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22èmes Rencontres du
Réseau Français de Phonologie

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Agadir, Maroc, 1-3 juillet 2025

Résumés – Abstracts

Sponsors

- Structures Formelles du Langage (SFL), CNRS, Université Paris 8.

- Laboratoire de Phonétique et Phonologie (LPP), CNRS, Université Sorbonne Nouvelle, Paris

- Laboratoire Interdisciplinaire des Langues et des Dynamiques Artistiques et Sociales (LILDAS), FLASH, Agadir

Programme – RFP 2025, Agadir

1 juillet 2025

09:30 - 10:00
Welcome Session

10:00 - 10:50
Karolina Bros – TBA

10:50 - 11:20
Tight and loose coordination as a marker of complex onsets and extrasyllabicity in French
Teja Rebernik, Annie Rialland, Philipp Buech, Anne Hermes

11:20 - 11:50
Pharyngealization in words without vowels: Insights from Tashlhiyt
Philipp Buech, Anne Hermes, Rachid Ridouane

11:50 - 12:20 - Pause café

12:20 - 12:50
Vowelless forms are allophonic variants of some words in Tarifit: Evidence from production and perception of triconsonantal words
Mohamed Afkir, Georgia Zellou

12:50 - 13:20
Prosodic augmentation of Moroccan Arabic C.CuC broken plural
Ali Nirheche, Michael Becker

13:20 - 14:50 - Déjeuner

14:50 - 15:20
The Contrastive Remnant Condition and the prosody of gapping in Shingazidja
Cédric Patin

15:20 - 15:50
The laryngeal articulation continuum and phonological categories at the interface
Alex Chabot

15:50 - 16:20 - Pause café

16:20 - 16:50
Tonic vs. templatic lengthening in Italian and Italo-Romance
Diana Passino

16:50 - 17:20
La voyelle épenthétique en farsi : fidèle et sans tête !
Alireza Jaferian

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Structure and complexity: sonorant internal codas in three Romance languages
Xiaoliang Luo

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2 juillet 2025

09:00 - 09:30
Hommage to Ian Maddieson
Ioana Chitoran & François Pellegrino (presented by Rachid Ridouane)

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Identification des consonnes non relâchées et du type de frontière syllabique en vietnamien et en thaï
Paula Alejandra Cano Córdoba, Thi Thuy Hien Tran, Nathalie Vallée, Coriandre Vilain, Silvain Gerber, Nicha Yamlamai

10:00 - 10:30
Affricates: between single and complex segments
Joaquim Brandão De Carvalho

10:30 - 11:00
Lexical stress modulates lenition: The case of palato-alveolar affricates in Italian
Bowei Shao, Anne Hermes, Philipp Buech, Maria Giavazzi

11:00 - 11:30 - **Pause café**

11:30 - 12:00
The typology of the distribution of |A| using MSLCs: the propensity for bipositionality
Mohamed Lahrouchi, Shanti Ulfsbjorninn

12:00 - 12:30
The Phonology of the Bangime Perfective-1 Suffix
Fabian Zuk

12:30 - 13:00
The morphophonology of Russian declensions
Edoardo Cavirani, Ora Matushansky

13:00 - 14:30 - **Déjeuner**

14:30 - 15:30
Poster Session

- *Vocalisme des verbes trilitères sains dans deux sociolectes de l'arabe tunisien : gouvernement propre et pieds prosodiques*
  Charles Vancaeyzeele
- *Using Temporal Stability to Probe the Syllabification of Medial Geminates: Evidence from Moroccan Arabic*
  Ali Nirheche

- *Acoustic correlates of standard Kosovar Albanian stress*
  Sawicka Irena, Andrzej Żak
- *La structure prosodique soutient-elle la structure phonologique dans l'autisme ?*
  Margot Jannot, Anne-Aël Pillet, Emilie Marty, Sandrine Ferré
- *Euh... but why? Facts and formal representations of French Schwa*
  Noam Faust, Mathilde Hutin, Mélanie Lancien
- *Phonological Awareness Deficits and Spelling Challenges in Moroccan Dyslexic First-graders Learning Standard Arabic*
  Assya Hanine
- *The Onset in Arabic: Homogeneity of the Target, Heterogeneity of the Process*
  Najiba Fares

15:30 - 16:00 - **Pause café**

16:00 - 16:30
Glide-induced quality change of vowels in Terek Kumyk
Liza Dorofeeva, Anna Alhazov

16:30 - 17:00
Too strong, too weak, or just right: gradiently active tones and tonal fusion in Ayutla Mixtec
Thom Van Hugte

17:00 - 17:30
Les changements phonologiques dans le jeu de mots japonais : Goro-awasé (mnémonique numérique)
Rie Urasoko

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3 juillet 2025

09:00 - 09:50
David Embick – TBA

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Charles Vancaeyzeele

10:20 - 10:50
Metrically-significant and insignificant schwas in Omani Mehri
Noam Faust

10:50 - 11:20
Sonority and the Structure of Arabic Quadriliteral Roots
Ali Idrissi, Mashael Al Muhawes

11:20 - 11:50 - **Pause café**

11:50 - 12:20
Minimal word constraint in Turkish final devoicing
Tobias Scheer, Göktuğ Börtlü, Eugeniusz Cyran

12:20 - 12:50
Les oppositions de durée vocalique en français de Suisse romande: un cas de déphonologisation
Marie-Hélène Côté, Isabelle Racine

12:50 - 14:30 - **Déjeuner**

14:30 - 15:00
An OT-based Analysis of Ablaut Reduplication in Punjabi
Nasir Abbas Rizvi Syed, Tooba Sahar

15:00 - 15:30
Phonologically Conditioned Allomorphy in Moroccan Arabic: A Strict CV Approach to Triliteral Action Nouns
Abdelkader Elkhaoua

15:30 - 16:00
On comparative concepts in the typology of tone
Dmitry Gerasimov

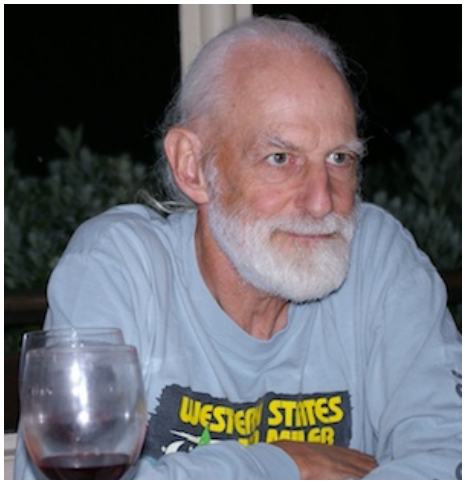
16:00 - 16:30 - **Pause café**

16:30 - 17:00
French Preposition-Determiner Contraction at the Phonology-Syntax Interface
Amazigh Bedar

17:00 - 17:30
Towards a panorama of tonal sandhi in Northern Wu languages
Yu Chen

17:30
Business Meeting

Obituary



Ian Maddieson
Born: Sept. 1, 1942, Watford, UK
Died: Feb. 2, 2025, Albuquerque, NM, US

Ian Maddieson, a distinguished linguist and passionate long-distance runner, passed away on February 2, 2025, in Albuquerque, New Mexico, at the age of 82. Born on September 1, 1942, in Watford, UK, Ian made groundbreaking contributions to the fields of phonetics and linguistic typology, most notably through the creation of the UCLA Phonological Segment Inventory Database and the acclaimed book "The Sounds of the World's Languages". Ian was a brilliant scholar, known for his kindness and unwavering support of his students. He was particularly excited about his upcoming invitation to participate in the RFP in Agadir, where he looked forward to sharing his insights with the community of the French Phonology Network.

