
a.	Come và?	[ˈkomevˈva]	‘How are you?
b.	bar aperto	[ˈbarraˈperto]	‘open bar’
c.	Và bene!	[ˈvabˈbɛːne]	‘OK!’

Problem: In recent OT analysis (Borrelli 2002, Saltarelli 2004), rhythmic doubling is attributed to the Stress-to-Weight constraint that demands stressed syllables to be heavy. A piece of data no account captures to date is the overapplication of gemination in constructions with stress retraction. Stress retraction is the shifting of stress to a preceding syllable if otherwise a stress clash would emerge (compare 2a and b) (Nespor & Vogel 1979, 1989). As Saltarelli (2004) shows Roman speakers remove stress from the word-final syllable and still geminate the following consonant (2b). He notes that this is not “predicted by a conventional theory of stress-driven initial consonant lengthening” (p.65).

(2)	Overapplication	
a.	[kaf.ˈfɛ] + [ˈluŋ.go]	caffè lungo
b.	[ˈkaf.fel.ˈluŋ.go]	‘long (diluted) coffee’

Solution: D’Imperio & Rosenthall (1999) show that full vowel lengthening occurs only in open penultimate syllables, while open antepenultimate syllables show less length. They conclude that lengthening occurs as an optimisation strategy of foot structure rather than augmentation of the stressed syllable. Final syllables are not footed if unstressed and feet have to be at least bimoraic. Lengthening of antepenultimate stressed vowels is a phonetic correlate of stress, not the addition of a mora. Hence, the Italian foot is minimally bimoraic. Rhythmic doubling can thus be attributed to the size restriction on feet rather than Stress-to-Weight. This alone does not explain the overapplication of doubling under stress retraction. In these cases the original foot on the word-final syllable is retained but it loses its head (see Crowhurst 1996 for headless feet). If the foot is there, without prominence, it still has to fulfil the bimoraicity requirement and does so by dragging the following consonant into its domain.

To account for the emergence of this headless foot in OT we split Output-Output faithfulness (Benua 2000). Faithfulness to a foot in a base has to be important, while faithfulness to the head of a foot as well as foot headedness (FT2HD, Crowhurst 1996) have to be less important than foot faithfulness and the constraint against clashes (3).

(3) Analysis sketch /kafˈfɛ/ + /ˈluŋgo/	*CLASH	OO-FAITH-FT	OO-MAX-FTHD	FT2HD	FT =μμ
kaf.(ˈfɛl).(ˈluŋ).go	*!				
(ˈkaf).fe.(ˈluŋ).go		*!	*		
☞ (ˈkaf).(fel).(ˈluŋ).go			*	*	
(ˈkaf).(fe).(ˈluŋ).go			*	*	*!

Conclusion: This paper shows that overapplication of rhythmic doubling under stress retraction is not as exotic as previously thought if raddoppiamento is understood as triggered by a two-morae foot size requirement rather than as a Stress-to-Weight effect and if feet can lose their heads.

Dinka noun plurals and their implications for theories of morphology

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Many languages mark morphological categories like number or tense by means of a limited number of morphological processes, one or a few of which apply regularly to a whole class of stems or to definable subclasses. This is the basis of "dual-route" models of morphology and the mental lexicon like Pinker's (1999 book), in which some morphological processes are rule-governed and productive while others are lexically listed and involve only probabilistic sub-regularities. Some researchers (e.g. Baayen & Moscoso in *Lg.* 2005) have challenged the dual-route idea, claiming that *all* morphological marking is ultimately listed in the mental lexicon and that the difference between regular and irregular morphology is only a matter of degree.

Inflectional morphology in Dinka, the Nilotic language of some 2m people in Southern Sudan, has the potential to shed light on this issue. Dinka has long been known for the apparent lack of systematicity in the way it marks plurality in nouns (e.g. Tucker & Bryan 1966 OUP book, Andersen in *Phonology* 1993). Plural marking is based exclusively on apophony, never on affixation: the difference between singular and plural is marked by modifications of one or more of the following phonological features of the stem: ***tone*** (e.g. ɲɔ̈ɔ̈k / ɲɔ́ɔ̈k 'louse/lice'), ***vowel length*** (e.g. tɔ̀ɔŋ / tɔ̀ɔɔŋ 'spear/spears'), ***vowel quality*** and/or presence of ***vowel breaking*** (e.g. ɟä̰aŋ / ɟjḛ̈eŋ, 'Dinka/Dinkas'), ***voice quality*** (e.g. màac / mə̰̀ɛc 'bullet/bullets'), and ***coda consonant*** (e.g. kɛ̰̀ɛw / kɛ̰̀ɛɛt̪ 'gazelle/gazelles'). Note that in the last two examples there are other differences in addition to the modification being exemplified; numerous combinations of modifications are found (e.g. rjɔ̈̆ɔp / rjɔ̈̀p 'fingernail/fingernails' [***tone, length***]; rɔ́ɔw / rɔ̰̀ot̪ 'hippo/hippos' [***tone, vowel quality, voice quality, coda consonant***]). Number marking in loans involves the same kinds of modifications, applied to the final syllable (e.g. t̪ʉ̈kʉ̈̂ul / t̪ʉ̈kʉ̀uul 'school/schools'; maŋgàa / maŋgàaa 'mango/mangoes').

We are currently engaged in an in-depth study of the Luanyjang dialect of Dinka (the third author's native language), attempting to identify possible sub-regularities in the system of noun plural marking, including implicational regularities (e.g. modification of feature X predicts the modification or non-modification of Y). So far, confirming earlier writers' findings, we have been unable to identify any semantic or formal principles governing which features are involved in marking a given singular-plural pair. Only two generalisations appear valid. First, modifications of tone and vowel length seem to be more basic; vowel, voice quality and coda modifications occur primarily in high-frequency words. Second, the "unmarked" form of a noun often has a shorter vowel than the marked form. However, first, even for tone and length there do not appear to be regular patterns of modification, and second, many nouns (denoting natural masses, groups, pairs, etc.) have the plural as "unmarked" (Dimmendaal in *Anthropological Linguistics* 2000). Anecdotally, when the third author is confronted with an unfamiliar singular word taken from a published word list, he is unable to infer its plural.

The goal of the paper is (1) to present the range of data to researchers interested in allomorphy; (2) to describe possible directions for future research (e.g. acquisition data, possibly frequency data, even experimental psycholinguistic data) and (3) briefly discuss ways in which a Pinker-style model might seek to deal with Dinka noun plurals. It is tempting to speculate that apophonic or ablaut-style morphology – which is at the heart of Pinker's prime example of English strong verb tense marking – may be more subject to irregular (or only probabilistically productive) patterning than affixing morphology.

Feature co-occurrence constraints in first-language acquisition

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Recent years have witnessed controversy over the issue whether children acquire phonological features (Jakobson 1941), or rather whole segments or individual words. We defend the Jakobsonian view, but argue that it should be supplemented by an analysis of the acquisition of feature co-occurrence constraints (FCCs). We propose a restrictive theory of FCCs and their acquisition. In this way, we also contribute to the theory of what constitutes a possible constraint within Optimality Theory, which is up until now underdeveloped.

The issues. In a traditional Jakobsonian view of language acquisition, children acquire phonological features rather than individual segments. This entails that natural classes of segments show up at the same time during language acquisition. But problems abound; in particular, it can be shown that segments constituting a natural class,do not emerge simultaneously. In short, features that appear to have been acquired do not combine freely. Such problems have led some researchers to abandon the Jakobsonian view in favour of a more 'exemplar-based' one: the order of the acquisition of segments is determined by frequency in the input language, or segments are acquired on a lexical basis, word by word. We will show that these alternatives make the wrong predictions.

Feature co-occurrence constraints. The role of FCCs in acquisition has not received a lot of attention. However, adult languages cannot be described either by merely listing the relevant features and assuming that they can be freely combined into segments. For instance, Dutch has voiced plosives /b,d/ and a voiceless velar plosive /k/, but no voiced velar plosive /g/. This is captured by a FCC*[voice, velar]. We argue in favour of a theory of FCCs based on monovalent features and the following restrictions: (i) FCCs mention exactly 2 features, (ii) there are two types of FCCs, one negative (*[F,G], 'no segment has features F and G at the same time' and one positive (F⊃G, 'if a segment has F, it should also have G'). Further, we propose that these constraints emerge at one specific moment only, viz. when both F and G have become available to the child.

The data. Our study is based on longitudinal data from 6 children in the CLPF database, containing 20,000 utterances of Dutch children aged between 1;0 and 2;8 years. As for the frequency of segments in the input language, we consider two sources: the Van de Weijer Corpus of Dutch child-directed speech, and the Corpus of Spoken Dutch.

Analysis. We distinguished between the 'word onset' (roughly, the first segment of the word) and the 'word offset' (the last segment) and focused on consonants. We analyzed the target consonants, as well as the actually produced consonants. Thus, for every recording, we found two consonant inventories: one of targeted consonants and one of actually produced consonants. These were ordered on Guttman scales – again two for every child, one for targets and one for productions. Finally we analyzed the developmental orders that could be deduced from the Guttman scales in terms of features and our restricted theory of FCCs. The individual sets of developmental inventories – which varied considerably – all fitted our model.

Theoretical contribution. Although constraints are important building blocks of OT, so far hardly any literature exists on the nature of markedness constraints. Our view of FCCs aims to contribute to the theory, by proposing that segment inventories are constrained solely by our small set of FCCs. The field of phonological acquisition is supplied with a model for the development of segment inventories.

Privativity and allophony in small inventories

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Browman & Goldstein 1989 proposed that phonological development consists in harnessing the pre-linguistic gestures or action units produced by the child during the babbling period to be the basic units of phonological structures. How far does this harnessing have to go in a language with a small phoneme inventory?

The present paper is an investigation into the allophonic variation of some of the smallest phoneme inventories reported to exist, for the purpose of getting a better understanding of primary phonemic splits in feature systems. One prediction would be that if features are privative, asymmetries due to marked vs. unmarked sets should be particularly easy to observe in a small inventory. One might also expect a lot of allophonic variation, with only gross articulatory gestures needed to distinguish utterances, since the available phonetic space for each sound is so large. The data includes descriptions and sound recordings of Rotokas by the Firchows and Stuart Robinson, and of Pirahã by the Everetts and Peter Ladefoged.

One result that emerges from the study, is that individual speech habits do indeed seem to vary, but maybe not quite as much as one might imagine. Speakers seem to arrive at a relatively constant way of pronouncing the phonemes. This may be due to overlearning of articulatory gestures. More striking than the individual variation is the fact that variation between individuals is significant, with a wide repertoire of realizations for the same phoneme. Allophony is utilized for signaling group membership, so young and old, men and women, and people in neighboring villages, may have very different pronunciation. We see e.g. that one speaker of Rotokas consistently will realize the /β/ phoneme as [m], whereas another, from a different age, sex or dialect group, prefers [β].

A rather surprising phenomenon is the occurrence of extremely rare sounds in these small inventories. A labial trill [ʙ] occurs in Pirahã and the unrelated Wari', which also has a relatively small phoneme inventory, and Pirahã also has a doubly flapped sound. Why should such rare sounds occur in languages with small inventories and presumably impoverished phonological specifications? One might imagine that very unspecified phonemes can be realized by gestures that are so imprecise that they sometimes give flaps as the result. But notice that even though these sounds have been reported to belong to the sound inventory of Pirahã, their function is not primarily distinctive, since they are in free variation with a variety of other voiced consonants. The articulation of these rare allophonic embellishments seems to be partly or wholly controlled by the speakers as vehicles of sociolinguistic information.

The fact that such sounds are included in the set of allophones, testifies to the unspecified phonological feature structure of the phonemes. When a Rotokas [m] in one speaker's system is identified as equivalent to [β] in that of another speaker, it is as when a speaker of French or German with a uvular [ʁ] talks to someone who uses an apical [r], or when Ni'ihau Hawai'ian has [t] where other dialects have [k]. The phonological representations of these phonemes will indeed have to be quite impoverished to encompass such a wide variation.

Our initial hypothesis, that featural splits would be asymmetrical, is supported by the data. One especially clear instance is the primary split between closed and open consonants, which gives a set of marked stop phonemes with very limited variability, e.g. Rotokas /p/ [p] or Pirahã /p/ [p~pʲ], and another leftover set of unmarked open consonants with a wide variety of realizations, e.g. Rotokas /β/ [b~β~ʋ~m~mb] or Pirahã /β/ [b~β~ʋ~m~mb~ʙ]. Such facts strongly support the privative feature analyses which will be presented.

Local and long-distance analyses of harmony in metaphonic systems

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There is considerable evidence that consonantal harmony should be treated as non-local segmental correspondence rather than autosegmental linking (Walker 2000, 19 WCCFL; Rose & Walker 2004, Lg; McCarthy 2006, ROA 879-1006; Hansson to appear, LI). These results suggest that there are two types of assimilation, long-distance correspondence, and local spreading. Since good cases of non-local correspondence seem to be found in consonantal harmony, it is important to see to what extent vowel harmony does not show non-local correspondence effects. There are recent proposals to apply the long-distance model to vowel harmony. Romance metaphony, a harmonic process that is stress-dependent, has been analyzed in this way by Walker 2004, 23 WCCFL; 2005, NLLT; 2006, handout, Phonology Fest, Indiana Un.). In metaphonic systems a post-tonic, usually final vowel triggers harmonic agreement of the stressed vowel, as in (1), where underlying /e/, /o/ raise to [i], [u], respectively.

(1)	Central Veneto, Grado	bévo	'I drink'	bívi	'you drink'
	Lena bable (Asturias)	kókos	'worms'	kúku	'worm'

Walker proposes that metaphony is the result of high-ranking of a constraint that states that post-tonic high vowels must be associated with a stressed syllable. (In Walker (2004, 2006) linked and unlinked structures are both allowed; relative ranking of INTEGRITY and IDENT (high) will choose one of them.) The constraint is motivated by perceptual grounding: high vowels are weak and repeating its features in stressed position improves perceptibility.

I propose instead that metaphonic harmonic systems are cases of local harmony. Harmony can be restricted to the word or to the foot domain. Grounding is the same as for other types of harmony: gestural homogeneity from a production perspective and in some cases extension of a special position (not necessarily a weak one) to a wider domain. Since grounding is not exclusively dependent on the weak character of high vowels, it is predicted that nonhigh vowels will also spread, which is found to be the case when more metaphonic systems are taken into consideration.

Notice that in the Romance varieties that show metaphony, stress falls on one of the three last syllables. In oxytones there is no harmony since there is no post-tonic vowel. In oxytones both analyses work equally well since both define a single trigger and a single target. Crucial evidence is furnished by proparoxytones, which have not been examined carefully enough (underlined Vs agree in the harmonizing feature):

(2)	a.	/($_{Ft}$Vstr V <u>V</u>) /	/Vstr V <u>V</u> /
	b.	($_{Ft}$<u>Vstr V V</u>)	<u>Vstr V V</u>
	c.	($_{Ft}$<u>V</u>str V <u>V</u>)	<u>V</u>str V <u>V</u>

Under a foot-based analysis, (2b) is the expected outcome, and (2c) should appear only under special circumstances (e.g. transparency). Under a long distance licensing analysis, (2c) is the expected outcome, and (2b) calls for additional mechanisms.

I will show that a more careful analysis of the sources and the use of direct sources indicates that whereas harmony is regular in paroxytones, proparoxytones always present special effects that can be derived from differences in the footing of the three last syllables. In many cases they do not harmonize, in others harmony is subjected to further restrictions that can be accommodated under a local analysis. I will also show that empirical extension to other metaphonic systems that have not been examined in this respect, like Catalan, Andalusian Spanish, and Sardinian, shows the paroxytone – proparoxytones asymmetries even more clearly and supports the local analysis.

The Importance of Detailed and Multifaceted Data in Analyzing Allomorphy

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The Balto-Finnic and Samic languages are well known for typologically rare and theoretically challenging phenomena that have defied straightforward analysis despite a long history of phonetic, phonological and morphological study. Among these are claims of a 3-way phonological contrast in consonant length - sometimes coupled with only a single long vowel in the language; a requirement of simple onsets but complex rimes - including a preference for long vowels, diphthongs, and coda clusters; and augmentation of root-medial consonants under inflection (a.k.a. consonant gradation) - including preaspiration and [v~k] alternations. Samic languages are also claimed to have a voicing contrast for stops in foot-medial position but importantly not in the onset of the stressed syllable (which are always plain). This is typologically unexpected and highly problematic for most theories of laryngeal features and markedness. Equally surprising is a claimed voicing contrast among foot-medial geminate stops, where the voiced geminates correspond to extra-long consonants in the morphological paradigm. Current theories of the phonetic relationship between stop duration and voicing should preclude this because longer stops should devoice rather than voice. Finally, there are somewhat mysterious, extra-short vowels that appear between some medial consonants in particular morphological paradigm cells. These "glide vowels" are intriguing because of their distribution and because they are described as undergoing vowel harmony even in those languages lacking harmony otherwise. In looking at these phenomena individually (as the literature does), we get a picture of the Balto-Finnic and Samic languages as having highly complex and unusual sound systems full of phonological oddities, puzzling allomorphy, and problematic phonetics-phonology relationships.