Ian is survived by his wife, Caroline Smith, as well as family, friends, and a vast community of colleagues and students who will forever cherish his intellect, warmth, and zest for life. His extraordinary legacy will continue to shape the fields of phonology and phonetics, inspiring future generations to pursue their passions with the same fervor he exemplified throughout his remarkable life. The 22e Rencontres du Réseau Français de Phonologie will be a wonderful opportunity to honor and celebrate this legacy.

Contents

Vowelless forms are allophonic variants of some words in Tarifit: Evidence from production and perception of triconsonantal words

Mohamed Afkir & Georgia Zellou (UC Davis)

Vowelless words are highly infrequent across languages of the world. But, they do occur in some languages. Across the Amazigh languages, there is variation in how vowelless words are produced. For instance, in Tashlhiyt (a Southern Moroccan Amazigh language), vowelless words are often produced with little to no vocalic-like elements (e.g. /ħkm/ [ħkm], Ridouane, 2008). Meanwhile, in Tarifit (a Northern Moroccan Amazigh language), consonant-only roots are reported to be required to have an epenthetic schwa (e.g., /ħkm/ [ħkəm], Mourigh & Kossmann, 2019). How might vowelless words develop historically? More specifically, how can examining synchronic variation in consonantal root words in Tarifit give us clues about the preconditions for vowelless word production in related languages? The current study presents the results from a production and a perception experiment examining Tarifit. We designed our studies to ask two specific questions: 1) do Tarifit speakers ever produce triconsonantal words as vowelless, and if so under what conditions do vowelless forms surface? And 2) how do Tarifit speakers perceive vowelless productions of words?

Study 1. Production Methods. In the production study, we had 12 native Tarifit speakers produce a list of 48 words in a frame sentence in two speaking styles. Target words had either CCəC or CCVC structure (CCəC examples: /xzən/ “to store”, /sxəf/ “to pass out”; CCVC examples: /ɣrib/ “stranger”, /qðˤuθ/ “cut it”). We coded words for presence of vowels and also measured vowel durations for vowels that were present.

Study 1. Results. Our production results reveal variation in produced forms of words. For CCVC words, only two types of phonetic forms were produced: [CCVC], [C̆CVC] (where ̆ə is a short schwa). For CCəC words, three types of phonetic forms of words were produced: [CCəC], [C̆C̆əC], and [CCC] (i.e., a vowelless word form). Table 1 shows the proportion of each type of prosodic structure produced for each word type across clear and fast speech, and mean word durations in each condition. As seen, [CCV/əC] is the most common prosodic shape. [C̆CV/əC] is also frequent across word types. Though rare, vowelless forms of words are also produced. Only CCəC words can be produced as vowelless; words with underlying full vowels are never produced as vowelless. Vowelless words are produced to an equal proportion across clear and fast speech. Vowelless words are shorter in duration than the other prosodic structures ($p < 0.001$). And, when produced in clear speech, vowelless words are longer in duration than when they are produced in fast speech ($p < 0.001$).

Study 2. Perception Methods. To test the perception of vowelless words, 31 native Tarifit listeners performed lexical decisions on auditory items (half were real and half were nonce words; items provided in Table 2). There were two trial conditions: in the unmodified condition, listeners heard items that had not been altered. In the vowelless condition, listeners heard items that had been modified to contain no vowel (the vowel was spliced out of the waveform at zero crossings). The stimuli were constructed from productions of 8 real words of Tarifit, all containing distinct consonantal roots (5 CCəC words and 5 CCVC words) and 10 non words of similar structure to the real words, produced by a native Tarifit speaker.

Study 2. Results. Figure 1 is a plot of the mean lexical decision accuracy across conditions. We find that for CCVC real words, Tarifit listeners are more likely to mistakenly respond nonword when the vowel has been removed than when hearing an unaltered item containing the vowel. In contrast, lexical decision performance does not decrease when the schwa has been removed from CCəC words, compared to when the schwa is present (significant interaction between word type and manipulation ($p < 0.05$)).

Discussion. We find converging evidence from the production and perception of Tarifit words that vowelless phonetic forms are rare, but acceptable shapes for CCəC words.

Thus, vowelless words are an allophonic variant in Tarifit. In contrast, words with a full vowel are never produced as vowelless and are not likely to be accepted as real Tarifit words. The results of this study are discussed with respect to typological phonology, implications for diachronic evolution of vowelless words, found in related language, and variation and change in Tarifit, an under-described language.

Table 1. Rate of production and word durations (in milliseconds) for the three possible prosodic structures for CCeC and CCVC words across fast and clear speech in Tarifit.

	/CCəC/		**/CCVC/**	
	fast speech	**clear speech**	**fast speech**	**clear speech**
[CCV/əC]	306/456 (67%) word dur: 377	304/456 (67%) word dur: 469	72/120 (60%) word dur: 416	69/120 (57%) word dur: 517
[CəCV/ə]	124/456 (27%) word dur: 365	128/456 (28%) word dur: 450	48/120 (40%) word dur: 474	51/120 (43%) word dur: 558
[CCC]	26/456 (6%) word dur: 327	24/456 (5%) word dur: 356	none	none

Table 2. Real and nonword items used in the perception study.

	Real words	**Non words**
CCVC	ʃniɣ "I'm beautiful", qðˤuθ "cut it", ndaθ "threw", ʕðuɣ "I passed", sfaħ "make happy"	ʃmif, qzuʃ, ngaf, ħzuɣ, sfan
CCəC	ʃməθ "let down", xzən "store", skəf "suck up", ħsəb "count", bkəm "shut up"	ʃnəħ, xbəm, zqəs, ħfəg, fqən

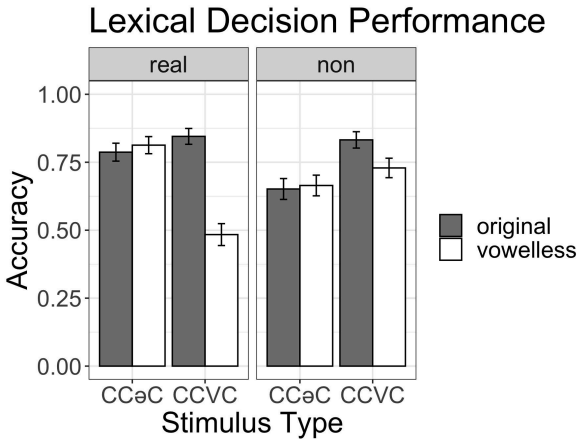


Figure 1. Perception Study Results. Lexical decision accuracy performance for /CCəC/ and /CCVC/ words in their original form compared to when they are modified to contain no vowels. Results for real Tarifit words provided in the left panel, and for nonce words on the right panel.

References

Mourigh, K., & Kossmann, M. G. (2019). *An Introduction to Tarifiyt Berber (Nador, Morocco)*. Münster: Ugarit-Verlag.

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French Preposition-Determiner Contraction at the Phonology-Syntax Interface

Amazigh BEDAR
Aix-Marseille Univ, CNRS, LPL, Aix-en-Provence, France

This study proposes a new analysis of contracted determiners (articles) in French, challenging traditional morphological and syntactic approaches. It argues that this phenomenon is best accounted for by phonological processes *directly* linked to the syntactic structure.

Contractions in French involve the fusion of the prepositions ***à*** 'to' and ***de*** 'of' with the masculine singular determiner ***le*** and the plural determiner ***les***. Example (1) illustrates a case where the preposition ***à*** 'to' contracts with the masculine singular determiner ***le***, resulting in ***au*** [**o**] (1a), but does not contract with the feminine singular determiner ***la*** (1b).

(1) a. Le garçon va *(***à le**) > ***au*** stade
DET.M.SG boy go.PRST to DET.M.SG stadium
'The boy goes to the stadium.'

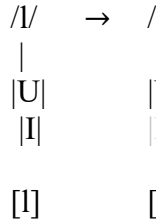
b. Le garçon va ***à*** ***la*** maison
DET.M.SG boy go.PRST to DET.F.SG home
'The boy goes (to the) home.'

If the sequence ***à le*** is realized as ***au*** [**o**] in example (1.a), there are other contexts where this sequence does not undergo contraction, as illustrated in (2).

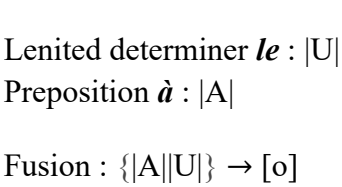
(2) Il faut penser ***à*** ***le*** faire
IMPER.3.M.SG need.3SG think.INF to DO.3.M.SG do.INF
'It is necessary to think to do it.'

The lack of contraction in sentence (2) has been used as an argument to suggest that the phenomenon is not governed by phonological rules, because the phonological environment is the same as in example (1a) (Cabredo-Hofherr 2008, a.o.). However, with an approach that considers that phonology, including its primes and processes, is *directly* linked to syntax, the phenomenon is well accounted for. I propose an analysis that combines both the syntactic Minimalist Program (Chomsky 1993, 1995, a.o.) with Government phonology (*Strict CV* (Lowenstamm 1996; Scheer 2004; a.o.) and *Element Theory* (Kaye et al. 1985, 1990; Harris 1990, 1994; Backley 2011)). I argue that the contraction results from two phenomena: (i) the vocalization of [l] to [u] resulting from lenition, as illustrated in (3); (ii) the fusion of the prime |U| with the preposition ***à*** 'to', yielding ***au*** [o], as illustrated in (4).

(3) *Vocalization of **l**: lenition through the loss of the prime* |I|



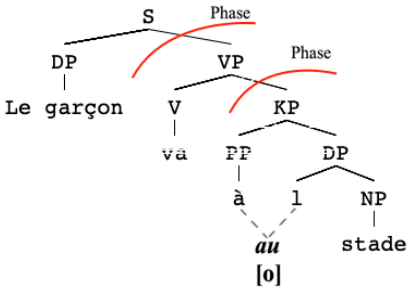
(4) *Element representation of the determiner and the preposition, and their fusion*



The masculine definite determiner ***le*** undergoes lenition because it is in a lenis position, and the following schwa (transcribed as ***e***) is not a phonological vowel, but an epenthetic segment, as evidenced by its phonetic optionality and elision in certain contexts. The fact that contraction also occurs with the plural determiner ***les***, but not with the feminine determiner ***la*** (1b), will be analyzed in terms of phonological *licensing* within the CVCV framework (Lowenstamm 1996).

Contraction occurred in the sentence (1a) because the preposition ***à*** and the determiner ***le*** belong to the same phonological domain and they are externalized in the same syntactic phase, as illustrated in (5).

(5)



However, contraction does not occur in sentence (2) because the pronoun ***le*** does not belong to the same phonological domain as the preposition ***à***, and they are not externalized in the same phase. The pronoun is subject to movement from the object position. This phenomenon, illustrated by the examples in (6), is also known as *pronominalization*: the subject *le travail* 'the work' in (6a) is not realized in situ during pronominalization in (6b), unlike in English, but instead moves to the preverbal position (6c). This is why the sequence ***à le*** does not undergo contraction in this context, which implies that phonology has *direct* access to syntactic structure.

(6) a. Il faut penser *à* faire **le** **travail**
IMPER.3.M.SG need.3SG think.INF to do.INF DET. .M.SG work
'It is necessary to think to do the work.'

b. Il faut penser à faire ***le**
'It is necessary to think to do it.'

c. Il faut penser **à *le*** faire ~~le~~
'It is necessary to think to do it.'

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Affricates: between single and complex segments

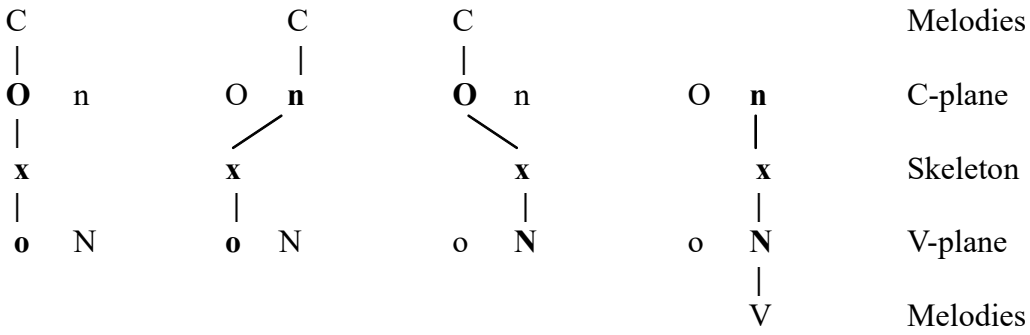
Joaquim Brandão de Carvalho (Université Paris 8, CNRS UMR 7023 SFL)