This talk will examine these issues in Lule Sami - the second largest Samic language. This language is important for two reasons. First, it has one of the simplest sound systems within this language family and yet has all of the above-mentioned phenomena. So, it is perfect for seeing clear cases of individual phenomena and the interactions among them. Second, the data presented in this talk are not based on traditional descriptions (which conflate dialects) or impressionistic transcriptions but on data collected from individuals during field research and transcribed with the aid of electronic acoustic analysis. Thus, orthographic, inter-dialectal and transcriber misperception influences on the description of the data are minimized. What we discover in looking at these data is that the broad descriptions found in the literature are essentially correct, but the details are crucially not. This has a profound effect on how one must analyze these data. I show that paying attention to phonetic and phonotactic details across the gradation system (i.e. viewing phonetics, phonology and morphology simultaneously) leads to the conclusion that this language does not have 1) a 3-way *phonological length contrast* for consonants, 2) a *phonological laryngeal contrast* for stops or 3) a *contrast* between allomorphs with and without glide vowels. Rather, I unify these three phenomena and show that they are slightly different phonetic responses to the same morpho-phonological/prosodic environments. Thus, the allomorphic alternations and phonological distributions turn out to be complex and interrelated, but not as unusual as the literature seems to suggest.

In summary, abstracting away from phonetic details, phonotactic distribution and morphological complexity in analyzing individual phonological phenomena can lead to a misunderstanding of the facts and ultimately to flawed analyses. As Ringen & Helgason (2007) put it "when careful acoustic and phonological studies are done, it turns out that the facts are different from what has been repeatedly analyzed in the phonological literature."

‘Contour’ segments as discordant stops

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Most phonological theories agree that precedence relations should be expressed within certain segments as well as between segments at the skeletal/CV level. For example, in contour expressions such as affricates, a precedence relation is assumed to hold between features like [±continuant] (Sagey 1986, McCarthy & Prince 1986).

In recent years, however, Lombardi (1990), Takahashi (1993), Schafer (1995), Scobbie (1997), Nasukawa (1999, 2005), Kehrein (2002), Scheer (2004), and others have questioned the grammatical status of contour representations. For example, by accepting a contour representation it becomes difficult to account for affricates which defy typical ‘edge effects’. In addition, admitting contour segments does not explain why the two slots in the contour never appear in the reverse order, even though this is predicted at least as a possibility. What is more, if we were to permit more than two slots in a contour, then the number of possible but unattested contour expressions would multiply further. Accordingly, it has been argued that precedence relations in contour segments are not the result of sequential ordering in representations, but rather, the effect derived from the staggered interpretation of a single segmental structure.

Various explanations have been proposed to account for the interpretation mechanism responsible for producing different contours and/or non-contours. For example, an affricate is produced by: the presence of the two unordered privative features [continuant] and [stop] within the same segment (Lombardi 1990), by asymmetric dependency relations between the same features (Schafer 1995), or by the presence of the phonetically incompatible features [A] and [ʔ] (Scheer 2004). This paper integrates these various views by introducing melodic *concordance* and *discordance* within an Element Theory approach. We claim that a well-formed phonological structure is subject to one of two types of phonetic interpretation: concordant and discordant. Most stops contain a *single* ‘place’ prime, which can be interpreted simultaneously with other elements in the expression (i.e. concordant interpretation). On the other hand, affricates contain *two* ‘place’ primes which cannot be interpreted concordantly. The melodic discordance associated with affricates results in a staggered interpretation of its melody. The same argument can be extended to the other types of melodic primes.

Phonologically Conditioned Suppletive Allomorphy: Cross-Linguistic Results and Theoretical Consequences

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Our understanding of phonology-morphology interface is incomplete with respect to two important questions: What phonological effects are possible in morphology? And how should they be modeled? One phenomenon that can shed light on these questions is *phonologically conditioned suppletive allomorphy* (PCSA). Although it has received some attention in the literature (e.g., Carstairs 1988, 1990, Mester 1994, Kager 1996, Mascaró 1996, Tranel 1996a,b, Carstairs-McCarthy 1998, Vaux 2003, Bonet 2004, Bye to appear), PCSA has not previously been subject to a broad cross-linguistic study. In this paper, I summarize the results of a large cross-linguistic survey of PCSA representing 67 languages. I then use the survey results to argue for an approach to PCSA in terms of morphological subcategorization, to be described below.

As an introduction to the PCSA phenomenon, consider the following genitive nouns Dja:bugay (Patz 1991: 269), a Pama-Nyungan language of Australia.

(1)	a.	guludu-**n**	‘dove-GEN’	b.	girrgirr-**ŋun**	‘bush canary-GEN’
		gurra:-**n**	‘dog-GEN’		gaɲal-**ŋun**	‘goanna-GEN’
		djama-**n**	‘snake-GEN’		bibuy-**ŋun**	‘child-GEN’

When the stem is V-final (1a), *-n* is used to mark genitive. When the stem is V-final (1b), *-ŋun* is used. The allomorphy is considered suppletive because no plausible phonological process could relate the two allomorphs to a single underlying form: this would require the simultaneous deletion or insertion of two segments, /ŋ/ and /u/. Therefore, underlyingly there must be two separate genitive suffixes. But although we cannot write a phonological rule to derive the allomorphs from a single underlying form, we can still state the distribution of allomorphs in phonological terms, since the relevant property of the stem (C- vs. V-final) is phonological.

The dual nature of PCSA (phonologically conditioned, but morphological in the sense of requiring multiple separate underlying forms) raises the question of whether the allomorphy is handled by phonology or morphology. In this paper, I contrast two competing models of PCSA representing phonological and morphological approaches, respectively. The first is the ‘P >> M’ OT ranking schema (McCarthy and Prince 1993a, b), which ranks phonological constraints above morphological constraints in OT. This can be characterized as a phonological approach since regular phonological well-formedness constraints determine allomorph distribution. The alternative is a ‘subcategorization-based’ approach where subcategorization frames specify the type of stem to which affixes attach, including syntactic, morphological, and (crucially) phonological features of stems. Because phonological conditions on allomorph distribution are stored in the underlying form of each affix, this is considered a morphological approach.

The two models are shown to be distinguished by four opposing predictions for PCSA in the world’s languages. As I show, the survey results favor the subcategorization approach with respect to all four: (1) PCSA is not always phonologically optimizing (see also Bye to appear); (2) PCSA is sensitive to underlying rather than surface forms; (3) Stems can condition PCSA in affixes but not vice-versa; and (4) PCSA occurs at the same edge of the stem as the trigger. Thus, the predictions of the subcategorization approach match better with the empirical results than do the predictions of P >> M. I conclude with a summary of the theoretical consequences of the survey and further discussion of strategies for modeling phonological effects in morphology.

Vowel Harmony in Kera

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In this paper, we investigate an interesting vowel harmony system in Kera, a Chadic language (Ebert 1979, Pearce 2003). Like Turkish, Kera has fronting and rounding harmony, but also has height harmony and total harmony. These operate over different domains, including the iambic foot and the Prosodic Word, which consists of all of the footed material within the Morphological Word. Suffixes are always footed and therefore part of the Prosodic Word, but Kera also has unfooted syllables at the right edge of words. These do not undergo any kind of harmony other than height harmony. For most of the harmony types, features spread from right to left, but height harmony is of particular interest because it is bi-directional with height dominance. We will consider the following types of harmony:

a. **Epenthesis**. This is a feature-filling process with the Prosodic Word as domain. When there is more than one specified vowel which could supply the features the preferred direction of spreading is right to left. Feet are marked with parentheses and epenthetic vowels are underlined.

(1)	mirk-t-n > (mir)(ki̲ti̲n)	'greets me repeatedly'	(One underlying vowel)
	mirk-t-u > (mir)(ku̲tu:)	'greets him repeatedly'	(Right to left preferred)
	mirk-t-n-u > (mir)(ku̲t)(nu:)	'greeted him repeatedly'	(Beyond foot boundary)

b. **Height**. This harmony exhibits height dominance in both directions with the Morphological Word as the domain of spreading.

(2)	mirk-a > (mir)(kɪ:)	'greet her (3sf)'	(Left to right)
	baad-u > (bʉ)(du:)	'wash him (3sm)'	(Right to left)

c. **Fronting and rounding**. A high central vowel will be fronted and rounded by high front or round vowels respectively within the Prosodic Word, spreading from right to left. This type of harmony involves Parasitic Harmony somewhat like that found in Yawelmani Yokuts (Cole 1998), with the restriction that the trigger and target must both be high.

(3)	cʉr-i > (cii)(ri:)	'your (f) head'	vs. vʉg-ɛ > (vʉ)(gi:)	'is emptying'
	ɨsk-i > (is)(ki:)	'hear you (f)'	vs. ɨsk-ɛ > (ɨs)(ki:)	'hear'
	cʉr-u > (cuu)(ru:)	'his head'		

d. **Fronting**. This harmony targets central vowels and is triggered by any front vowel. Spreading only takes place within the foot, from right to left.

(4)	ɨs-ɛ > (isi:)	'sit down'	vs. ɨsk-ɛ > (ɨs)(ki:)	'sit you (f) down' *(is)(ki:)

e. **Total**. The domain of total harmony is the Prosodic Word within the root. Suffixes are neither triggers nor targets. Non-footed syllables are also exempt.

(5)	(kuŋ)(kuruŋ) 'leather bag'	vs. (kas)kɔ	'bird'

The right to left spreading in most of these harmony types may be caused by the need to identify vowel suffixes which consist of only one vowel. Suffixes can trigger most types of harmony, but they can only be targets of height harmony. While height harmony involves little information loss, the changes from fronting and rounding are more severe.

Kera harmony is of interest because of the varying combinations of harmony types, domains and directions. In addition, height dominance and the foot domain are both rare and therefore fill typological gaps. (Archangeli and Pulleyblank 2007, van der Hulst & van de Weijer 1995). We will combine all of these seemingly incompatible strands within an OT framework and conclude that while the harmony system reduces the information load, it also has the function of defining the prosodic and morphological boundaries and thereby eases the task of parsing the speech signal.

Evidence for pword structure

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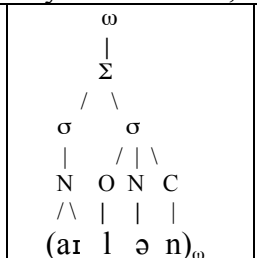
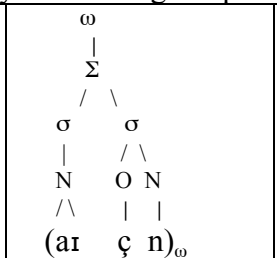
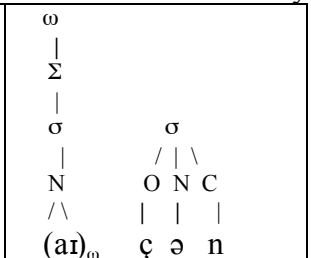
Reference to the pword (phonological word) in phonological descriptions is typically either impressionistic and riddled with inconsistencies or, presumably a consequence thereof, largely neglected (cf. de Lacy 2007 'The Cambridge Handbook of Phonology'). The purpose of this paper is to illustrate a more rigorous approach to recognizing pword structure, where alignment of pword boundaries with morphological boundaries, the necessary domination of at least one foot, and proper containment of all lower constituents are considered inviolable constraints (Selkirk 1995). An additional restriction is to recognize pwords in some language only if there are generalizations which cannot be captured with reference to lower prosodic constituents (syllables, feet) or be stated as morpheme structure conditions. We argue that the phonology of *-chen*-suffixation in German satisfy these criteria.

The word in (1a) includes a back vowel followed by a palatal fricatives with an intervening morpheme boundary. This combination violates a constraint "*Aç", which is always satisfied in simplexes, regardless of syllable or foot structure (cf. the data in (1b)).

(1)a.	[mam**áç**ən] 'Mama-chen' 'Mama-Diminutive suffix'
b.	[ɪç] 'ich' 'I'- *[aç] (cf. (ax) 'ach' 'oh' (Interjection))
	[ɛ́ço] 'Echo' 'echo'- *[táço] (cf. (táxo) 'Tacho' 'speedometer')
	[t^{s}içóriə] 'Zichorie' 'chickory' - *[vaçóldɐ] (cf. [vaxóldɐ] 'Wacholder')

The claim that the proper domain for this constraint is the pword (e.g. (mama)$_{ω}$çən), rather than the morpheme, is supported by a correlating peculiarity in phonetic syllabification patterns. Foot-internally the realization of schwa is governed by sonority restrictions, resulting in syllabic sonorants whenever the sonority of the nucleus exceeds the sonority of the onset (cf (2a) vs. (2b)). Here monomorphemic constituents and those including vowel-initial or consonantal suffixes pattern alike, due to phonologically conditioned affix integration into the pword of the stem (cf. Dixon 1977). The occurrence of schwa, rather than a syllabic nasal, in the *-chen*-suffixation in (2c) supports internal pword structure, which necessarily delimits feet, thereby obstructing the prosodic context for sonorant syllabicity.

(2)a.	 /aɪlən/ ‚eil-en‘ 'to hurry'	b.	 /aɪçən/ ‚Eiche-n‘ 'oak trees'	c.	 /aɪçən/ ‚Ei-chen‘ 'egg-DIMINUTIVE'

The somewhat subtle contrast in (2b,c) is reflected in transcriptions in pronouncing dictionaries (Mangold (1990), GWDA (1982)) and was confirmed in a carefully controlled experimental study based on acoustic measurements to be described in our presentation. An analysis in terms of idiosyncratic marking of the suffix to secure the schwa is rather questionable, given the low-level nature of the syllabification pattern. Affix-specific marking would further fail to explain the fact that an analogous contrast is reflected in the entries for English words with consonant-initial syllabic suffixes such as *rueful, woeful*, pronounced with schwa, versus *rifle* with a syllabic sonorant in Kenyon & Knott (1953) and Muthmann (1999), (but not in Wells (2000)). For English and German there is robust evidence for word-internal pword boundaries whenever there is a productive and hence recognizable, consonant-initial suffix, regardless of the properties of the root (recurrence, meaning). This generalization, which correlates with independent evidence for pword structure in prefixations, does not hold for all languages, suggesting that reference to pwords should be omitted in those languages.

Neutralization and anti-homophony in Korean
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●The behavior of obstruent codas in Korean is a textbook case of neutralization. For example, all of [t t^h tʃ $tʃ^h$ s] neutralize to [t˥] in coda position. To the extent that neutralization here might induce homophony, phonological systems cannot be said to be driven by functional considerations such as contrast maintenance. However, a corpus study of 1.5 million Korean word tokens reveals that neutralization-induced homophony is remarkably limited in scope. Out of 35,908 different nouns in the corpus, there are only nine clear-cut potential cases of alternation-induced homophonic doublets❶. In this presentation, I exemplify the neutralization pattern of Korean coda obstruents, and present the details of my corpus investigation. I further trace the historical development of the pattern, considering influences from phonetics (loss of stop "release"), morphology (suffixation and compounding), and language contact (the influx of Chinese forms), that have influenced its development. I conclude that, indeed, despite such pervasive neutralization, there are strong anti-homophony pressures on the pattern's diachronic comportment. ●In its pre-history, Korean possessed many root-final consonants that were released. As in every language though, there always existed a potential for word-final consonants to lose their "release" features. Due to extensive borrowing from Chinese—with its system of unreleased root-final stops—the possibility of "release"-loss was "encouraged", and ultimately actualized. That is, since the extensive Sino-Korean (SK) vocabulary had a fairly simple system of root-final consonants ([p˥ t˥ k˥ m n ŋ]), this eventually had the effect of triggering a change in the native system of word-final consonants (which is a common sort of sound change even without any external "encouragement"). So, when native Korean roots stood alone, or when they were followed by a consonant, they slowly came to conform to the SK pattern that was so extensive. ●However, it's likely that this change took place *only* because communication was not adversely affected. ●For **verbs** there are a significant number of potentially homophonous forms, but obligatory suffixation induces alternation, thus eliminating the risk of significant homophony. Crucially, consonant-final verb roots usually take vowel-initial suffix allomorphs, thus guaranteeing "release". ●For **nouns**, there are fewer alternations (since nouns often appear in bare, unsuffixed form). But potential homophony due to the loss of word-final contrasts is offset by a pervasive SK compounding process. The compounding, like the loss of "release", was also due to contact with Chinese. ●Most broadly, the Chinese pattern of "unrelease" probably influenced Korean exactly because so little actual homophony results (due to alternation for [native] verbs, and compounding for [SK] nouns❷. ●If alternation weren't present, and if compounding weren't present, then loss of "release" would have done far more functional damage. Indeed, it is almost unimaginable that Korean would have tolerated this simplification of its coda system if it would have resulted in extensive homophony. ●The Korean pattern suggests that neutralization is counter-functional only to the extent that it induces homophony, but, in fact, neutralization is unlikely to ever induce significant homophony. Indeed, neutralization may become extensive, but only provided that significant homophony is not induced.