1 Comprising two subspecies, “fricative” (henceforth T͡S) and “trilled” (T͡R), affricates show a paradox similar to that of long segments before the advent of autosegmental phonology: are they one or two units? On the one hand, they are arguably complex segments since T͡S implies the existence of plosives (T) and fricatives (S), and T͡R implies that of T and sonorants (R), but not the other way around. The greater complexity of affricates is confirmed by the fact that most languages with T͡S and branching onsets do not allow T͡SR, exceptions as in German *Pflicht* 'duty' being very rare. This brings them closer to complex onsets like Greek /ps, ts, ks/ (TS) or *muta cum liquida* clusters (TR). On the other hand, an affricate may lack its fricative counterpart: (non-*porteño*) Spanish has /t͡ʃ/ but not /ʃ/, while having fricative counterparts to /p t k/. Some languages, *e. g.* Polish, have both T͡S (*czy* 'if, whether') and TS (*trzy* 'three'). Also, many languages that forbid consonant clusters in onsets may have affricates. This leads us to consider them as singletons.

This paradox has not been satisfactorily dealt with within formal phonology, where T͡S has generally been analyzed as resulting from *two* components T and S linked to *one* timing slot (see *e.g.* Goldsmith 1990: 68-73) vs. two slots for complex onsets. As linearity is assumed to follow from skeletal positions, nothing, then, except a writing artifice, tells us that T precedes S (or R). Consequently, only substance-oriented explanations seem to provide a solution, by showing, for example, the articulatory complexity of contour segments in a branching onset.

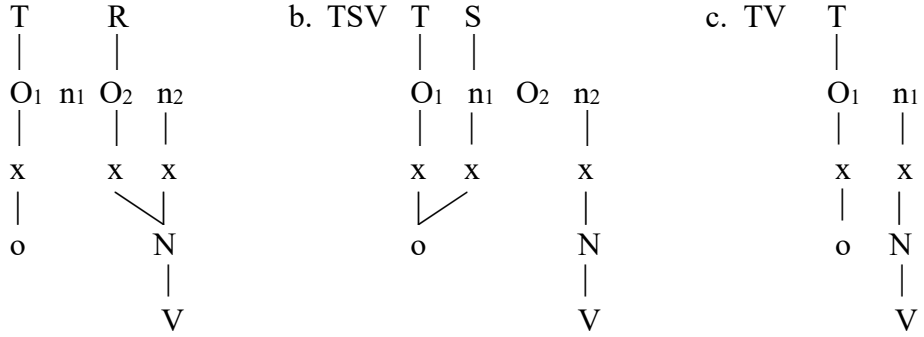
2 Yet the Alignment Theory of Sonority (AT; Carvalho 2017, 2023) succeeds in offering a straightforward formal account of affricates. In AT the features defining T, S, R and V emerge from synchronisation between onsets and nuclei on the consonantal plane (C-plane) and those on the vowel plane (V-plane), as shown in (1) where the alignments relevant to the sonority categories are in bold (and C generally refers to place features).

(1) a. /T/ b. /S/ c. /R/ d. /V/



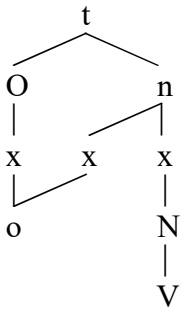
A second feature of the model is that the C- and V-planes can differ in length by virtue of phonotactic constraints. This is, for example, the case with the *asymmetrical* structure of TR and TS branching onsets in (2a,b), in contrast to (2c) where the two planes are of equal length.

(2) a. TRV b. TSV c. TV

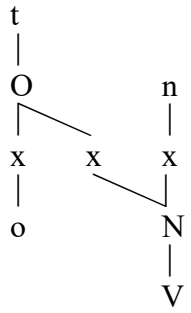


3 As was seen in (1), o-n alignments represent *fricatives* in AT, while O-N alignments underlie *sonorants*; both contrast with occlusion (O-o). Let us assume that these alignments also occur in affricates as shown in (3), where t = coronal. The affricate in (3a) has fricative off-glides (most of which are sibilant), and the one in (3b) shows sonorant (lateral or "trilled") off-glides.

(3) a. t͡sV



b. t͡rV



Our paradox is thus explained: affricates appear as complex segments as they involve two slots like (2a,b) *contra* (2c); however, they may be regarded as simple as they remain symmetrical structures with only one On sequence like (2c) as opposed to (2a,b).

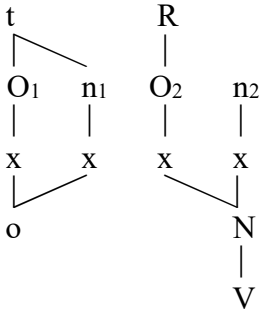
Let us now assume the markedness constraints in (4), which govern representations in AT.

(4) a. MINIMALITY: Representations must show the lowest number of ON-components for a given number of x-slots, and conversely.

b. BIUNIVOCITY: There must be one-to-one correspondence between the components of the C-plane and those of the V-plane so that each element of each set is associated once to one and only one element of the other set.

This accounts for the implicational generalizations provided by typology mentioned in §1: (i) affricates are marked with respect to plosives (1a) and fricatives (1b) which better satisfy both constraints; (ii) affricates and TR clusters better satisfy (4a) and (4b) respectively, hence each type can exist without the other according to the constraint ranking; (iii) T͡SR clusters are highly marked, as they entail one additional On *and* 3 x-slots, as shown in (5).

(5) t͡sRV



4 As in the case of length in the 1970s, the paradox of affricates thus finds its solution within an autosegmental framework. Interestingly, just as the [±long] feature had to be reformulated in terms of structure – one melody associated with two positions –, so it is necessary, in order to resolve this second paradox, to reformulate the manner features in terms of structure, as proposed by the alignments under (1).

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Pharyngealization in words without vowels: Insights from Tashlhiyt

Philipp Buech, Anne Hermes, Rachid Ridouane
LPP, Université Sorbonne Nouvelle, CNRS (Paris, France)

This study investigates the contrast of pharyngealization in Tashlhiyt, focusing on words without vowels (e.g., /trzm/ 'she is disabled' vs. /trzˤm/ 'she opens'). Pharyngealization is typically associated with changes in the formant structure of adjacent vowels, most notably a rise in F1 and a lowering of F2 (e.g., Al-Tamimi, 2017; Buech et al., 2022). However, in the absence of underlying vowels, the question arises as to how his phonological contrast is acoustically and articulatorily implemented. The study also explores the role of intrusive schwas, which sometimes appear acoustically within these vowelless words, and considers what their presence tells about their status within the phonological system of Tashlhiyt.

Method. Six male native speakers (32–50 years; mean (sd) = 44 (7)) were recruited. Each speaker produced a list of words, repeated three times (see Table 1). The articulatory and acoustic signals were recorded simultaneously using the electromagnetic articulograph (EMA AG501). Sensor coils were placed on the upper and lower lips (UL, LL), the tongue tip (TT), the middle of the tongue (TM), and the tongue body (TB). Two main analyses were applied: a dynamic analysis of the articulatory data and a parametric analysis of the acoustic data. For the dynamic analysis, we analyzed the trajectories of the vertical and the horizontal positions of the LL, TT, TM and TB. For the acoustic analysis, we measured temporal (e.g., closure and release duration for stops, duration for non-stops) as well as spectral moments of the release and fricative spectra for each consonantal segment. For intrusive schwas, we extracted F1, F2 and F3 at the schwas' midpoint. Hierarchical Bayesian regression analyses were performed on the kinematic and the acoustic data using PyMC (Abril-Pla et al., 2023) and Bambi (Capretto et al., 2022).

Results. At the articulatory level, the findings showed that the primary distinction between words with pharyngealized and non-pharyngealized coronals was most evident in the vertical dimension (high-low). Specifically, the TB showed important lowering in pharyngealized forms compared to their plain counterparts (Figure 1). These results align with previous findings on words containing full vowels in Tashlhiyt (Buech et al., 2025), and various Arabic dialects (Embarki et al. 2011, Zeroual et al., 2011). At the acoustic level, despite the articulatory effects of pharyngealization, the results showed no evidence that pharyngealization affected the spectral or temporal properties of the consonants. However, when intrusive schwas were present, they consistently exhibited a lowering of their F2 (β=-1.57 [-1.91, -1.23]) and a tendency of a raised F1 (β=0.84 [0.07, 1.59]) in the context of pharyngealized consonants (Figure 2). There was no evidence that the type of articulation had an influence on the occurrences of schwa (β=0.03 [-0.97, 0.99]).

Discussion. These findings raise several theoretical questions that merit further discussion. One important question relates to the nature of the intrusive schwas. Are these vocoids merely by-products of the basic articulatory maneuvers required for producing consonant sequences—automatic and not intentionally planned by the speaker? Or do they serve as active strategies to enhance the contrast of pharyngealization in words lacking full vowels? To account for our findings, we propose a hybrid explanation. On the one hand, the presence of intrusive schwas is a biomechanical consequence of the underlying articulatory strategies involved in producing consonant sequences. On the other hand, in some specific cases, these schwas may be intentionally reinforced to enhance the perceptual distinction of pharyngealization. For instance, in a form like [ndˤm] 'compose a song', the consonantal acoustic cues alone may not sufficiently signal the pharyngealization of [dˤ]. However, the presence of an intrusive schwa, along with the formant modifications it introduces, allows pharyngealization to be perceptible,

thereby reducing the risk of confusion with a plain [ndm] ‘regret’. This dual perspective implies that once the gestural origin of these schwas is established, speakers can deliberately enhance their effects to preserve lexical contrast (Keyser & Stevens 2006, Hoole & Honda 2011).

Table 1. Underlying representation of words used in the experiment along with their meanings.

plain	**meaning**	**pharyngealized**	**meaning**
frʃ	‘mislead’	frˤʃ	‘furnish’
ndm	‘regret’	ndˤm	‘compose a song’
nkr	‘stand up’	nkrˤ	‘deny’
tfss	‘she is quiet’	tfssˤ	non-word
trzm	‘she is disabled’	trzˤm	‘she opens’
tfsst	‘you were quiet’	tfssˤt	non-word

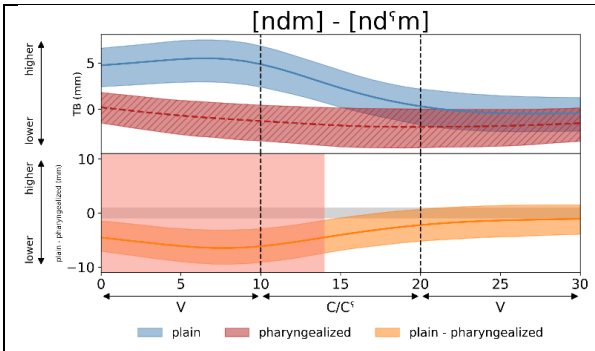

Figure 1. Vertical TB trajectory estimates of plain (blue) vs. pharyngealized (red) productions (top) and the difference between the plain and pharyngealized trajectories (bottom) for the pair /ndm/-/ndˤm/. The pink area indicates statistical evidence for a difference.

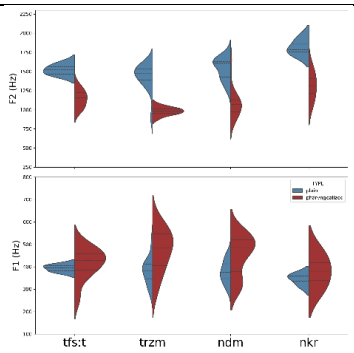

Figure 2. Effect of pharyngealization on F1 (bottom) and F2 (top) of the intrusive schwa [ə]. Averaged across six speakers.

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Identification des consonnes non relâchées et du type de mot simple *vs* composé en vietnamien et en thaï

Paula Alejandra Cano Córdoba[1], Thi-Thuy-Hien Tran[1], Nathalie Vallée[1], Coriandre Vilain[1], Silvain Gerber[1], Nicha Yamlamai[2]

(1) Univ. Grenoble Alpes, CNRS, Grenoble INP, GIPSA-lab ; (2) Faculté de Lettres, Univ. Silpakorn, Bangkok, Thaïlande

nom.prenom@gipsa-lab.grenoble-inp.fr[1] ; yamlamai_n@su.ac.th[2]

Mots clés : perception, plosive, coda, syllabe CVC

Présentes dans toutes les langues du monde, les plosives (Maddieson, 1984) résultent d'une occlusion totale en un point du conduit oral dont le relâchement provoque un événement acoustique bref perceptivement saillant appelé *burst* (Stevens, 2000). Celui-ci contient des indices acoustiques permettant d'identifier la plosive (Ladefoged & Maddieson, 1996). Dans certaines langues en position coda de syllabe même non branchante, les plosives sont régulièrement produites sans que cet indice acoustique soit présent (Iwata et al., 1990). La finale de syllabe sujette à l'affaiblissement articulatoire (lénition) est , dans ces langues, un lieu de neutralisation phonologique (Kingston, 2008).