❶Root	Tokens	Hangul	English	Root	Tokens	Hangul	English
{Mas}	392	맛	taste	{Math}	3	맡	???
{Such}	14	숯	charcoal	{Suth}	7	숱	density
{Nach}	91	낯	face	{Nas}	25	낫	sickle
{Teoch}	31	덫	trap	{Teos}	4	덧	short time
{Pat}	2	받	???	{Path}	380	밭	field
{Cheop}	8	첩	a dose of	{Cheop}	14	첩	mistress
{Pic}	128	빚	debt	{Pich}	726	빛	light
{Ip}	1139	입	mouth	{Iph}	158	잎	leaf
{Pyeos}	6	볏	crest	{Pyeoth}	32	볕	sunshine

❷1300 years ago	1100 years ago	500 years ago	400 years ago
SK vocabulary, with its unreleased final stops, is supplanting many native nouns with two-root compounds	Root-final [t^h], [tʃ], [$tʃ^h$] and [s] are still found in final position, and before consonants, in native Korean	Influenced by the SK root-structure, [t^h], [tʃ], and [$tʃ^h$] become [t˥] in final position. But verbs alternate, and SK nouns are compounds.	[s] alternates with [t˥] in these positions as well. Still, there are few adverse functional consequences.

Multiple-Feature Mutation and Realize Morpheme

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Wolf (2005) argues that the realization of featural affixes in mutation is governed by the constraint in (1a) specific to subsegmental morphology, and provides mutation data involving multiple phonological features as evidence for assuming MaxFlt instead of the weaker and more general constraint in (1b). In this talk, I show that attested data of this type follow from independently motivated morphological operations and Realize Morpheme can fully replace MaxFlt for mutation.

(1) a. MaxFlt: All autosegments that are floating in the input have output correspondents. (Wolf, 2005)

b. Realize Morpheme: For every morpheme in the input, some phonological element should be present in the output. (van Oostendorp, 2005; ≈ Akinlabi's, 1996 Parse-Morph)

Problem: Wolf cites the Texistepec Popoluca data in (2), where 1st person agreement is realized by nasalizing, 2nd person by nasalizing and palatalizing, and 3rd person by denasalizing and palatalizing the initial root consonant, giving rise to the morphemes 1P:[+nasal], 2P:[+nasal –back], and 3P:[–nasal –back], where +/-nasal and –back are floating features. Crucially, for 2P and 3P, Realize Morpheme would not enforce realization of both phonological features inside the root, and other constraints such as Ident and root-prominent faithfulness constraints would favor an incorrect output where only one floating feature for each morpheme is present. Hence high-ranked MaxFlt seems to be necessary which requires that all floating features of an affix are realized.

(2)

Inf. —	**1P** [+nasal]	**2P** [+nasal –back]	**3P** [-nasal –back]	
d*astah*	***n****astah*	***ɲ****astah*	***dʲ****astah*	'dig'
n*aj*	—	—	***dʲ****aj*	'sprout'

Background: Morphological research of the last decades (e.g. Noyer, 1992) has shown that descriptive morphosyntactic terms such as 2nd person must be decomposed into more atomic features which may be expressed separately by different morphemes. Thus Müller (2005) shows that in Sierra Popoluca, a closely related language, in a verb as (3) *i-* is a [-1] affix (present also in 3rd person agreement, but not in 1st person exclusive and inclusive), while *m-* realizes the feature [+2] also present in 1st person inclusive forms.

(3) *m-i-nɨk-pa* 'you are going'
[+2]-[-1]-go-Imperfective (Sierra Popoluca; Müller, 2005)

Analysis: Assuming that featural affixes have the same morphological status as segmental ones, Texistepec Popoluca instantiates the same type of expressing person categories as Sierra Popoluca, where the morphemes are specified as in (4):

(4) a. [-3]:[+nasal] b. [-1]:[-back] c. [+3]:[-nasal]

In 2P/3P forms Realize Morpheme enforces realization of two phonological features since there are two corresponding morphemes (for 2P: (4a) and (4b)). The same approach extends to other categories. Thus Wolf cites Nuer where negative past participles impose the features [–voiced –continuant] on the final root consonant and present participles [-voiced +continuant]. Here I take [-voiced] as the marker for [+participle] and the voicing contrast as the correspondent of additional features distinguishing participle types.

Set the Controls for the Heart of the Alternation

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Dahl's Law, found in a number of Bantu languages and commonly described as a voicing dissimilation process between a prefix and a stem, presents an interesting challenge in Kitharaka. First, the alternation is between [k] and [ɣ] (not [g], which is absent from the Kitharaka inventory), as seen in (1a). Second, /θ/ (which is in free variation with [ð]) does not trigger the alternation (1b). Third, the process is subject to an intriguing locality requirement: It bridges hiatus and a nasal in a cluster (1c) but cannot skip an onset nasal (see (1a) again).

(1)	(a)	ɣo-to	'ear'	ɣe-ciko	'spoon'
		ko-ɣoro	'leg'	ka-mote	'small tree'
	(b)	ka-iθe	'surprise sale item'	ko-θiŋgata	'to follow'
	(c)	ɣoo-nto	'somewhere'	ɣa-iɲci	'thorny shrub fence'

We propose that an analysis of the data crucially hinges upon minimal feature specifications (see e.g. Rice & Avery 1991, Dresher & Zhang 2000, Morén 2003). We will also present evidence, though, that these specifications do not derive solely from overt phonemic contrast. First, underspecification is needed to account for the locality of the dissimilation process. If no feature bearer may intervene between trigger and target (Odden 1994), non-interacting segments like nasals, which are transparent, cannot be specified for the dissimilating feature. In addition, the data suggest a hitherto unreported locality condition; Dahl's Law applies between adjacent onsets; consonantal material or onsetless syllables can intervene.

The alternation with [ɣ] also poses a challenge, since [ɣ] is not just the voiced counterpart to [k] (contra Lombardi's 1995 analysis of Kikuyu) but a surface sonorant, as evidenced by a process of postnasal hardening whereby the class of N+/β, r, j, ɣ/ become [mb, nd, ɲɟ, ŋg]. Additionally taking into account the fact that [θ] does not trigger dissimilation, a claim that Dahl's Law is just a voicing alternation runs into severe problems. In fact, voicing is not contrastive at all in Kitharaka, which has a set of voiceless aspirated stops, a set of nasals, a set of sonorants and a single fricative /θ/, which has variable voicing.

Given contrastive underspecification, dissimilation thus does not seem to involve [voice] or some other laryngeal feature. Evidence from recent borrowings suggests that it does, though. Voiceless fricatives can be retained unassimilated, then triggering dissimilation (e.g. [ɣofirisi] 'to freeze'). A solution to the problem can be found in the above-mentioned process of postnasal hardening: [b, d, ɟ, g] exist, if only on the surface. The feature system seems to be sensitive to such non-contrastive information. Again, loanword adaptation provides support for this: English /b, d, g/ are adapted as nasal clusters [mb, nd, ŋg] (also showing that the choice of [ɣ] in Dahl's Law is not a 'nearest match' for unavailable [g]; this match is [ŋg]).

We will present an analysis of Dahl's Law in which [spread glottis] is the dissimilating feature for which stops are contrastively specified. The 'sonorants' /β, r, j, ɣ/ are underlyingly specified for place only and receive context-dependent manner specifications on the surface. Loss of [spread glottis] in dissimilation yields a mannerless consonant, explaining the [k]~[ɣ] alternation as one which involves the loss of only one feature. This analysis has theoretical implications for the status of contrast in feature specifications and suggests a tension between underspecified inputs and more fully specified output representations. We will therefore present an analysis in the framework of Turbidity Theory (e.g. Goldrick 2000, van Oostendorp in press) which addresses these issues. Finally, we emphasize the necessity to look at a phonological system as a whole in determining the nature of some process (cf. Morén 2006); the heart of Dahl's Law in Kitharaka cannot be properly understood without reference to inventory facts and alternations which provide crucial evidence for feature specifications.

Tonal asymmetry in Norwegian derivational affixes

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Polysyllabic words in Standard East Norwegian have one of two tonal patterns referred to as Accent 1 and Accent 2. The distribution of tonal accent in derived words evidences that affixes have an influence on the tonal accent of the resulting complex word, e.g. *svak*$_1$ 'weak' has Accent 1 in isolation and in the derivation '*svakhet*$_1$ 'weakness', yet '*svakelig*$_2$ 'delicate' has Accent 2.

Two of the most prevalent morphophonological analyses of tonal accent in Standard East Norwegian are Withgott & Halvorsen (1984) and Kristoffersen (2000). Both analyses deal with the effect of affixes on tonal accent. Withgott & Halvorsen (1984) account for the tonal influence of a selection of affixes by lexically specifying morphemes for inducing Accent 1, Accent 2 or being tonally neutral and then categorizing these morphemes for different degrees of dominance. Kristoffersen's analysis only marks morphemes for inducing Accent 2 or for having no influence on tonal accent at all. To account for the distributional facts for complex and simplex words, however, he must assume various additional alignment and lexical constraints.

Our paper provides an account of the tonal influence of derivational affixes in a new light. In accordance with Lahiri et. al. (2005), we only lexically specify morphemes for Accent 1 and are thus able to account for the distributional facts in a more straightforward and coherent way. Our paper proposes the following:

a. morphemes may only be lexically specified for Accent 1
b. all other morphemes are tonally unspecified
c. the prosodic structure of a derivational suffix plays a role in accent assignment
d. homophonous affixes must not concur in lexical tonal specification - thereby leading to allomorphy

The Accent-1 and Accent-2 derivations made with the Accent-2 verb '*handle*$_2$ 'to handle' such as {be-} + {handle} > *be'handle*$_1$ 'to handle'; {mis-} + {handle} > '*mishandle*$_2$ 'to abuse' illustrate points (a) and (b). Lexical specification for accent does not account for the difference in tone in derivations such as '*galskap*$_1$ 'insanity' and '*galning*$_2$ 'madcap' made with the suffixes {-skap}$_w$ and {-ning} but rather their prosodic structure (c). Concerning point (d), tonal allomorphy explains the differing accent of derivations containing {-isk} as for example in '*dyrisk*$_1$ 'bestial' or the Accent-2 derivation '*nordisk*$_2$ 'nordic'. The fact that all monosyllabic words such as *dyr*$_1$ 'animal' and *nord*$_1$ 'north' have Accent 1 in isolation implies that we are dealing with two tonal allomorphs of {-isk}. We back this assumption with historical and synchronic evidence.

Following these principles and by assuming a strict difference between affixes and clitics, all of the distributional facts of tonal accent in derivations fall into place. We need no additional constraints or degrees of dominance.

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Why Czech case markers sometimes get lost

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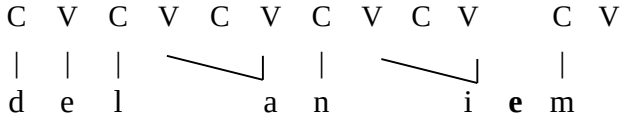
In this paper, we discuss the relationship between the phonological structure of vowel-final nominal stems in Czech and the phonological structure of their inflectional forms. Following the CVCV model of Scheer (2004), we assume (i) the existence of final empty Nuclei, and (ii) the fact that the vowel of V-initial case markers is a floating melody. We show that on these assumptions the morphologically irregular non-realization of V-initial case markers in a specific neuter paradigm follows from its phonological properties.

Case markers in Czech are either zero or begin with a vowel. Both categories typically produce opposite effects on the stem; e.g. kot**e**l-Ø ‘boiler,nom.sg.‘ vs kot**ø**l-i ‘loc.sg.‘, kot**ø**l-em ‘ins.sg.’ Hence in case there is an e~ø alternation between the stem-final consonants, all positive markers behave alike (they produce a zero in the stem) and contrast with zero markers (which produce the V in the stem). In CVCV, the distribution of alternants is controlled by Government: alternation sites remain phonetically unrealized under Government. Provided that full, but not empty Nuclei can govern, stem-final Nuclei in the context of positive markers have to be full, but in the context of zero markers need to be empty. It follows that in the lexicon, marker-initial Vs have to float; in the course of the derivation, they associate with the stem-final Nucleus which therefore can govern the preceding alternation site.

The floating scenario, which is enforced by the assumptions of the specific phonological theory at hand, receives support from the strange behaviour of a peculiar inflectional paradigm. In Czech nominal declension, 14 paradigms are usually identified. Among them, the neuter paradigm ***dělání*** ‚making‘ shows a massive syncretism which (i) has no parallel in any other paradigm, and (ii) occurs whenever a case marker consists of just a V. This V fails systematically to be realized. However, the paradigm at hand is not otherwise special since all consonants that appear in the other neuter paradigms are also faithfully realized. Illustration is given below from the comparison with the singular of the two other neuter paradigms, ***moře*** ‚sea‘ and ***město*** ‚city‘:

NOM/ACC	dělání	moř-e	měst-o
GEN	dělání	moř-e	měst-a
DAT/LOC	dělání	moř-i	měst-u
INS	dělání-**m**	moř-**em**	měst-**em**

The state of affairs described follows from the hypothesis that initial vowels of V-initial case markers float: they can associate only with stems whose final Nucleus is empty. In the ***dělání*** paradigm, however, the stem-final nucleus is filled up with the suffix *–í*. This holds also for the instrumental marker. However in instrumental, the floating ***e*** is followed by a full Onset - filled up with [m] - which can be normally pronounced:



Crucial for this analysis is the assumption that the suffix *-í* is not a case marker itself (as is traditionally assumed). This is actually what makes stems of this paradigm stand out among others that are V-final in nom.sg. The *-í* cannot be a case marker for three reasons: (i) no case marker is syncretic across five paradigm slots, (ii) it nominalizes participles: ***nesen*** ‚carry, part.‘ and ***nesen-í*** ‚carry, noun‘, (iii) it always changes the gender to neuter which case markers do not do necessarily: ***zem*** ‚ground, fem.‘ and ***podzem-í*** ‘underground, neu.’vs ***zem*** and ***zem-ě***, both ‘ground, fem.’

In sum, thus, we submit independent morphological evidence for the floating analysis that has been achieved on purely phonological grounds.

Poster papers

Is r*addoppiamento sintattico* tied to the phonological phrase? The evidence against.

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Abstract

Raddoppiamento sintattico (RS), or word-initial gemination is a well-known external sandhi phenomenon in Italian. In its best-known manifestation, doubling occurs regularly after stress-final words, e.g. *cantò* [b:]*ene* 'he sang well' v *canto* [b]*ene* 'I sing well'. RS has been widely discussed in the phonological and phonetic literature and its analysis was central to the formulation of Prosodic Phonology (PP) in the 1980s (Nespor & Vogel 1982, 1986). While approaches to phonology have changed radically since the 1980s, many of the tenets of PP with regard to RS, in particular its relationship with the phonological phrase (ϕ), for which RS is reputedly an important diagnostic, continue to be reported uncritically (e.g. Borrelli 2002 and many others). This is despite the availability of strong counter-evidence. In this paper we evaluate PP claims with regard to RS only occurring within and never across ϕ, and point to a number of facts inconsistent with such a position. These include:

(a) mapping difficulties in the formulation of N & V's algorithm – in particular the latter's failure to generate structures as predicted

(b) basic empirical problems with the cited data, as well as other data we provide

(c) clear evidence of RS occurring across ϕ and even higher constituents in the prosodic hierarchy

(d) an inability of PP to separate RS from Gorgia Toscana, an important phenomenon in Tuscan Italian which involves lenition, e.g. *lo canta* [lo hanta] 'he sings it, rather than gemination, and which is in full complementary distribution with RS.