Thaï (TA) et vietnamien (VN) sont deux langues morphologiquement monosyllabiques bien qu'elles comptent aujourd'hui, via les processus de compositionnalité sémantique, une proportion d'unités lexicales polysyllabiques loin d'être négligeable : les composés dissyllabiques constituent 35 % et 49 % du lexique en TA et en VN respectivement alors que les monosyllabes représentent 41 % des lemmes en TA et 50 % en VN (Rousset, 2004 ; Tran & Vallée, 2009). Les mots de trois syllabes ou plus sont plus rares et ce davantage en VN (1 %) qu'en TA (25 %). Bien que les deux langues possèdent des plosives labiales, coronales et vélaires et trois modalités du trait laryngal (voisé, non voisé, aspiré), leurs inventaires diffèrent : 8 des plosives du TA /p, p^h, b, t, t^h, d, k, k^h/ (Tingsabadh & Abramson, 1993) et 5 du VN /b, t, t^h, d, k/ (Kirby, 2011) peuvent se trouver en position initiale de syllabe. Par contre, en coda, les deux langues partagent un inventaire de plosives réduit et similaire, laissant place à trois allophones non voisés et non relâchés [p̚, t̚, k̚].

Plusieurs études ont évalué les performances perceptives de locuteurs natifs et/ou non natifs pour ces plosives non relâchées afin d'identifier leurs indices psychoacoustiques (Iwata, 1990 ; Tran, 2010 ; Tsukada, 2004). Sur le plan acoustique, Tran *et al*. (2019) pour VN et Cano Córdoba *et al*. (2023) pour TA ont mis en évidence des différences spectrales dès la seconde moitié de la voyelle selon le lieu d'articulation consonantique dont la contribution au niveau perceptif devrait être suffisante pour permettre une identification correcte du lieu d'articulation. Une étude inter-langue (Tsukada, 2004) a révélé que les locuteurs natifs du thaï identifient mieux ces plosives en thaï et en coréen que les anglophones natifs. Par ailleurs, Tran *et al*. (2019) et Cano Córdoba *et al*. (2023) ont montré un effet significatif du type de mot sur la production de la rime en VN et en TA, respectivement, selon que la coda appartient à un mot monosyllabique ou à la première syllabe (S1) d'un composé dissyllabique.

Cette étude perceptive vise à examiner et comparer : (1) les performances d'auditeurs TA et VN natifs dans l'identification des 3 plosives non relâchées [p̚, t̚, k̚] (TEST 1) ; et (2) leur capacité à discriminer les types de mot à partir de stimuli de type CVC (TEST 2). Nous examinerons également un effet du ton sur la perception des plosives finales et du type de mot en VN.

Méthodologie : Les stimuli sont de type CVC̚ avec v = /a/ et C̚ = [p̚, t̚, k̚], affecté du ton haut T4 /a^{45}/ pour le thaï et D1 /a^{35}/ pour le VN. Le ton bas D2 /a^{31}/ a été ajouté pour les stimuli vietnamiens. L'attaque des stimuli correspond à /k^h, l, m, n, p^h, s, w/ pour TA et à /ʔ, b, f, h, k, l, n/ pour VN. Deux tests, d'une durée de 10 min chacun, ont été conçus et présentés pour chaque langue via E-Prime 2.0 (*Psychology Software Tools, Pittsburgh, PA*). Les stimuli ont été joués dans un ordre aléatoire différent pour chaque participant via un casque binaural AKG K72. Pour le TEST 1, neuf monosyllabes produits par 3 locuteurs natifs ont été sélectionnés. Au total, 108 stimuli ont été diffusés (9 mots * 2 exemplaires * 3 locuteurs * 2 répétitions). Les participants devaient identifier la consonne finale parmi P, T ou K en appuyant sur 1 pour P, 2 pour T ou 3 pour K sur un pavé numérique. Pour le TEST 2, neuf monosyllabes et neuf S1 de dissyllabes ont été utilisés pour chaque langue. Au total, 108 stimuli ont été joués ([9 monosyllabes + 9 S1] * 2 exemplaires * 3 locuteurs). Les participants devaient identifier si la syllabe entendue était un mot simple ou la S1 d'un composé, en appuyant sur la touche 1 ou 2 sur le pavé numérique. Trois locuteurs par langue ont été enregistrés pour assurer une variabilité acoustique des productions. Au total, 62 locuteurs natifs de chaque langue ont participé à l'expérience. L'ordre des tests a été contrebalancé entre les participants.

Analyses statistiques : Une régression logistique avec effets aléatoires a été utilisée afin de tester l'impact des variables explicatives C_{finale} (P, T ou K), TYPE DE MOT (SIMPLE ou COMPOSE) et TON (HAUT ou BAS) et leurs interactions sur le score de réponse des participants (variable réponse). Ce modèle permet de tenir compte que la variable réponse est binaire, et de la répétition des effets aléatoires *Participant, Stimulus* et *Locuteur*.

Résultats et discussion : Les résultats montrent que les auditeurs VN et TA identifient les plosives non relâchées avec des scores supérieurs à 71 %. Le score le plus bas concerne /p/ dans les deux langues, confirmant Tran & Vallée (2010). En VN (Fig. 1), /p/ est significativement moins bien perçu que /t/ et /k/ sous le ton haut D1 ($p < 0.001$), tandis qu'aucun effet de la consonne n'est observé sous le ton bas D2. En TA (Fig. 3), les scores sont meilleurs pour /t/ (96 %) que pour /p/ (75 %) et /k/ (80 %) ($p < 0.001$), sans différence significative entre /p/ et /k/. Ces résultats concordent

avec Abramson & Tingsabadh (1999) et Tran & Vallée (2010) où /p/ est la moins perçue des plosives en TA et en VN. Cette différence de performance pourrait s'expliquer par la fréquence lexicale des plosives dans les langues étudiées : /p/ est la moins fréquente en finale (VN : 214 occurrences ; TA : 218), tandis que /t/ a l'occurrence la plus forte (VN : 510 ; TA : 493) (*Grenoble & UCLA Lexical and Syllabic Inventory Database - G-ULSID*, Vallée & Faure-Vincent, consulté en février 2025). Pour le TEST 2, les participants des deux langues identifient mieux les monosyllabes (CV**C**#) que la S1 d'un composé CV**C**σ.CVC (Fig. 2 et 4). Les différences de scores sont significatives pour les trois consonnes en coda ($p < 0.001$), sauf pour /p/ en VN sous les tons D1 ($p = 0.522$) et D2 ($p = 0.275$). Ces résultats confirment Tran & Vallée (2010) : les plosives non relâchées sont mieux identifiées en fin de mot qu'en fin de S1 d'un composé. Un effet de la consonne dans l'identification du type de mot est observé uniquement en VN : sous le ton haut D1, les monosyllabes sont mieux identifiés lorsque que la coda est /t/ (71 %) plutôt que /p/ (55 %) et /k/ (63 %) ; sous le ton bas D2, lorsque la coda est /p/ (54 %) le type de mot est moins bien identifié par rapport à /t/ (73 %) et /k/ (70 %) (Fig. 2 en rouge). Pour la S1 d'un composé, un effet de la consonne apparaît uniquement entre /p/ et /t/ (Fig. 2 en vert). Contrairement aux tendances précédentes, la coronale est la moins bien perçue (D1 : /p/ 50 % > /t/ 39 % ; D2 : /p/ 51 % > /t/ 33 %, $p < 0.001$). Bien qu'un effet du ton ne soit pas trouvé statistiquement significatif en VN, des tendances émergent. Par exemple, une différence significative entre /k/ *vs* /p/ est observée pour les monosyllabes sous le ton bas, mais pas sous le ton haut. Un prolongement de l'étude avec d'autres contextes vocaliques (ex. /i/ et /u/) et l'intégration du ton bas en TA permettraient d'affiner la compréhension des facteurs influençant la catégorisation des plosives finales non relâchées.

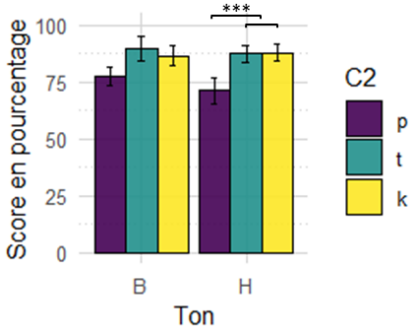

Figure 1 : Réponses des participants VN avec intervalle de confiance pour le TEST 1 en fonction de la plosive en coda (C2) et du ton.

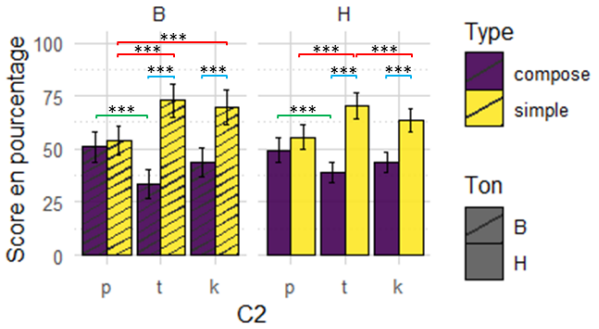

Figure 2 : Réponses des participants VN avec intervalles de confiance pour le TEST 2 en fonction du type de mot, de la consonne en coda et du ton. Effets : type de mot en bleu ; C2 de mot simple en rouge ; C2 de S1 de composé en vert.

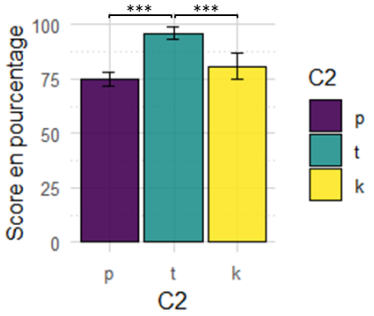

Figure 3 : Réponses des participants TH avec intervalles de confiance pour le TEST 1 en fonction de la plosive en coda (C2).

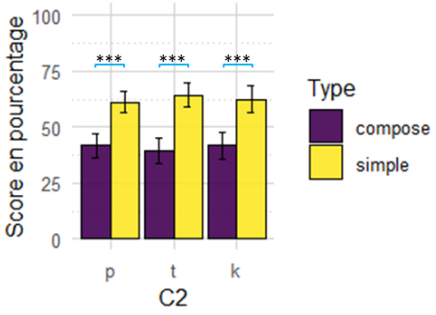

Figure 4 : Score de réponse des participants TH avec intervalles de confiance pour le TEST 2 en fonction du type de mot et de la C2. Effet du type de mot en bleu

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The morphophonology of Russian declensions

Edoardo Cavirani - KU Leuven & - CNRS

The declension class is defined as a property of a noun or an adjective determining the choice of its case endings and, unlike gender, lacking any syntactic effects. In line with recent studies deriving declension classes from the underlying representations of nominal stems, we propose to derive Russian declension class from the gender and final consonant of the stem in a system that adopts strict CV and Element Theory. While traditional Russian grammars distinguish three declension classes, Corbett (1982) argues for four (henceforth encoded, after their nominative singular, as *a*-declension, *o*-declension, C-declension and the *ǐ*-declension, where *ǐ* is the front yer). For inanimate nouns the declension class predicts gender, as in (1), with a few exceptions.

(1) a. Inanimate nouns of the C-declension are masculine
b. Inanimate nouns of the *a*- and *ǐ*-declensions are feminine
c. Inanimate nouns of the *o* declension are neuter

If the declension class is merely a diacritic on the nominal stem, syncretism patterns between declension classes (Tab.1) can only be non-accidental if treated as Elsewhere cases. One recent alternative (Alexiadu & Müller 2008 a.o.) is to treat the declension class as a combination of two binary features, as in Tab.2, with Privizentseva (2023) identifying [±α] as [±F] (see Caha 2021 for an alternative approach).

Table 1: Nominal declension classes (after Corbett 1982)

	-o	-C	*-ǐ*	*-a*
NOM	božestv-ó	stól	bol^{j}	čert-á
ACC	GEN/[+ANIM], NOM/[-ANIM]		NOM	čert-ú
GEN	božestv-á	stol-á	bol^{j}-í	čert-ɨ́
DAT	božestv-ú	stol-ú	bol^{j}-í	čert-é
LOC	božestv-é	stol-é	bol^{j}-í	čert-é
INS	božestv-óm	stol-óm	bol^{j}-ju	čert-ój(u)

Two problems remain. Firstly, there is no independent motivation for [±β]. Secondly, indeclinable nouns, forming a large and open class in Russian, are neither expected nor explicable, requiring another diacritic feature, a standard treatment of this class.

Table 2: Featural decomposition of declension classes

	$-\alpha$	$+\alpha$
$-\beta$	C-declension: *stol* 'table.M'	*ǐ*-declension: *l^{j}ubóv^{j}* 'love.F'
$-\beta$	*o*-declension: *božestvó* 'deity.N'	*a*-declension: *čertá* 'line.F'

Stem-final segments define classes: we propose that nominal declension is determined by the final segment of the stem, which can be either a consonant for the C-declension, the floating vowels *a*, *ǐ*, and *o* for the *a*-, *ǐ*-, and *o*-declensions, respectively, and any non-floating vowel for indeclinables. We further argue that these floating vowels might realize SG, and that *ǐ* is a segment consisting of an empty root node and a floating palatalizer (Cavirani & Vanden Wyngaerd *accepted*). Adopting strict CV, the floating vowels surface iff associated to an empty C/V slot.

Indeclinables: If stems end in a non-floating stem-final vowel, namely in a non-empty V slot, the floating vocalic elements of the declensional suffixes have no available V slot to associate to, thus they do not surface (Fig.(1)a). In this perspective, the difference between declinable and indeclinable nouns becomes non-diacritic. The fact that there are no inanimate consonant-final indeclinable nouns is also accounted for, as the empty V slot which in strict CV obligatorily follows the last C is available for the floating vowels of the declensional suffixes to associate to (Fig.(1)b).