We conclude that the PP treatment of RS does not appear to be particularly data driven, nor especially accurate with regard to the prosodic phrasing of RS (see also Loporcaro 1997). A better analysis of when RS does/does not occur in Italian needs to account for much more data than prosodic phonologists are willing to refer to and cannot be reliably associated with ϕ.

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Stochastic Phonology: Evidence from Korean Reduplication

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Korean has a type of reduplication used for adjectival or adverbial ideophones. Normally, the reduplicant consists of a full copy of the base. When the base begins in a vowel, a consonant is inserted in the reduplicant (underlined in the data):

(1)	a.	omil-**tʃ**omil	'meticulous'	(palatal affricate)
	b.	ulak-**p**ulak	'wild'	(bilabial stop)
	c.	alok-**t**alok	'pied'	(alveolar stop)
	d.	upul-**k'**upul	'windingly'	(velar stop)

I argue that while the choice of an inserted consonant is not completely predictable, it is also not arbitrary. The basic generalization is that the inserted segment is never identical in both place and manner to the neighboring consonants. However, the segment to be inserted is not completely determined. For example, /p/ is epenthesized in (1b) while /t/ in (1c). They are in fact flanked by the same set of consonants, i.e., /k/ and /l/. In this context, some consonant like /m/ should be the best choice in that it is distinct from adjacent sounds both in place and manner. However, in (1b) /p/ is acceptable since it is disparate from /k/ in place, and from /l/ in place and manner. In (1c) /t/ is acceptable since it is distinct from /k/ in place and from /l/ in manner. Then we predict that consonants like /k/ should not be acceptable as an inserted sound in the position between /k/ and /l/. Based on this generalization, I predict that the consonant insertion in the reduplicant can be accounted for by identity avoidance in place or manner. I will present evidence supporting this claim from a corpus-based analysis of V-initial base where reduplicant has an inserted consonant, and from an experiment I conducted in which Korean native speakers were asked to form reduplicated versions of nonce words. The evidence from both the corpus and the word creation task demonstrates that identity avoidance in terms of place and manner serves as a crucial factor in determining an inserted sound. The Korean data is not an isolated case where reduplication is based on the gradient identity avoidance. Similar patterns have been found in Turkish, English, Javanese, and Muna (Yip 1997; Coetzee and Pater 2005).

I argue that the described patterns can be explained within a theory of grammar only assuming that constraint rankings are stochastic. For instance, the OCP (Obligatory Contour Principle) or REPEAT (Yip 1997) will apply as a gradient constraint, not as a categorical constraint. All these data and evidence confirm that gradiency is reflected in the pattern of lexical items of language, and phonotactics itself is probabilistic.

The phrasing of right dislocations in Catalan: an OT account

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The goal of this study is to present a phonological analysis of the phrasing of right dislocated constructions in Catalan, using the conceptual framework of Information Structure theory and the analytical tools of Optimality Theory (Prince and Smolensky 1993; McCarthy and Prince 1993; Kager 1999; McCarthy 2002), and citing as evidence examples from a corpus of empirical Catalan data. It has been presented as a phonological universal that certain peripheral syntactic constructions such as, among others, right-dislocated phrases, non-restrictive relatives, and parenthesis form independent phrases in any language that makes use of them (Selkirk 1984, Nespor and Vogel 1986, Truckenbrodt 1995). However, the frequently observed variability in the phonetic cues of prosodic constituency (that is, cues such as pauses, lengthening, and tonal movements) appear to challenge this claim.

In this study I present a phonetic and phonological description of the phrasing and intonation of right detached constructions, such as:

(1) Les vaig comprar a Barcelona, les cadires
CL.ACC.1SG bought in Barcelona the chairs
'I bought the chairs in Barcelona'

The analysis is based on a corpus of Catalan data formed by 448 sentences, 224 minimal pairs of right-dislocations and appositions. The data was obtained under different experimental conditions calculated to induce prosodic re-phrasing. Results show significant variation in the phrasing of the constructions under study and it is argued that such variation is phonetic in nature, not phonological. The proposed analysis extends the proposal in Ghini (1993) and accounts for the observed patterns of phonetic variability with a set of phrasing constraints ranked with faithfulness constraints, and, crucially, with effort-minimizing constraints that promote rephrasing or deaccenting according to speech rate and style. I provide arguments for analysing these detached constructions as intermediate phrases, the constituent in the prosodic hierarchy (Nespor and Vogel, Selkirk 1986, Truckenbrodt 1995) ranked just below the Intonational Phrase.

The proposed analysis successfully accounts for the observed patterns of phonetic variability by proposing a set of phrasing constraints ranked with faithfulness constraints and, crucially, with effort-minimizing constraints that promote rephrasing or deaccenting according to speech rate and style.

Vowel quality effects on vowel deletion in Spanish

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During the speech act, adjacent vowels in hiatus often suffer durational reduction that motivates resyllabification of the vowel sequences, a phenomenon known as hiatus resolution. One of the resyllabification strategies in Spanish to resolve hiatus is vowel deletion, which involves monophthongization of the original hiatus and the elision of one of the vowels in the sequence. A number of studies have focused their attention on other strategies of hiatus resolution, specifically diphthongization, when dealing with the categorization of rising vowel sequences into hiatus or diphthongs (Aguilar 1999, Hualde & Prieto 2002, Hualde & Chitoran 2003, Simonet 2005) and the long standing debate in the literature of Spanish about the status of high vowels (Aguilar 1997, Hualde 1994, 2004). But less attention has been paid to deletion and the causes that motivate it. Deletion is suggested to fit in a continuum of strategies that apply to adjacent vowels under the effect of durational variability in speech (Aguilar 2003), ranging from hiatus to diphthongization and then to coalescence or deletion, targeting mainly the first vowel in the sequence. But if durationally impoverished contexts reduce perceptibility, we should expect less perceptible vowels to be the target for deletion in cases where this strategy applies, regardless of their position in the sequence.

This paper explores the effects of vowel deletion on the perception of non-high vowel sequences on 8 native speakers of Iberian Spanish. It reports the results of a psycholinguistic experiment using E-Prime, which contribute to the understanding of the factors that have an effect on deletion in Spanish, and consequently on the phenomenon of hiatus resolution. Combinations of /a, e, o/ were implemented into words to create 8 different contexts of unstressed vowel sequences, as follows: within word boundaries, in initial position; across word boundaries, without coda, in content+content, function+content and content+function word combinations; and across word boundaries, with a nasal, liquid, [s] and obstruent coda.

For all the resulting tokens two items were implemented into the computer program, one with a deletion of the first vowel (V_1) and another one with deletion of the second vowel (V_2). Participants were asked to listen to the items in the form of sound stimuli and to answer whether what they heard sounded correct to them. As well as their intuitions of their correct responses, the reaction time to each answer was registered.

The results confirm the effect of lexical boundaries and word type as factors influencing deletion (Gow et al. 1996) and they also contribute to acknowledge the effects of coda consonants. But mainly, they shed some light on the effect of vowel quality on deletion. If items with V_2 deletion are accepted and shorter reaction times are recorded in those cases, it is possible to suggest a preference for more prominent vowels to prevail regardless of their position, and to consider vowel quality as a primary factor determining the production of hiatus resolution. This suggests that perceptual distinctiveness is relevant to the understanding of acoustic and articulatory preferences.

Phonetic Explanation in Phonology: Appealing to Perceptibility Scales

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Exploring the role played by phonetics in the organization of sound systems has become an exciting and growing area of linguistic science and, increasingly, phonetic explanation has been pursued in formal analyses (e.g. Boersma 1998, Flemming 1995, Hayes 1999, Steriade 2000/2001 among many others). One sub-area of this line of research concerns itself specifically with the role of speech perception in phonology, and perceptual considerations have been appealed to in accounting for phonological patterns in a variety of ways. Perceptibility scales, for example, have been used to explain patterns of assimilation and other processes of reduction or alteration. In some cases (e.g., Kawahara 2006, Mielke 2003), perceptual evidence has supported rankings of Preservation constraints within OT, such that more salient sounds are protected, but perceptually weak sounds are lost in the output. This study focuses on one particular use of a perceptibility scale appearing to lack such experimental evidence: that proposed for unreleased voiceless final stops in Jun (1995/2004).

Jun (1995/2004) notes a cross-linguistically frequent pattern of place assimilation in which certain stops are more vulnerable than others to regressive place assimilation in consonant clusters. Specifically, coronals are most likely to undergo assimilation to labial and dorsal stops, labials will undergo assimilation to following dorsals but not to coronals, and dorsals do not assimilate to either following coronal or labial stops.

The claim which is made is that this pattern of assimilation is a consequence of the relative perceptual salience of unreleased voiceless stop consonants. As the first stop in a cluster is generally unreleased, these stops have only VC transitions to cue place of articulation. It is further pointed out that coronal stops are characterized by rapid tongue movement, while labial and especially dorsal VC transitions are slower and more sluggish gestures. Dorsals additionally have F2 and F3 convergence as a cue. From these gestural and acoustic facts, it is proposed that dorsal stops should be most perceptually distinct, followed by labials and then, finally, coronals (dorsal > labial > coronal). Assuming that speakers will allow less perceptible sounds to undergo assimilation, it is proposed that this hierarchy is the source of the phonological pattern.

This account relies on a hierarchy which was deduced primarily from gestural and acoustic facts, yet the strongest support for a hierarchy of perceptual salience of unreleased stops will naturally come from independent perceptual evidence. Some previous work has been devoted to the perception of unreleased [p,t,k] (e.g., Malécot 1958, Lisker 1999, Kochetov & So 2006), nearly each study coming to different conclusions as to their relative salience.

Here the view is taken that these previous perceptual studies of unrelased [p,t,k] are flawed in two very important ways: firstly, they often do not control for effects relating to preceding vowel place, and secondly, they do not control for response bias in any way. It is shown that if scores of perceptual accuracy are calibrated (so as to include the proportion of "false positives"; see Hume *et al*. 1999 and Warner *et al*. 2004), past studies are more in agreement with one another, and possibly with Jun's (1995/2004) predictions as well. Finally, a new perception experiment is carried out with speakers of British English and results are analyzed using a calibrated measure of accuracy.

Although phonetic explanation in phonology is indeed an interesting and promising area of study, it must be pursued in a very careful way. Crucially, this line of research is dependent on experimental work in phonetics; in the case of perceptibility scales, this amounts to a reliance on independent perceptual evidence.

Feature Geometry and OT: a case study of Pasiego and Andalusian vowel harmony

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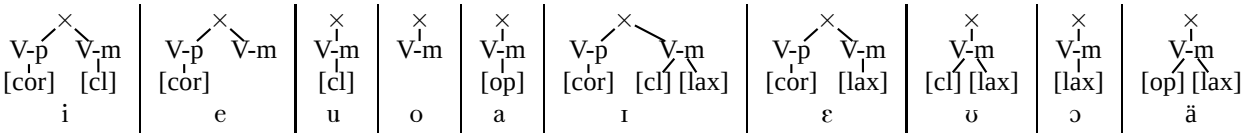
The aim of this paper is to highlight the benefits of combining OT with feature geometrical representations. Additionally, it contributes to the growing body of evidence indicating that binary features are superfluous. I present a case study of raising and tenseness harmony in Pasiego (McCarthy 1984) and Andalusian Spanish (Zubizarreta 1979).

Both dialects have the classical 5-vowel system consisting of **i**, **e**, **a**, **o**, **u**, as well as the lax counterpart of each of these. Andalusian has tenseness harmony, triggered by word-final lax vowels, with the low vowels triggering but not undergoing harmony. High vowels are transparent to harmony. In Pasiego, all vowels regularly undergo laxing harmony. Additionally, the dialect displays height harmony, where tonic vowels cause both lowering and raising of preceding vowels. The low vowels do not participate in the height harmony (they act as blockers), but they undergo tenseness harmony. Tonic vowels only change their height when they undergo tenseness harmony.

I present an analysis of these phenomena using the feature geometrical representations based on Morén (2003) in the framework of OT (Prince & Smolensky 1993) and argue that this combined framework leads to a better understanding of the data than either of its components.

For reasons of space, I only outline the analysis of Pasiego in this abstract. I propose the following representations for the vowel system (V-p=V-place, V-m=V-manner, [cor]=[coronal, [cl]=[closed], [op]=[open]).



The ranking **MAX.LINK[LAX]**, **AGREE[LAX]**, **ID.LINK[OP]**≫**ID.LINK(STRESSED)(VM)** ≫***VM** enforces different kinds of spreading depending on the vowels involved: for non-high vowels, it causes sharing of the **V-m** node, resulting in both tenseness harmony and height harmony that is symmetrical for raising and lowering. In case of a low vowel and an underlying lax vowel in the domain, all vowels share the feature [lax] but not their **V-m** node, undergoing laxing harmony but remaining faithful to their underlying height.

The model accounts for the following aspects of Pasiego harmony: 1. Height harmony is spreading of the **V-m** node, thus it is symmetrical in the lowering and the raising direction. 2. Tenseness harmony, on the other hand, is the spreading of the feature **[lax]**, thus it is asymmetrical. 3. The low vowels do not undergo height harmony, since, as **[open]** is a dependent of **V-m**, sharing their **V-m** with non-[open] vowels would violate high-ranked **ID[OPEN]**. 4. Low vowels undergo tenseness harmony, however, because spreading **[lax]** does not violate **ID[OPEN]**. 5. Vowels on either side of a low vowel do not engage in height harmony, since spreading **V-m** would violate **ID[OPEN]**. 6. Tenseness harmony entails raising harmony for mid and (vacuously) for high vowels, since acquiring **AGREE[LAX]** forces a violation of **ID(STRESSED)(VM)**. Therefore, 7. Tonic vowels only change their underlying height if they also change their **[lax]** feature. These facts are interconnected in the present analysis, while in other frameworks they have to be independent rules accidentally found in the same language: traditional feature geometry has no account of violability of constraints, while most forms of OT do not make use of featural dependencies.

In sum, I illustrate that combining the advances in the theory of representations with OT helps increase the explanatory adequacy of phonological analyses. The paper also demonstrates that binary features are not necessary to describe symmetric spreading processes.

REGULARITY AND IRREGULARITY IN ITALIAN VERBAL INFLECTION

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In this paper we propose an analysis of Italian verb conjugation within a Word and Paradigm model of morphology, along the lines proposed by Pirrelli & Battista (2000) for Italian, Bonami & Boyé (2003) for French or Boyé & Cabredo Hofherr (2006) for Spanish. The paradigmatic approach we propose is intended to give a model of the way speakers learn and apply the conjugation system of their language. It departs from traditional views on inflection in that it considers highly irregular verbs not as a more complex case of regular verbs, but rather the latter as a simplification of the former. This means that a verb (and in general any inflected lexeme in a language) is planned to reach a certain degree of complexity, but that no verb actually displays the maximal complexity, and that the majority of verbs (the regular ones) in fact display the minimal complexity. This hypothesis is based on the observation that irregularity distributes within verbs in a systematic way. We reject the idea that lexemes would systematically have a unique underlying form for all the stems in their paradigm. Rather, we consider that the representation of a lexeme stored in our mental lexicon is a complex structure, a stem space, which contains a list of stems and/or some functions allowing calculating their form. These functions may correspond to a segmental operation (i.e. the adjunction of a suffix), to a phonological alteration (i.e. a stress shift). They may also specify the simple identity between two stems. The actual forms are obtained via another set of functions relating stems to forms. An example of these functions is given in (1):

(1)

- 1st singular present indicative = STEM2⊕/o/
- 3rd singular present indicative = STEM3 (classes 1-2) / STEM3⊕/e/ (class 3)
- 3rd plural present indicative = STEM2⊕/ano/ (class 1) / STEM2⊕/ono/ (classes 2-3)
- STEM3 = STEM2
- STEM2 = STEM1

Of course, the rules in (2) hold as defaults. If lexical specifications intervene, these rules don't hold. Thus, STEM2 is identical to STEM1 in regular first class verbs, but not for those verbs (as UDIRE, VALERE or TENERE) which specify a suppletive stem. The format of rules we propose establishes a parallelism between fully inflected forms in that both these units may be irregular. Following Bonami & Boyé (2003), we thus make a distinction between suppletive stems (e.g. /valg/ in 3rd person plural *valgono*), to which a suffix is regularly attached, and suppletive forms (e.g. *è* 3rd singular present indicative of ESSERE 'to be'). The rules make a crucial distinction of verbs into classes. In this, our approach is consistent with traditional views which consider that verbs are divided into classes according to their theme vowel (for us, a part of the stem). It departs from traditional grammars, however, in that we consider that a single verb may display different theme vowels along its paradigm.

In our model, the identity of stems throughout the entire paradigm becomes just a subset of a more general scheme, and thus, paradoxically, be considered as an 'irregular' case. This captures the fact that for minor classes (those of verbs with infinitives in *–ere* or *–ire*) what is commonly called the 'regular' inflection is in fact represented by a small minority of their members. This is clear, for instance, in the difference between the rare *dormire* / *dormo* ('to / I sleep') type and the largely more frequent *finire* / *finisco* ('to / I end') type, containing what is traditionally called a 'stem-extension' /isk/, /iʃ/ in some cases of the paradigm.

Where does German vowel length come from ?

Synchronic and diachronic evidence

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This talk is based on the analysis of an electronic (synchronic and diachronic) corpus of about 15 000 (New High) German (NHG) words, 5 500 of them being native words (i.e. forms that were attested in Middle / Old High German - MHG / OHG). The topic will be dealt with in a CVCV framework (Scheer 2004), but the results will be of course theory independent. In NHG, long and short vowels are said to be in complementary distribution : the former occur in open (OS), the latter in closed syllables (CS) (cf. Benware 1986, Hall 1992, Lenerz 2000, Ramers 1992, Vennemann 1982, Wiese 1996). This generalization requires a number of additional assumptions which will be made explicit. I then focus on an aspect of the genesis of NHG vowel length that is not usually discussed but which I show is critical: what is known as NHG open syllable lengthening (OSL) in fact was a tonic lengthening (TL). Data show that:

- only roots conform to the standard assumption mentioned at the beginning: the length of a vowel does never vary in the course of derivation, inflexion or composition (cf. *Liebe* [i:] 'love', *liebt* *[ɪ] but [i:] '(he) loves').
- so-called OSL is more complex a phenomenon than it seems. The position of the syllable in the word (word-final syllables closed by a single consonant behave like OS, i.e. final consonants are not codas; cf. *Bad* [bɑ:t] 'bath'), the voice value of the following intervocalic consonant (short vowels precede voiceless, long vowels precede voiced consonants; cf. *Liebe* [i:] 'love' vs. *backen* [a] 'to bake'), and the identity of the following vowel (full vs. schwa) also need to be taken into account.
- as a matter of fact, no MHG unstressed vowel has become long in OS in NHG. Also, in NHG no vowel can be long if it is unstressed (cf. *Möbel* [ø:] 'piece of furniture' vs. *möblieren* [ø] 'to furnish').

So in German, vowels need(ed) stress to be long (to lengthen). Hence NHG lengthening (L) is not correctly described as an OSL. Rather, it is a case of TL as found for example in Italian, but of a more complex kind. In Italian, L happens to penultimate stessed vowels that stand in an OS, no matter what the following consonant is (cf. Vogel 1982, Repetti 1991), whereas in German, the voice value of the following consonant must be taken into account. Stress somehow makes the tonic vowel stronger and different from other vowels (which in MHG have most of the time been reduced to schwa). If vowel length is a matter of syllabic space, it is thus reasonable to assume that stress provides syllabic material: Nespor & Vogel (1979) have argued that stress provides an extra x-slot, to account for the observed lengthening.

I argue that the syllabic space in question is a CV unit (cf. Larsen 1998). Predictions, then, are as follows: if the tonic vowel does not lengthen (if the following consonant is voiceless, for instance), we should still be able to perceive the effect the CV unit (stress) on other segments, i.e. on the following consonant. It is the case indeed: if the vowel does not lengthen, the following consonant does: MHG *mite* > NHG *Mitte* [ɪ] (supposing the existence of long consonants in NHG – being 'virtual' geminates or ambisyllabics (even real geminates in some dialects) – is the only way to account for vowel length distribution in NHG).

In this talk, I intend to show that vowel length in NHG (MHG) is (has become) stress-dependent, even if authors do not usually mention this fact. I will account for the German facts, keeping in mind that the analysis needs to be adaptable to the Italian data, since both phenomena share at least one major characteristic: both involve the insertion of some syllabic space (a CV unit). The added CV unit will provide space for tonic vowels to lengthen, but will also be available to the following consonant in cases where the vowel does not use it: the insertion of such a CV unit gives a unified account of both vowel AND consonant lengthening.

Stress, Duration, and Pitch High in Paiwan Word-Prosody

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This paper investigates the phonetic correlates of stress and word-level prosodic features in Paiwan, an Austronesian language spoken in Taiwan, with around 53,000 speakers. Data collected in the study were based on firsthand fieldwork. The study focuses on the durational, spectral and fundamental frequency correlates of stress in the speech of six speakers. Paiwan has a quantity-insensitive stress. Vowel length is not phonemic. The interaction between stress and vowel length in Austronesian languages have been discussed in Wolff's (1993) comparative study. Yet, whether vowel length is a phonetic realization of stress in Paiwan is unknown, and phonetic cues to Paiwan stress are never examined in earlier study.

In the present study, final syllables were longer in Paiwan, regardless of stressed or unstressed syllables. Paiwan speakers tend to exhibit final lengthening effect. As for the effect of syllable structure on the vowel length, vowels in open syllables tend to be longer than those in closed syllables. When the quality of the preceding consonant segments and the effect of final-vowel lengthening were controlled, the stressed vowels at the penultimate syllables are longer than the unstressed vowels at the initial syllables. Stress lengthening correlates with higher pitch (f0), whereas final lengthening of the unstressed vowels correlates with lower pitch. Final lengthening is due to position-in-word, whereas higher pitch on the penultimate syllable is due to stress effect. Stressed syllables in the examined data always have higher pitch than unstressed syllables, and pitch high tends to be a robust cue for the production and perception of Paiwan stress. On the other hand, the final unstressed vowel with longer duration and pitch drop provides some support for the Paiwan word as a phonological unit. The boundary of a phonological word in elicitation is usually aligned with pitch drop and longer vowel length.

Paiwan has different prosodic representations from the other languages such as Mandarin and Taiwanese spoken in its geographically contiguous districts. Vowels originally long in Japanese loanwords may be stressed in Paiwan, which violates the general principles for stress assignment in the language. Paiwan words with accent include prosodic words in imperatives or pragmatic contexts. Canonical stress rule or cyclic phonological rules cannot account for the distribution of word-level pitch accent. It has been found that phonetic implementations of high and low tones are important indices for word-level pitch accent of Paiwan. In an isolated Paiwan prosodic word, stress is the only parameter to determine the alignment of peak prominence. When a prosodic word is placed in different discourse contexts, pitch accent may occur to change either the f0 timing or the peak alignment in the prosodic word. For instance, pitch peaks always occur in the final syllable of the prosodic words, when the imperative vocalic morpheme is added to stems ending with the identical vowel.

It is concluded that word-level accents convey various types of semantic and pragmatic information in Paiwan. One important finding in the study was that tone or prosodic variation was best modeled in terms of the f0 realization.

Towards an intonational grammar for Icelandic

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As supposed to many other languages, Icelandic has not yet been the subject of much research on intonational phonology. In the work that is available, specifically Árnason (1998), two bitonal pitch accents (H*L and L*H) and two boundary tones (H% and L%) have been identified and have been argued to make up the basic tone inventory of Icelandic. All possible combinations of these pitch accents and boundary tones have been attested. All pitch accent types and boundary tones occur both in declaratives and questions. Under neutral focus, the rightmost constituent is the most prominent one. However, focused constituents are marked intonationally by pitch accents anywhere in the sentence (Árnason 1985, 1998; Dehé 2006). It has also been shown that Icelandic has downstep across Intonational Phrases (Árnason 1998, Dehé 2006).

The aim of this paper is to shed new light on the intonational phonology of Icelandic and to complement the tone inventory as previously described in the literature. The study is based on data from three different sources, two of which are experimental reading studies, the third one being a recording of a children's story read by a trained speaker in a colloquial way.

Specifically, I will address pitch accent types and edge tones, and their combinations in neutral declaratives and questions, and in utterances containing narrow focus.

I will show that along with its two bitonal pitch accents, Icelandic has two monotonal pitch accents: H* and L*. The difference between the bitonal pitch accent types on the one hand and the monotonal pitch accent types on the other hand (specifically, the difference between H*L and H* and between L*H and L*) lies in the timing of the pitch movement after the starred tone. While a trailing tone in a bitonal pitch accent has to be completed on the prominent syllable or on the immediately adjacent one, pitch movement after a monotonal pitch accent is not until a following edge tone.

I will also provide evidence for the existence of the two phrase accents H- and L-, which may be associated with secondarily stressed syllables. I will argue that phrase accents are optionally realised but that if they are present, they may be distinctive between contours, and are thus a necessary part of the Icelandic tone inventory.

I will show that pitch peaks (starred tone in H*L and H* type of accents and the trailing tone in L*H, as well as high edge tones) are indeed downstepped across Intonational Phrases/ short utterances, but that questions and also focused constituents in declaratives are exempted from downstep. Furthermore, evidence will be given that along with downstep, Icelandic also has upstep across Intonational Phrases, such that an early peak is lower than a following one, which in turn is lower than the next one, the last pitch peak being the highest one. This is reminiscent of upstep as described for German by, e.g., Grice & Baumann (2002). Upstep in Icelandic is towards final prominence, i.e. either towards the final prominence in neutral declaratives ("normal stress"), or towards a final focus position in the sentence.

Overall, the results of this study provide a substantial addition to our knowledge of Icelandic intonational phonology.

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Phonetic Cues and Phonological Representations of West Germanic Plosives

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Abstract

This paper examines the phonetic properties that are responsible for particular phonological contrasts in West Germanic plosives. We focus on the phonetic cues for laryngeal contrasts and quantity contrasts in plosives that may or may not be present in the following three positions in the word: (i) initial in a stressed syllable before a vowel, (ii) medial between a stressed vowel and a following unstressed vowel and (iii) final. The five main languages under discussion are Dutch, English, Frisian, Standard German and Swiss German, but we will also discuss the phonological representation of plosives in languages such as Icelandic and Old Irish.

For Modern Dutch and West Frisian, we will demonstrate that the most important phonetic cue is the Voice Onset Time (VOT) in voiced plosives. We will argue that specifying lax plosives by the phonological feature [slack vocal folds] and leaving tense plosives unspecified for a laryngeal feature best captures the laryngeal contrast in Dutch and Frisian plosives. The segmental feature [slack vocal folds] is phonologically active in that it may spread or delink in certain phonological environments.

For English and German, VOT is also the most important phonetic cue to distinguish two laryngeal classes of plosives. In contrast to tense plosives in Dutch and Frisian, we argue that tense plosives in English and German are specified for a laryngeal feature and the feature in question is [stiff vocal folds] (see also Keyser & Stevens 2006 for English). This feature is phonologically active in both languages in that it may spread to neighbouring consonants. In certain positions in the word, this feature may be enhanced by the laryngeal feature [spread glottis], which – as we will demonstrate – does not characterize single segments, but rather syllabic nodes, e.g. the onset (cf. Kehrein & Golston 2004).

In Swiss German, the so-called 'singleton' plosives have similar Closure Durations and VOTs as the Standard German so-called 'voiced' plosives. These classes of plosives are unmarked in both languages and not specified by laryngeal features. Kraehenmann (2003) demonstrates that VOT is not a reliable cue to distinguish two classes of plosives in Swiss German. Instead, Closure Duration (CD) plays a role in contrasting singleton and geminate plosives. This contrast is not captured by a phonological feature, but rather by syllable positions (or timing units). In Swiss German, we do not find phonological processes involving laryngeal features.

Time permitting, we will also report on a study that we will carry out in Konstanz and that aims to find out at which age German and Swiss German children are sensitive to the respective phonetic cues in their language – i.e. VOT and CD, respectively – and how they use that sensitivity to build phonological representations in their lexicon.

Reduction and Syncope in Klamath Reduplication

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Klamath (a Penutian language formerly spoken southern Oregon and northern California), has a number of reduplicative prefixes, some of which contain fixed segmental material but all of which reduplicate the stem-initial vowel. When this happens, the stem vowel deletes or reduces to schwa:

toq'a	'is scared'	hVs+toq'a → hostq'a	(causative)
paga	'barks'	CV+paga → papga	(distributive)
qlin	'chokes'	snV+qlin → sni-qlən	(causative)
pčin	'twists'	CV+pčin → pči-pčən	(distributive)

These facts raise several questions, namely: i) why does this process occur always and only with reduplicative prefixes? ii) why is the stem vowel always affected, and never the vowel in the reduplicant? iii) what factors govern the distribution of reduction and deletion in these forms?

In this paper, I propose a solution to the problem of Klamath reduplicative reduction and syncope within the frame work of Optimality Theory. I argue that the motivation for this process is the Obligatory Contour Principle (OCP), shown in this case as a constraint prohibiting identical vowels in adjacent syllables — introducing the possibility of reduction and syncope as a kind of dissimilation, an uncommon but possible solution under typological predictions of constraint interaction. Additionally, I propose solutions to each of the above questions, drawing on Broad Correspondence (Struijke, 2000), Positional Faithfulness (Beckman, 1998), and the potential weightlessness of schwa (Kager, 1990).

Yip (1995) observes that reduplication and the OCP inherently stand in an antagonistic relationship with each other; reduplication demands repetition, and the OCP forbids it. Klamath avoids violating the OCP by reducing or deleting the stem vowel in reduplicative environments. This dissimilation is limited to reduplication because that's the only situation where reduction or deletion does not result in a loss of information about the quality of the input vowel. Broad Correspondence captures this intuition formally: both the stem vowel and its copy stand in correspondence with the input, so preserving one of them is just as faithful as preserving both of them.

Broad Correspondence and Base-Reduplicant faithfulness both treat deletion or reduction of the base vowel as equal to deletion or reduction of the vowel in the reduplicant, but it is always the base vowel that is affected. This can be best explained in terms of Positional Faithfulness; the reduplicative prefix is always a word-initial syllable, which is a highly prominent position and therefore demands a higher degree of faithfulness than the non-word-initial base vowel. Applying Positional Faithfulness to Klamath reduction and syncope captures Cole (1997)'s generalization that initial-syllable faithfulness leads to greater recoverability than base vowel faithfulness would.

Both deletion and reduction surface as solutions to the problem of OCP; deletion occurs when the vowel in question would surface in a coda-less syllable, and reduction occurs elsewhere. Klamath does not permit scwha, which is derived and not underlying in the language, to appear in open syllables — a generalization that can be explained by positing that derived schwa does not bear moraic weight. Reduction is the preferred solution to OCP violations, but deletion occurs when reduction would result in a weightless syllable.

Morpheme-specific alternations triggered by "maximality" constraints

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"Minimality" constraints, requiring that particular linguistic units be no smaller than a syllable, foot etc., have been well known in phonology since McCarthy and Prince (1990), (1994). In this paper, I will argue that there is overwhelming evidence for mirror-image "maximality" constraints, which impose limitation of morphemes' phonological structure to given prosodic units. The approach can handle various kinds of irregular allomorphy, as well as static generalizations found in languages. I will demonstrate that maximality constraints are not only an effective technique in the architecture of Optimality Theory, but are well motivated by language usage criteria, specifically, by a correlation between size and frequency of a linguistic unit, known as "Zipf's laws" (after Zipf 1935). Consequently, a variety of seemingly unrelated phenomena can be unified under a natural and general explanation. As to the formal side of analysis, I will assume a model, in which morpheme-specific phonology (including maximality effects) is treated by means of indexed lexical constraints (cf., among others, Hammond 1999, Ito and Mester 1999, Kraska-Szlenk 1997, 1999, Myers 1999, Pater 2000, to appear, Russell 1995).

Maximality constraints account for the data, which are otherwise extremely difficult to analyze, since they often involve exceptionality of particular morphemes, further restricted to particular contexts. The examples below provide a brief illustration from Standard Swahili. The negative prefix *ha* is realized in the full form in some morphophonological environments, e.g. before class 3 prefix *u*, as in (1a). But it occurs in a reduced form before the homophonous prefix of the 2nd person singular, as in (1b). Similarly, the infinitive prefix *ku* occurs before most verbal stems in the full form, as in (2a), but shortens to the non-syllabic *kw* variant in some cases, as in (2b). These data present an additional problem, since both verbs in (2) contain the same root, adjacent to the same prefix. Therefore, standard analyses, whether based on exceptional faithfulness or exceptional alignment, can not account for the difference between (2a) and (2b).

(1a)	cl. 3	/ha-u/ > *hau*	e.g. *(mti) haukuanguka* '(tree) did not fall'
(1b)	2nd sg	/ha-u/ > *hu*	e.g. *hukuanguka* 'you (sg) did not fall'
(2a)		/ku-end-el-a/ > *kuendelea*	'to continue'
(2b)		/ku-end-a/ > *kwenda*	'to go'

Idiosyncratic reductions as in (1b) and (2b) eliminate the hiatus, hence can be understood as enforced by specific markedness constraints (e.g. Onset). But no such chance appears for other attested cases in which a reduced allomorph contains a marked structure, impossible to be predicted as optimal by any ranking of markedness constraints. Conversely, the choice of such marked allomorph follows straightforwardly under an analysis recognizing maximality constraints, which provide the only principled explanation of this kind of irregular morpheme-specific alternations.

Reduplication as Evidence for the Skeletal Nature of Tones

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Fanqie ("reverse cut") is a traditional philological method used to specify the pronunciation of a new character in terms of two known words. Here is a sample of two different *fanqie* languages:

(1) a. Man-t'a

ma 55 → **m**an 55-t'**a** 55

taw 51 → **t**an 51-t'**aw** 51

b. Mey-ka

ma 55 → **m**ey 51-k**a** 55

taw 51 → **t**ey 51-k**aw** 51

Man-t'a differs from Mey-ka in that the former *fanqie* language has /an-t'/, while the latter has /ey-k/. In both cases, the syllable onset is combined with a new rime, and the rime with a new onset. This reduplication process has received much attention since Chao (1931), Yip (1982), Duanmu (1990) and Bao (1990). Adopting Steriade's (1988) reduplication theory, Bao claims that *fanqie* involves two steps: reduplication and substitution of onset and rime, which could be represented as follows:

(2)

a. source syllable	b. reduplication		c. substitution	
ma	mV	Ca	man	t'a
|	|	|	|	|
55	55	55	55	55

However, reduplication usually acts on skeletal units: thus, phonological length is transferred from the base to the reduplicative affix, i.e. *sɔɔrok*→*sɔɔ-sɔɔrok* in Mokilese, and length is encoded, in autosegmental theories, by skeletal units. Now, the examples in (1) involve both syllabic and tonal reduplication. There must be a dissyllabic template anyway; can we speak of a tonal template as well?

Ma-sa, a *fanqie* language based on Taiwanese, shows the following fixed tone pattern [5-2]:

(3) a. ma 3 → ma 5-sa 2 b. kun 31 → kun 5-sun2

Examples in (3) illustrate that syllables associate to a fixed tonal pattern [5-2]. Assuming that such processes are of the same type as those that involve syllable templates elsewhere, (3a,b) are hardly compatible with the definition of tones as pure melodies: they do imply a specific tonal template [5-2]. Consequently, the only way to unify the processes of *fanqie* language in (1, 3) is to suppose that there is reduplication of a tonal basis, which allows the reduplication of syllables in (1).

We argue that the assumption of the autosegmental nature of tone is undone in analyzing the tonal reduplication processes in *fanqie* languages. In contrast, tones have to be analyzed as skeletal units. Following the assumption of a universal tonal periodic skeleton HLHL postulated by Carvalho (2002), analogous to the syllabic skeleton CVCV proposed by Lowenstamm (1996), we will demonstrate that typology, language acquisition and morphology concur with *fanqie* languages in providing strong evidence in favor of the existence of a tonal skeleton in Asian tonal languages.

Concerning typological issues, suffice it to say that two asymmetries on tonal markedness follow from the tonal skeleton hypothesis. First, in contour tone languages, tones are much the same as syllables. Just as CV is unmarked compared with .VC., the falling tone HL is unmarked by comparison with the rising tone LH, because the latter one supposes two empty positions on its right and left sides. The presence of rising tones implies that of the falling tones, but the opposite is false. Second, level tones are more marked than contour tones since they have not only two empty tonal positions just as the rising tone, but also a *median* empty tone. This assumption is supported by empirical facts, where a language can have only contour tones without level tones, as in Chengtu, Shanghai, Zhenhai, Pingyao and Wuxi. A tonal system with only level tones is not attested in Chinese dialects.

Phonetic similarity, the nature of mergers and the role of standardized language.

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This paper investigates the notion of sameness in relation to phonological and morphological mergers. As historical events there are plenty of examples of mergers from the history of English: ME /e:/ versus /E:/ in ***meet/meat***; ME /a:/ versus /ai/ in ***name/day***; ***gh***-mergers caused by the loss of ME /x/ in ***might/mite***. In each case the resultant vowel realizations would be considered the same by speakers of those dialects that have undergone the development. But what are the criteria for determining that a merger has actually taken place? An implicit assumption seems to be phonetic identity, but we all know what a will-o'-the wisp that is (rather like native speaker intuition!). Phonetic similarity gets us no further, if we have no measure of similarity. Whereas phonetic realization clearly plays a role, there have to be functional, phonological or morphological criteria to support a claim of merger. I intend to look at a few examples in some detail to demonstrate that phonetics alone cannot be the basis of merging. It also seems to be the case that the standardized written form is the basis of some interpretations of variant linguistic forms. The mergers/distinctions I will consider are: /f/-/θ/ mergers, the East Anglian ***beer/bear*** and ***made/maid*** distinctions, the ***–ing/-in'*** merger, the East Anglian ***it/that*** merger, and the glottal stop realization of the definite article, e.g. [Am/bUs] ***on the bus***, in several parts of the north of England. I will also consider whether these forms are all part of the same grammatical system or from competing systems.

ALLOMORPHY AS OPTIMIZATION OF PHONETIC SALIENCE

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Allomorphy is driven by more than mere phonotactics; it is driven by mechanisms of perceptual optimization. This paper argues that the choice of allomorph is determined by perceptual salience: the context which optimizes the salience of the morpheme is the optimal context. Crucial evidence comes from the Swedish non-neuter definite article /n/.

Postvocalic and post-obstruent realization of the morpheme are unsurprising. Hiatus is avoided after vowels ([kuː] 'cow' [kuːn] 'the cow'). Coda-internal sonority rises are avoided after obstruents, [en] surfaces ([sɑːk] 'thing' [sɑːken] 'the thing'). Post-nasal allomorphs are more striking. Swedish licenses word-final [mn] and [ŋn] clusters ([sømn] 'sleep'; [sɛŋn] 'tale'), but these clusters are split if the [n] is the definite article ([sømː] 'seam' [sømːen] 'the seam'; [sɛŋː] 'bed' [sɛŋːen] 'the bed'). This is not a minimality effect, as we can see in the genitive (cf. [søm+s] 'seam, gen'; [sɛŋ+s] 'the bed'), nor is it a sonority contour effect (cf. [ɛːg+d] 'own, participle'). The lexicon provides two allomorphs to choose from, [n] and [en]; the goal is to render the sound [n] salient. The /n/ sound is more salient in the word [sømː+en] than the allomorphic competitor [sømː+n]; the V-C contour makes the nasal easy to hear; a nasal in postnasal position is comparatively difficult to identify. The monomorpheme ([sømn] 'sleep') does not trigger epenthesis, since the final /n/ is not a distinct morpheme.

Allomorphy-as-antigemination (McCarthy 1986, Yip 1988) is irrelevant to Swedish, since geminates are licensed in stressed syllables ([spanː] 'bucket'). The proposal of Bakovic (2006), where epenthesis between non-identical sounds blocks potential neutralization into a geminate (e.g., the [əz] allomorph for the plural of [drɛs] , blocking output *[drɛsː]), is irrelevant to Swedish. First, examples such as [sømn] 'sleep' and [sɛŋn] 'tale' show that no neutralization takes place with these segments. Second,the neutralized geminate would be phonotactically impeccable anyhow: consider [sømː] 'seam', [sɛŋː] 'bed', [spanː] 'bucket'.

Allomorphy as lexically licensed context-variability can be extended to the classic cases of English allomorphy, generally analyzed as phonotactically driven. The epenthesis of a vowel between stridents and the –s suffix generates a more salient suffix: a strident in post-strident position is hard to identify. Similarly, epenthesis of a vowel between coronal stops and the –ed suffix optimizes the perceptibility of the suffix. The proposal is empirically distinct from the phonotactic proposal, as it predicts that epenthesis is crosslinguistically more likely to occur at morpheme boundaries. The proposal is empirically and conceptually distinct from REALIZE MORPH (Kurisu 2001), as it involves gradient phonetic effects, not categorical phonological representations.

French liaison with plural indefinite determiners: when phonology and syntax are not sufficient to explain variation

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The goal of this poster is to show that in French 'liaison' which is known as an heterogeneous phenomenon, semantics intervenes, on a par with phonology and syntax, as a factor conditioning its surface realisation. These three parameters can partially allowing us to explain why liaison is variable in some cases. We will focus here on the behaviour of plural indefinite determiners, and more specifically to *autres* ('other'), *plusieurs* ('several') and *certains* ('some, certain').

Liaison can be defined as a phonological process by which the final consonant (the 'latent' consonant, LC) of certain words (e.g. the final *t* of *petit*) surfaces only when the following word begins with a vowel and that those two words are narrowly connected at the syntactic level par (e.g. *un petit ami* [ɛ̃pətitami] / *un petit apprend vite* *[ɛ̃petitaprãvit]). Phonology and syntax, which constitute the two major factors responsible for the conditioning of liaison and which are interdependent (Dell, 1970) allow to distinguish three kinds of liaisons (Encrevé, 1988): 'categorical' liaison, which are systematic; 'variable' liaisons, which depend on sociolinguistic parameters at play; and 'erratic' liaisons, which shouldn't be realised.

In the case of Det + N noun phrases, this typology predicts a categorical liaison between the LC of the determiner and the following vowel-initial noun: thus, *les amis* is systematically realised [lezami] and not *[leami].
However, a corpus-based study liaison for indefinite determiners reveals that these determiners exhibit a variable liaison. In our corpus (projet PFC, "Phonologie du Français Contemporain", Durand & Lyche, 2003), *plusieurs*, although it is pronounced with a liaison (e.g. *plusieurs amis* = [plyzjørzami]) in most cases, can nevertheless be pronounced without ([plyzjørami]).
One can also observe a variable liaison in *autres*, as in *les autres années* which has a range of realisations: [lezotrəzane], [lezotzane], [lezotrane] or even [lezotane]. However, liaison is categorical in *certains* (e.g. *certains animaux* realised [sɛrtɛ̃zɑnimo] and not *[sɛrtɛ̃ɑnimo]).

Besides possible phonological factors as in *autres* (OL cluster simplification, schwa loss), the problem can be stated as follows: either these indefinite determiners are not determiners, as is usually accepted in syntax, or, more likely, one has to acknowledge and explain that liaison can be variable for (some) determiners. In other words: why do some indefinite determiners (*autres* and *plusieurs*) trigger variation and not others (*certains*)? These observations raise a broader question: which characteristics define these indefinites (*plusieurs, autres*) as a class, if phonology and syntax fail to account for the observed patterns?

After setting the problem, we will offer an in-depth analysis of indefinite determiners in our corpus and will examine a third parameter which has been overlooked so far: the semantic load of plurality.

Theoretical Issues in Ternary Shifting and Spreading in Bantu Tonology

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In the studies of tone, Bantu languages are best known for their dramatic tonal mobility that can involve shifting and spreading (and sometimes both shifting and spreading in the same language). In these languages, tone can spread or shift in bounded or unbounded fashion (Cassimjee and Kisseberth 1998). In bounded mobility, tone can shift or spread to the neighboring Tone Bearing Unit (TBU) as shown in Kikuyu and Setswana data in (1) and (2) respectively. The sponsoring TBU is underlined and the High tonal domain is shown in brackets.

(1) Bounded shifting in Kikuyu (Clements 1984)
tɔmɔ(tɔ́má)gha "we send him/her"
tɔ(hetú)kagha "we go"

(2) Bounded spreading in Sestwana (Mmusi 1992)
go(rɛ́ká) "to buy"
(óá)tsamaya "(s)he is walking"

In unbounded mobility, tone can shift or spread iteratively to the right (and sometimes to the left) of the prosodic word, prosodic phrase and intonational phrase. This is shown in the second set of data in (3) and (4) respectively.

(3) Unbounded spreading in Xitsonga (Cassimjee and Kisseberth 1998).

ndzati:rha	(vátî:)rha	"I/they work"
ndzixava nya:ma	(váxává nyá:)ma	"I/they buy meat"
ndzixava xihlambetwa:na	(váxává xîhlámbétwá:)na	"I/they buy pot"

(4) Unbounded shifting in Mijikenda (Cassimjee and Kisseberth 1988)

ninalamusa	(yunalamú)sa	"I/he greet"
ninalamusa muganga	(yunalamusa mugá)nga	"I/he greet doctor"

Both types of mobility (bounded and unbounded shifting and spreading) can be elegantly accounted for in standard Optimality Theory (OT) or its various versions like Optimal Domains Theory (ODT) – Cassimjee and Kisseberth (1998) and Headed Spans Theory (HST) – McCarthy (2004) as demonstrated by Cassimjee and Kisseberth (1998) and Key (2007) respectively. However, there are few Bantu languages e.g. Sukuma, Ikalanga, Shona, Venda and Tonga in which the High tonal domain is neither bounded nor unbounded (Kisseberth and Odden 2003). In these languages, high tones usually surface two syllables to the right of their underlying location creating ternary domains (cf. 5-7). The ternary domains are problematic in standard OT, ODT and HST because they are not predicted in these theories and are cross-linguistically rare.

(5) Ternary shifting in Kisukuma (Matondo 2003).

(nagɔchá)gɔla	"I will choose"	(mgɔchá)gɔla	"you (pl) will choose"
(ɔgɔchá)gɔla	"you will choose"	(dɔgɔchá)gɔla	"we will choose"

(6) Ternary spreading in Ikalanga (Hyman and Mathangwane: 1998)

ku(cínyébú)nuusa	'to raise it'	cithu (bánótúú)ma	'the thing that they send'
(bánótúú)ma	'to carve it'	ku(tíshálúú)la	'to choose for us'

(7) Bounded shifting and spreading resulting in a ternary domain in Saghala (Patin 2004)

njovu	'elephant'	ivi(lya vítá)nda vibwaa	'those big beds'
i(lya njóvú)	'that elephant'		

In this paper, I review the major proposals in the literature to account for the ternary tonal domains e.g. Sietsema (1989) in Kisukuma and Topintzi (2003) in Ikalanga; and offer new ideas in which the problematic ternary domains in Bantu can be accounted for in ODT and HST by exploring the (O-O) Correspondence Theory.

Phonological representation of phonetically long nasals in Low German

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In the literature on ambisyllabic behavior of (geminate) consonants in the world's languages no tonal language has been investigated, yet. The presentation at hand aims at filling this gap by surveying some tonal Low German (LG) dialects. With respect to the phonetics-phonology-interface, and contributing to recent debate on ambisyllabicity, we argue that in LG in the combination [_VN:#] nasals are split into two parts: a first ambisyllabic part, and a second part occupying its own syllable head.

The issues. Barry et al. (1999) have adumbrated that northern German varieties of the Standard reflect more clearly ambisyllabic behavior of consonants than other German varieties do. This insinuation leads to the question how far the same applies to the geographically directly adjacent tonal LG dialects. These dialects exhibit minimally different triplets like [^{1}mi:n] 'my', [^{2}mi:n] 'mine-Sg.', [mi:^{2}n:]* 'mine-Pl.', and [kan] 'can-Sg.Pres.', [kan:] 'pitcher-Sg.', [kan:n] 'pitcher-Pl.'. The triplets developed due to syncope of schwa in the plural- and infinitive-endings. How can these differences be accounted for phonologically? In the case of [mi:^{2}n:] and [kan:n], instead of a monosyllabic status also the assumption of a bisyllable is conceivable, if not necessary.

The data. Recent LG recordings as well as data from the 60s and late 70s were analyzed with PRAAT. First we measured a list of stimuli with a supposed long final nasal following a preceding V or V: . The duration of the final nasal and the preceding vowel, and the total duration of the stimulus were documented. Additionally, the sonority of the nasal part and the specific pitch contour was measured. The results were then compared to equivalent measurements performed on LG words with (not long) final nasal and (not-long) word-internal nasal after preceding V and V:, respectively.

The outcome. In terms of nasal-duration, the supposed long nasals show a strikingly higher duration in comparison to their short correspondents. This result is consistent for both, preceding short and preceding long vowel / diphthong. On average, N: is 0.0722 sec. longer after V and 0.0325 sec. longer after V: as compared to N. Yet, the nasals in [_VN:#] are on average 0.0109 sec. longer than those in [_V:N:#]. In the vast majority (82%) of cases the final long nasals exhibit their own sonority peak. This is coherent with the clear auditory impression of a long syllabic final segment. In 16% of the stimuli with final N: the second sonority peak is steeper than the first one. Tones in terms of certain pitch contours are not found.

An analysis. There is no single explanation that covers the whole set of data. Rather, the emerging solution is twofold: (1) A bisyllabic prosodic word that displays an ambisyllabic N: in the case of _VN: like in /kaṇ:/ 'pitcher-Pl.', and (2) a bisyllabic prosodic word without association of the first part of the final N: to the preceding syllable in the case of _V:N: like in /mi:^{2}ṇ:/ 'mine-Pl. ' and /du:m̩:/ 'thumb-Sg.'. The longer duration of the nasal in [_VN:#] compared to that in [_V:N:#] suggests a difference in phonological representation. In the former case the nasal is ambisyllabic while in the latter case it is not. The absence of distinct pitch contours of the final long nasal on most of the stimuli (88%) is crucial phonetic evidence for the bisyllabic representation since tones in LG merely surface on word-final bimoraic syllables. Additionally, these proposed bisyllabic words show two sonority peaks, while words with short final nasal do not. Furthermore, the assimilatory processes in the original morphological endings imply that an inherent connection exists between the consonant preceding and following the syncopated schwa. In cases like /du:m̩:/ 'thumb-Sg.' and /kɔim̩:/ 'came-1.3.Pl.' with a long vowel / diphthong in the rhyme, a highly marked trimoraic syllable would emerge if the final consonant was embedded within the first syllable. A constraint *μμμ prevents this.

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* The later aligned superscript 2 marks a tone with delayed alignment on the word.

A Span Theoretic Account for Kinande Dominance and Dominance Reversal

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Kinande, a Bantu language spoken in Congo, exhibits a complex harmony system, where both [+ATR] *dominance* (as in (1)) and *dominance reversal* (as in (2)) are observed. In (1) and (2), the same combination of the prefixes /ɛ-ri/ surfaces differently, depending on the height of the vowel in the stem.

(1) [+ATR] Dominance (Hyman 2002: 19): [+ATR] high vowel triggers harmony

a) /ɛ-ri-bɛrɛ/ → [**e-ri**-bɛrɛ] (*[ɛ-ri-bɛrɛ]) 'breast'

b) /ɛ-ri-bɔndɔ/ → [**e-ri**-bɔndɔ] (*[ɛ-ri-bɔndɔ]) 'wild palm'

(2) Dominance Reversal (Hyman 2002: 19): [+ATR] high vowel *undergoes* the harmony caused by another high [-ATR] vowel

a) /ɛ-ri-hɪrɪ/ → [ɛ-rɪ-hɪrɪ] (*[e-ri-hɪrɪ]) 'crab'

b) /ɛ-ri-tʊmbɪ/ → [ɛ-rɪ-tʊmbɪ] (*[e-ri-tʊmbɪ]) 'yam'

The main purpose of this paper is to present a Span Theoretic (McCarthy 2004) account of Kinande [ATR] harmony. To fully account for dominance and dominance reversal in Kinande, I propose a reformulation of the *Headedness Constraint* such that it requires that there be *at least one* span that is headed by a high vowel, rather than requiring that *all* high vowels head their own spans.

In Kinande [ATR] harmony, high vowels both trigger and undergo the harmony. Under a Span Theoretic account, the fact that high vowels trigger harmony can be captured by the headedness constraint **HEAD ([+HI], [ATR])** (cf. McCarthy 2004: 7), which requires that *every* [+high] vowel heads an [ATR] span, dominating ***A-SPAN [ATR]** (cf. McCarthy 2004: 5), which prohibits disharmonic forms. However, this ranking fails to account for dominance reversal, as illustrated in (3). Under McCarthy's original formulation of the headedness constraint, candidate (3a) is preferred to (3b) (In tableaux, the underlining indicates the head of a span, which is located at the edge of a span by the directionality constraint (**SPANHEAD** (McCarthy 2004: 12)).

(3) Regular Dominance is Preferred by HEAD([+HI],[ATR]) >> *A-SPAN [ATR]

/ɛ-ri-hɪrɪ/ → [ɛ-rɪ-hɪrɪ] (dom. reversal)	HEAD([+HI],[ATR])	*A-SPAN [ATR]
💣 a) (e-ri)(hɪrɪ) (regular [+ATR] dominance)	*	*
☹ b) (ɛ-rɪ-hɪrɪ) (actual, dominance reversal)	**!	

I propose a reformulation of the headedness constraint, which is satisfied if there is *at least one* [ATR] span that is headed by a high vowel (**HEAD ([+HI], [ATR])-∃**). I refer to this reformulation as Existential Headedness (EH). EH is illustrated in (4).

(4) Existential Headedness NOT Violated by the Reversal Candidate

/ɛ-ri-hɪrɪ/→[ɛ-rɪ-hɪrɪ]	HEAD([+HI],[ATR])-∃	*A-SPAN [ATR]
a) (e-ri)(hɪrɪ)		*!
☞ b) (ɛ-rɪ-hɪrɪ)	✔	

(4b) does not violate the headedness constraint even though the high vowel in the second prefix does not head its own [ATR] span: there is a span headed by a high vowel in (4b). Thus, this new formulation allows a high vowel to undergo harmony while maintaining the ranking HEADEDNESS >> *A-SPAN. I also demonstrate that EH will still account for the regular dominance case with the same ranking. Finally, I examine the typological predictions made by EH and the directionality constraint, which arises from the introduction of EH to Span Theory.

From allophony to allomorphy: The case of German umlaut

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What are the origins of stem allomorphy in German nouns and verbs and what triggers this surface allomorphy in Standard German (StdG)? This paper espouses a feature-based approach to a morphologically conditioned stem alternation (umlaut), which is couched in the framework of the Featurally Underspecified Lexicon (Lahiri & Reetz, 2002) and supplemented by experimental data (Scharinger, 2007). The crucial assumption is that umlaut, i.e. the fronting of original back vowels, evolved from an allophonic variation in Old High German (OHG) which resulted in allomorphic variation in Modern StdG. Examples can be found in particular nouns of which the plural appears to involve a separate allomorph (e.g. ({Stock} for the singular, {Stöck} for the plural of 'stick') and from the present tense of strong verbs where certain person/number combinations involve seemingly different stems ({schlaf} for the 1ST P. SINGULAR, {schläf} for the 2ND and 3RD P. SINGULAR of the verb 'sleep').

(1)	[ʃtɔk]	{Stock}	'stick SINGULAR'	[ʃtœkə] {Stöck}e	'stick PLURAL'
(2)	[ʃlafə][1]	{schlaf}e	'sleep 1ST SG PRES'	[ʃlɛfst] {schläf}st	'sleep 2ND SG PRES'

In OHG, umlaut was the predictable change of back (dorsal) vowels to front (coronal) vowels when a suffix with a high front vowel followed. At that stage, umlaut could be considered allophonic variation. The proposal here is that umlauted as well as non-umlauted surface forms originated from one phoneme, which was underspecified for its place of articulation feature (coronal or dorsal). The OHG vowel system consisted of 5 vowels which were specified for tongue height and labiality only (/i/ [HIGH], /u/ [HIGH] & [LABIAL], /e/ unspecified, /a/ [LOW], /o/ [LABIAL]). By default, low and labial vowels surfaced as dorsals, all others as coronals. In the umlaut environment, the dorsal default rule was blocked such that the affected vowels surfaced as coronals.

In StdG, the transparent umlaut environment disappeared and the blocking of the dorsal realisation rule in particular umlaut-yielding paradigms has to be stored in each relevant lexical entry. As a side effect, vowels which never umlaut have to be specified underlyingly for dorsality. On the other hand, the phonological representation of umlautable vowels is a remnant of the OHG place of articulation underspecification: All umlautable vowels are not specified for the feature [DORSAL]. They may surface as either dorsals or coronals depending on the morpho-syntactic environment. Furthermore, front vowels are never specified for coronality in their underlying representation. It has been shown elsewhere that these assumptions are supported by findings on speech perception, especially when mapping surface forms to underlying representations (cf. Scharinger, 2007).

A consequence of this view is that stem allomorphy in German nouns and verbs is phonologically *and* morpho-syntactically determined. The necessary condition for a vowel to show umlaut is its phonological underspecification for dorsality. The surface realisation of umlaut is triggered by morpho-syntactic properties which invoke the blocking of the dorsal realisation rule. Thus, the underspecification of the root vowel in the verb *schlafen* (sleep) explains the "outwards-sensitivity" (Carstairs, 1987) of the stem alternant {schläf} with respect to agreement of person (2ND and 3RD) and number (SINGULAR).

[1] Vowel length is ignored in the examples.

Apocope vs syncope in West Saxon adjectives: Evidence for cophonologies

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The behaviour of high vowel deletion in West Saxon adjectives provides support for specific kinds of interaction between phonology and morphology, in contrast to traditional philological theories such as Campbell's (1959) in which all sound change is expected to proceed in a regular manner, with exceptions due to the morphology being considered to be analogical and totally separate from any phonological conditions.

In this paper I discuss two methods within Optimality Theory that can be used in accounting for cases in which a phonological process behaves differently with respect to morphological categories. This problem is thrown up by the neuter and feminine adjectives of West Saxon in relation to high vowel deletion, in that final deletion is the norm in the feminine adjectives, whilst medial deletion proceeds in the neuters.

For example, in a disyllabic word with a heavy root syllable such as ***hālig*** 'holy', the nom/acc.pl.neut. form in ***–u***: [ω[.hɑː.].**li**.**ju**.] ****hāligu*** will face deletion due to the emergence of an unfooted syllable (Bermúdez-Otero forthcoming). However, two unfooted syllables are evident: which one will be deleted? Our phonological analysis must consider the driving forces separating apocope and syncope, accounting for the precise deletion site. The problem is that in the adjectives of the West Saxon dialect, a nom/acc.pl.neut. adjective such as ***hālig*** will show syncope: [ω[.hɑːl.].ju.] ***hālgu*** whereas a nom.sg.fem. adjective, which provides exactly the same prosodic conditions in attaching ***–u,*** will show apocope: [ω[.hɑː.].lij.] ***hālig***. The analysis must therefore account for this discrepancy, as a constraint ranking which drives either syncope or apocope cannot be used to describe the whole dialect synchronically.

Within Optimality Theory, there have been a number of ways suggested of dealing with such morphophonological phenomena, including morpheme specific constraints (Anttila 2005) and cophonologies. Morpheme specific constraints allow us to stipulate that only a certain morphological category will be affected by the constraint in question. In a cophonology analysis, we have a master hierarchy (Bermúdez-Otero & McMahon forthcoming) containing all the constraint rankings that are true across the board in the language. However, the master hierarchy may leave the relative ranking of some constraints unspecified. In this situation, different morphological constructions may select different total orderings compatible with the master hierarchy

I will show that for the data at issue, an analysis involving cophonologies is preferable to invoking morpheme specific constraints. One reason for this is that the cophonology analysis reflects the weakness of the specific constraint rankings that are susceptible to sound change within the dialects under consideration. We can also avoid, with this analysis, the positing of language specific constraints which may have limited cross linguistic support.

Consonant clusters in Ivory Coast French: lenition trajectories and free variation

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This poster intends to show the preliminary findings of an in-depth pilot study of the phonotactics of consonant clusters in Ivory Coast French. The variety in question is characterised by a high degree of simplification in the surface realisation of consonant clusters, constituting a real difficulty for parsing by speakers or recognition systems based on the "standard" variety. Incidentally, the correct modelling of Ivory Coast pronunciation is a challenge for any phonological theory as well.

The first contribution of the poster is a systematic analysis of the behaviour of consonant clusters based on recordings of 12 speakers within the PFC project on contemporary spoken French (Durand & Lyche 2003). While obstruent - obstruent clusters follow the cross-linguistic pattern of contextually conditioned (strong vs. weak positions) lenition trajectories (through spirantisation / glottalisation / sonorisation / vocalisation and, ultimately deletion), obstruent-liquid and liquid-obstruent clusters show a somewhat chaotic picture for two reasons:

i. In contradiction to the theory of lenition, clusters weaken even in phonologically strong positions like in a word initial onset
ii. [R] and [L] type sounds potentially lenite regardless of whether they are dependents in a branching onset or in a coda-onset interlude OR simple onset heads. This state of affairs leads to opaque situations where it is impossible to tell WHY lenition takes place (being in a cluster OR being a liquid)

In order to maintain phonological generalisations that otherwise seem valid to us (i) and to keep the grammar deterministic (ii), in this language the issue of cluster simplification has to be separated from the behaviour of liquids, strategy adopted by Côté (2004) for Quebec French.

The second part of the poster shows an attempt to predict the distribution of the 8 surface allophones ([r ɹ ɾ ʀ χ h ɦ ɰ]) of [R] that, at the first glance, are in free variation. Although a straightforward sonority / syllable based phonological account does not seem to be possible for these complex data, a complex approach combining notions of phonetic salience, lexicalist - exemplarist considerations invoking frequency effects (Bybee 2001) and a close speaker-by-speaker scrutiny reveals nevertheless strong tendencies and yields (weak) predictions.

Superheavy champs: truncations in Dutch, English and German

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Introduction The aim of this paper is to present an analysis of the shape of truncations of names in German, English and Dutch that is in agreement with the research program of the *Generalized Template Theory* (GTT) (McCarthy & Prince 1994ab). We will focus on the role of *superheavy* strings: open and closed syllables followed by one extra consonant. Such syllables are only found word-finally. German and English truncations are such superheavy strings and Dutch truncations may end in them. It turns out that they are excellent feet, which makes them excellent PrWds, and therefore excellent Roots.

We show that this analysis is to be preferred over the one in Itô & Mester (1997). They argue that the superheavy string is opaque since it does not correspond to a property of the input nor of the base. A constraint is needed to narrow down the set of candidates (McCarthy 1997, 2004). This constraint requires that all syllables are aligned with the left edge of the PrWd, which excludes all candidates that are larger than one syllable. We argue that this analysis is undesirable: (a) superheavy strings are transparent from the point of view of the entire phonology and (b) their analysis does not extend to similar cases in English and Dutch truncations.

Data and Analysis *German* truncations correspond to a superheavy string followed by the suffix -i. Examples are (superheavy strings are underlined, syllables are separated by periods: *Gabrielle* → *Gaa.b*-*i*; *Heiner* → *Hei.n*-*i*; *Marcel* → *Mar.c*-*i* (Féry 1997, Itô & Mester 1997, Wiese 2001). Since long vowels and diphthongs occur in open syllables and short vowels in closed ones, such superheavy strings are best analyzed as two syllables (McCarthy 1979, van Oostendorp 1995): a full-voweled syllable followed by a degenerate vowelless one. These strings are only found PrWd-finally. We assume that a foot-head dominates vocalic features and a non-head does not (HEADASS) (Dresher & van der Hulst 1998, van Oostendorp 1995, Downing 2006). Therefore, such superheavy strings are excellent feet. They are binary and they obey HEADASS and contain more material than a heavy syllable. The only TRUNC-specific statement that is necessary is TRUNC=ROOT.

With minor modifications the *American English* -meister formation and the Dutch truncations follow the same pattern. The -meister formation takes a superheavy strings are from the head of the base: *Bəˈlinda* → *the Lind-meister*. This is achieved by a constraint aligning the left edges of the TRUNC-morpheme and the base. The *Dutch truncations* end in a superheavy string or in a footed light syllable: *ˈMoo.loo.tov* → *(ˈMoo.loo)* or *(Moo.l)*. A TRUNC-morpheme is a Root and it needs to be left-ANCHOR-ed to the Base. Furthermore, the head of the base needs to be the head of the TRUNC-morpheme and the constraint HEADASS is

Boudledidge: A Mitford Language Game

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Phonological analyses have claimed implicitly and explicitly that language games are governed by the grammar, and necessarily involve either extending, modifying, or exaggerating attested natural language processes (Bagemihl 1988, 1989 McCarthy and Prince 1986, Alderete *et al*. 1999, Nevins and Vaux 2003). This raises the question, if all language game processes correspond to natural language ones, can all natural language phonological processes be used in language games? Somewhat surprisingly, the typology of language games documented so far suggests an answer of 'no' – language games seem to be narrowly restricted to the operations of segment deletion, insertion, reordering, or substitution.

I present here a counterexample to this generalization, drawing on data from a language game called Boudledidge. It is the joint creation and one of the many claims to fame of the Mitford sisters Unity and Jessica (Decca), and is well–attested in published letters and other biographical materials (Mitford 1960, 2006, Pryce-Jones 1977, Lovell 2001). Boudledidge involves not only the familiar procedure of segment/syllable insertion into forms of the base language, but also segment/featural modification that is frequently found in phonological alternations of the world's languages, yet to my knowledge has never been described in a language game. These modifications include variation in voicing, affrication, and vowel quality (examples below).

Because of these properties, Boudledidge represents a significant departure from language games described and analyzed to date. Yet it conforms to claims made in the literature on language games, insofar as the alternations it involves are 'natural' ones, also found in natural language phonologies. In this way, Boudledidge extends rather than contradicts phonological theories of language games.

Insertion (1-4): of [d] after the stressed vowel of all polysyllabic, some monosyllabic forms. When necessary to resolve resulting clusters, liquids>syllabic, or schwa inserted.
Voicing (5-6): of all unvoiced consonants.
Affrication (7-8): of coronal consonants.
Direction unusual: fricative>affricate rather than stop>affricate.
Vowels (1,4,6,7,8): more idiosyncrasy, but mostly monophthongization and laxing.

	English	→ Orthography	→ Transcription
1)	Robin	rudbin	rʌdbɪn
2)	still	dzdiddle	dzdɪdl̩
3)	dear	deedr	didr̩
4)	appeal	abbidle	əbɪdl̩
5)	check	jegg	ʤɛg
6)	force	vudz	vʌdz
7)	stage	dzdedge	dzdɛʤ
8)	enclosed	engludzed	ɛnglʌdzd

Phonology and morphology are in a single OT grammar

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Problem. In the Australian language Dyirbal (Dixon 1972), there are two allomorphs of the ergative suffix used after V-final stems. If the stem is disyllabic, the ergative suffix is [-ŋku], as in [ya.ɽa-ŋku] 'man', whereas longer V-final stems take [-ku], as in [ya.ma.ni-ku] 'rainbow'. This system of allomorphy is theoretically challenging. On the one hand, the generalization about whether to use [-ŋku] or [-ku] is statable in exclusively phonological terms, which suggests that the choice of allomorphs happens in the phonology and not in a separate morphological component. On the other hand, it is hard for an OT-based phonological analysis to explain why [-ŋku] is *ever* chosen over [-ku]. The two allomorphs are very similar, so few markedness constraints will prefer one over the other, and all plausible ones that do will prefer [-ku], since it lacks the additional marked segment [ŋ] found in the competing allomorph [-ŋku].

Proposal. Given that neither a purely-morphological nor purely-phonological account of the Dyirbal ergative would be satisfactory, I suggest that it be analyzed by incorporating phonological and morphological pressures into a single OT grammar. I adopt the view (McCarthy & Prince 1993, Kager 1996, Picanço 2002, Bonet, Lloret & Mascaró 2005) that allomorphy systems like the Dyirbal ergative require an arbitrary preference between the allomorphs, in this case one of [-ŋku] over [-ku]. However, I part company with earlier proposals regarding how to enforce this preference within the phonology. My proposal is that the privileged/elsewhere relation between [-ŋku] and [-ku] in Dyirbal results from [-ŋku] being specified to spell out a greater number of morphosyntactic features than [-ku] is. The use of [-ŋku] is preferred by a constraint SPELL-OUT which demands that as many morphosyntactic features as possible be spelled out by vocabulary items (see Noyer 1993, Trommer 2000 for such constraints). Following McCarthy & Prince (1993), I assume that [-ŋku] is indexed to an ALIGNMENT constraint requiring it to appear at the right edge of the head foot. Dyirbal has left-to-right trochaic stress, so this ALIGN constraint can only be satisfied if the stem is disyllabic. That ALIGN constraint will therefore prefer [-ku] over [-ŋku] when the stem is longer, and [-ku] will thus be used with longer stems if the ALIGN constraint dominates SPELL-OUT.

Discussion. The assumption that privileged/elsewhere relations result from a pressure to spell out as many morphosyntactic features as possible is standard in realizational theories like Distributed Morphology (Halle & Marantz 1993), wherein vocabulary items compete on the basis of which can spell out the most features. The Dyirbal example shows that arbitrary preference is sometimes needed in systems of allomorphy that are phonologically-conditioned, and greater parsimony is achieved if in these systems too the preference for the privileged allomorph is attributed to the need to maximize feature spell-out. The example also shows that the preference for a privileged allomorph can be overridden on phonological grounds, and therefore can be regarded as complementing other reported cases where morphological well-formedness is sacrificed for the sake of phonological well-formedness, e.g. hiatus-avoiding gender mismatch in French *beau/bel(le)* suppletion (Tranel 1996, Perlmutter 1998), or insertion of meaningless suffixes like the augment [-pa] used prevent words from ending in a consonant in Pitjantjatjara (Hale 1973). These results together suggest that a whole range of morphological pressures can be overridden by phonological ones, which invites the conclusion that the morphology and the phonology occupy a single OT grammar.

Contrast in Buchan Scots Laryngeal Assimilation

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This paper incorporates the view that phonology is to be regarded as an abstract cognitive system and considers as primary evidence the system of contrasts, regardless of its phonetic and acoustic correlates (Dresher and Zhang 2000). In light of this view, I argue that phonological activity is dependent on the structure of the contrast system of a given language. Based on the system of contrast, the analysis of language into an economic and exhaustive set of features is achieved, and the resulting set of distinctive features is able to uniquely define natural classes of segments, which are responsible for all kinds of phonological behavior in language. I illustrate this with regard to one phonological process in which a vocalic laryngeal feature assimilates to neighboring segments with complex consonant-vowel interactions, namely lowered larynx assimilation in Buchan Scots.

The distribution of vowels in Buchan Scots (1a) provides evidence that this dialect exhibits a unique type of assimilation unknown to other dialects of English. Paster (2004) has characterized the assimilation as vowel lowering harmony blocked by voiced obstruents. However, since unstressed non-high vowels never follow high vowels in trochees, the assimilation must be one of raising, i.e. target vowels are underlyingly non-high. Furthermore, the parallel effect of voiced obstruents and "stopped sonorants" on stressed vowels in monosyllabic trochees (1b) (Trigo 1986, Wölck 1965) and on unstressed vowels in disyllabic trochees (Dieth 1932, Fitzgerlad 2002) (1c) suggests that raising is triggered by these consonants in both environments.

(1) (a) *Apparent vowel height harmony (disyllabic trochees)*

[drixi]	'dreary'	[twɨnti]	'twenty'	[budi]	'ghost'
[beke]	'container'	[bəte]	'bit (dim.)'	[borə]	'borrow'

(b) *Only stressed high vowels before voiced obstruents (monosyllabic trochees)*

[sɨb]	'sib'	[gɨd]	'go & give'	[dɨv]	'do'
[tɨnt]	'tent'	[skɨmp]	'skimp'	[bɨŋk]	'bench'

(c) *Only unstressed high vowels after voiced obstruents (disyllabic trochees)*

[robɨn] ,	*[robən]	'robbing'	[lodi] ,	*[lode]	'loadie (dim.)'
[lʌvi] ,	*[lʌve]	'lovey (dim.)'	[feʒɨn] ,	*[feʒən]	'pheasant'
[lʌmpi] ,	*[lʌmpe]	'lumpy'	[grantɨt] ,	*[grantət]	'granted'

I propose a non-linear analysis of these facts in the framework of the Parallel Structures Model of feature geometry (Morén 2003, 2006). The analysis of Buchan phonology within this model provides a unified account of the assimilation facts based on contrastive phonological evidence for all feature specifications. Importantly, all triggers of assimilation (whether consonants or vowels) form one natural class of segments; they are underlyingly specified for the vocalic feature [Lowered Larynx]. This phonologically abstract feature uniquely captures the contrasts between voiced and voiceless obstruents and between high and non-high vowels in the language. [Lowered Larynx] harmony in Buchan is sponsored by an underlying [LL] segment which targets non-high vowels. These structurally simple non-high vowels acquire an [LL] feature which they add to their structure to form the featurally more complex high vowels. There are no blocker segments for this process, but there is a class of transparent segments, namely all consonants except the triggers. I provide autosegmental representations of the Buchan assimilation pattern as such and show that the relevant features behave independently of their respective segments.

Special session

Where is allomorphy?

On the nature of the cycle

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Phonology applies cyclically over a hierarchy of domains projected from the morphosyntactic constituent structure of linguistic expressions. Powerful support for this claim comes from instances of phonological opacity in which the conditions for the application (or nonapplication) of a phonological process hold within a morphological subconstituent of the expression but fail to surface transparently anywhere in the paradigm. In such circumstances, output-output correspondence is of no use, as the base never surfaces. This may happen for purely phonological reasons (i.e. processes applied in later cycles), but may also be due to morphological factors (e.g. defectiveness, deponency, etc.)

If this argument is correct, then we are confronted with a deeper question: why is phonology cyclic? A possible answer is that cyclicity is hardwired in Universal Grammar, in which case the explanation would have to be sought in evolutionary phenomena: adaptation, exaptation, and/or design constraints. This paper explores the alternative possibility that cyclicity emerges during acquisition from largely independent factors.

First I consider intrastratal cyclicity. Theories such as Lexical Phonology simply stipulate the fact that only the highest phonological level (the stem level) is internally cyclic. However, if we adopt the plausible assumption that stem-level phonological outputs are listed in the permanent lexicon, then stem-level cyclicity can be derived from the independently necessary mechanism of morphological blocking, whereby listed items block grammatically derived competitors. Insofar as the incidence of morphological blocking correlates with token frequency, this approach correctly predicts the possibility of noncyclic and even countercyclic effects at the stem level (e.g. idiolects with *c*[aɪ]*cle* ~ *c*[ɪ]*clic* ~ *c*[aɪ]*clicity*). In the framework of Stratal OT, moreover, cyclic transfer from the base to the derived form requires that the relevant faithfulness constraints should be ranked high. Again, this correctly predicts that any stem-level process showing cyclic misapplication must be neutralizing or, at least, have lexical exceptions (Chung's Generalization): thus, cyclic stress preservation in ***oríginal*** → ***orìginálity*** implies the existence of underived items such as ***Epàminóndas***.

More tentatively, I speculate that interstratal cyclicity may also emerge from independent factors during language acquisition. Developmental studies indicate that children typically acquire knowledge of morphosyntax in a characteristic series of stages: holophrases > words > inflection > derivation. This developmental sequence bears an obvious resemblance to the stratal architecture of phonology, suggesting that learners acquire alternations in a stepwise fashion: as each new region of morphosyntactic structure is discovered, the learner installs a new phonological stratum on top of the existing ones to capture the corresponding phonological regularities.

Three propositions:

a) During acquisition, learners reinterpret phonological patterns across paradigms as effects of the syntagmatic structure of individual paradigm members.
b) The cycle provides morphophonological research with a firm anchor in morphological theory because every cyclic domain must be coextensive with an independently motivated morphosyntactic constituent.
c) Cyclic approaches to the morphology-phonology interface are capable of incorporating insights from usage-based models of grammar (e.g. observations related to frequency) and are compatible with an abstractness-without-innateness programme for linguistic theory.

The role of distributional probability in allomorph selection

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Generative phonology analyzes allomorphy by means of rules or interactions of constraints, which select the correct allomorph for a given stem. Before the selection, all allomorphs are equally probable. After the selection, the correct allomorph is the absolute winner and the incorrect allomorphs have no further role to play.

In this talk, I will present psycholinguistic data from Dutch showing that these models do not reflect the phonological processes that unfold in the brain. The selection process appears to be much more dynamic and sensitive to the relative appropriateness of the alternative allomorphs. It turns out that even if only one allomorph may be considered as correct given the relevant phonological property of the stem, the alternative allomorphs may be more or less likely given very different properties of the stem (see also Albright & Hayes 2003). The more appropriate an alternative allomorph, the slower the selection of the correct allomorph and also the slower the auditory comprehension of the full morphologically complex form.

These data require a language model in which simple rules or interactions of constraints are replaced by mechanisms sensitive to the distributional probabilities of the different allomorphs. Such a model would also be more in line with most existing psycholinguistic models of speech production and perception, in which several types of evidence contribute to the lexical activation of different lexical candidates that compete with each other.

Three propositions:

a) Corpus-based research and psycholinguistic experiments are indispensable for fully coming to grips with grammar.
b) Phonological theories and psycholinguistic models of speech processing should share their principles and mechanisms.
c) Models of speech processing should incorporate analogical processes based on exemplars and cohorts of exemplars as well as abstract generalizations over these exemplars.

Where's Opacity?

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A phonological process is opaque if the result of applying it or the conditions that made it (in)applicable are not visible in surface structure (Kiparsky, 1973). Which grammatical component deals with opaque alternations? Should the phonology be granted the power to analyze opacity? Or should all opacity be handled with lexical listing of allomorphs?

This issue first arose in the 1970's. The *SPE* theory treated opaque and transparent alternations exactly alike. In reaction to perceived excesses in *SPE* (e.g., English *right* from /rixt/), the proponents of Natural Generative Phonology took the opposite view, proposing principles to eliminate opacity from the phonological grammar (Hooper [Bybee], 1976; Vennemann, 1972, 1974). Opaque alternations were attributed to lexical listing of allomorphs, lexical redundancy rules, and idiosyncratic rules of allomorph selection.

Optimality Theory (Prince and Smolensky, 1993/2004) has reawakened interest in this issue. Because OT's markedness constraints evaluate only surface structures, classic OT does not offer a general solution to the problem of opaque alternations. This has led some to reach the same conclusion as the NGP theorists: opaque alternations are outside the scope of the OT phonological grammar and must instead be attributed to the lexicon and the morphology (Green, 2004, 2005; Mielke, Hume and Armstrong, 2003; Sanders, 2002, 2003).

This talk presents evidence that at least some opaque processes belong in the phonology. The evidence comes from two varieties of Arabic, and it includes the following:

- Speakers of an Arabic dialect with opaque stress and speakers of dialects with transparent stress perform alike in a stress deafness experiment and in transfer of their stress system to L2 English. If the opaque stress system were lexicalized and morphologized, the speakers would be expected to perform differently.
- Opaque processes of high-vowel syncope and low-vowel raising in a Bedouin Arabic dialect are highly productive by various criteria: they apply to loan words, they apply in external sandhi, and they apply in play languages.

To complete the argument, I will show that these phenomena cannot be analyzed using just the resources of "classic" OT: markedness constraints, faithfulness constraints, and a single pass through GEN and EVAL. The discussion will include a critique of local conjunction of faithfulness constraints as a theory of opacity.

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Morpheme realization by vocabulary insertion and word minimality by phases

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In this presentation, I depart from current thinking and argue, on both empirical and theoretical grounds, that the there is an autonomous word minimality (MINWD) requirement, imposed on the mapping from morpho-syntactic structure to phonological form. I assume that words have an internal syntax as determined by Distributed Morphology (DM) (Halle and Marantz 1993) and that the phonological interpretation of word structure proceeds by phases, in the spirit of Chomsky (2001, 2005) and Marvin (2002). Each phase corresponds to a prosodic word, and MINWD may require that a prosodic word be disyllabic (i.e. binary at the syllabic level). Therefore, the satisfaction of MINWD depends crucially on the phonetic content of the vocabulary items that realize phase-internal morphemes. I provide evidence that allomorphy as the choice between exponents of a morpheme is sometimes (indirectly) regulated by the demands of MINWD; ineffability emerges if the phonetic content of a phase is insufficient to project a well-formed prosodic word. However, enforcement of this constraint is subject to a language-specific choice that determines whether it is satisfied at every phase or only at the final phase in a derivation. When a language chooses the first option, morphemes spelled out in different phases cannot contribute to the satisfaction of MINWD. In contrast, the second option allows any morpheme in a word to be a contributor. The two options are also correlated with another difference in the manifestation of word minimality. Languages that enforce the MINWD constraint at the final phase may employ a syllable epenthesis strategy to achieve the minimal size (e.g. Mohawk), but this strategy cannot be employed by a language that enforces the constraint everywhere (e.g. Ojibwa, Tiriyó).

Three propositions:

a) Phonology is an interpretive system; it imposes phonological form on abstract morpho-syntactic structure.
b) The computation of phonological well-formedness is fundamentally cyclic, reflecting the sensitivity to the cyclic derivation of word structure.
c) 'True' allomorphy does not emerge from the phonology but takes the form of a disjunctively ordered set of lexical choices.