Table 3: [+F] declension classes

CASE	UR	*-ǐ*	UR→SR	*-a*	UR→SR
NOM	∅	bol^{j}	-ǐ+a+∅ →-ǐ	čert-á	-C+a+∅ →-a
ACC	-u	bol^{j}	-ǐ+a+u→-ǐ	čert-ú	-C+a+u→-u
GEN	-ɨ́	bol^{j}-í	-ǐ+a+CV$_{ɨ́}$→-ǐ	čert-ɨ́	-C+a+CV$_{ɨ́}$→-ǐ
DAT	-i	bol^{j}-í	-ǐ+a+CV$_{I}$→-i	čert-é	-C+a+CV$_{I}$→-e
LOC	-i	bol^{j}-í	-ǐ+a+CV$_{I}$→-i	čert-é	-C+a+CV$_{I}$→-e
INS	ŭju	bol^{j}-ju	-ǐ+a+ŭC$_{j}$V$_{u}$→-ju	čert-ój	-C+a+ŭC$_{j}$V$_{u}$→-ju

Unification of [+F] nouns: The hypothesis that [+F] nominal stems can end in -C and -*ǐ* permits dispensing with allomorphy for the case endings of the *a*- and *ǐ*-declension classes and deriving the appropriate surface representations from phonological principles, achieving a diacritic-free system (Tab.3). The details of some of the derivations in Tab.3 are given in Fig.2, 3, 4. In Fig.2, the exponent of [+F] – a floating /a/ – cannot associate to the final V slot of $\sqrt{\text{BOLǏ}}$ because the latter is not empty, but it can associate to the empty final V slot of $\sqrt{\text{ČERT}}$. In Fig.3, the exponents of [+F] and [ACC] – a floating /u/ – cannot associate to the final non-empty V slot of $\sqrt{\text{BOLǏ}}$ and remain afloat. Assuming that a sequence of two floaters is simplified by deleting the leftmost one (cf. Jakobson's vowel-before-vowel deletion), when concatenated to $\sqrt{\text{ČERT}}$, /a/ gets deleted and /u/ associates to the final empty V slot. In Fig.4, the floating exponent of [+F] cannot associate to the non-empty final V slot of $\sqrt{\text{BOLǏ}}$, while the non-floating exponent of [GEN], by virtue of having its CV slots, surfaces as such (/ɨ/→[i] after palatal consonants) both in $\sqrt{\text{BOLǏ}}$ and in $\sqrt{\text{ČERT}}$. In these forms, the final *-i* properly governs the (grayed-out) stem-final *ɨ*), preventing the surfacing of /a/ in Fig.4b. We argue that the exponent of DAT/LOC is a CV whose V slot contains a root node (not represented for space restrictions) and a floating I element. The presence of the C slot is suggested by the fact that stem-final floating consonants such as n (['vrʲemʲə].NOM *vs* ['vrʲemʲinʲi].GEN) and r (['matʲ] *vs* ['matʲerʲi]) are realized, and the floating status of the I element by the fact that I can surface as such if associated with /ɨ, i/ (Fig.5a) or merge with /a/ and surface as /e/ (Fig.5b; assuming element theory, /a/=A, /i/=I, /e/=AI). The presence of a root node in the suffix-final V slot block the association of /a/ in Fig.5a (Cavirani & Vanden Wyngaerd *accepted*).

Figure 1: $\sqrt{\text{KINO}} + a.\text{GEN} \rightarrow [\text{ki'no}]$ *vs* $\sqrt{\text{STOL}} + a.\text{GEN} \rightarrow [\text{sto'la}]$

a. C V C V + → C V C V
k i n o a → k i n o a

b. C V C V C V + → C V C V C V
s t o l a → s t o l a

Figure 2: $\sqrt{\text{BOLǏ}} + a.\text{F} + \emptyset.\text{NOM} \rightarrow [\text{'bolʲ}]$ *vs* $\sqrt{\text{ČERT}} + a.\text{F} + \emptyset.\text{NOM} \rightarrow [\text{ʧer'ta}]$

a. C V C V + + ∅ → C V C V
b o lʲ ǐ a → b o lʲ ǐ a

b. C V C V C V + + ∅ → C V C V C V
č e r t a → č e r t a

Figure 3: $\sqrt{\text{BOLǏ}} + a.\text{F} + \text{u.ACC} \rightarrow [\text{'bolʲ}]$ *vs* $\sqrt{\text{ČERT}} + a.\text{F} + \text{u.ACC} \rightarrow [\text{ʧer'tu}]$

a. C V C V + + → C V C V
b o lʲ ǐ a u → b o lʲ ǐ a u

b. C V C V C V + + → C V C V C V
č e r t a u → č e r t a u

Figure 4: $\sqrt{\text{BOLǏ}} + a.\text{F} + \text{CV}_{\text{ɨ}}.\text{GEN} \rightarrow [\text{'bolʲi}]$ *vs* $\sqrt{\text{ČERT}} + a.\text{F} + \text{CV}_{\text{ɨ}}.\text{GEN} \rightarrow [\text{ʧer'ti}]$

a. C V C V + + C V → C V C V C V
b o lʲ ǐ a ɨ → b o lʲ ǐ a i

b. C V C V C V + + C V → C V C V C V C V
č e r t a ɨ → č e r t a i

Figure 5: $\sqrt{\text{BOLǏ}} + a.\text{F} + \text{CV}_{\text{I}}.\text{DAT} \rightarrow [\text{'bolʲi}]$ *vs* $\sqrt{\text{ČERT}} + a.\text{F} + \text{CV}_{\text{I}}.\text{DAT} \rightarrow [\text{ʧer'te}]$

a. C V C V + + C V → C V C V C V
b o lʲ ǐ a I → b o lʲ ǐ a I

b. C V C V C V + + C V → C V C V C V C V
č e r t a I → č e r t a I

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The laryngeal articulation continuum and phonological categories at the interface

Alex Chabot – University of Maryland, College Park

Overview: This talk investigates laryngeal configuration and the effect of laryngeal posture on frequency and perceived pitch, and how pitch is phonologized. It aims to demonstrate two things. First, that the continuum of possible laryngeal configurations mean that there are multiple pathways for pitch variation, and thus the phonological categories based on pitch are not in a one-to-one relationship with their articulatory correlates. Second, pitch is the acoustic correlate of (at least) two classes of phonological systems: tone and vowel register. As such, there are both one-to-many and many-to-one mismatches at the phonetics/phonology interface. Thus, phonological categories cannot be tied to universal, invariant phonetic correlates. This talk thus argues for a phonetics/phonology interface that is acquired and language specific (cf. Kingston & Diehl 1994), and provides support for a view of phonological categories which emerge on a language-specific basis (Boersma 1998; Dresher 2014; Odden 2022).

The larynx and consonant/vowel interactions: Pitch variation arises through modifications in the tenseness of the glottal folds, which is also one of the determining conditions of consonant voicing (House & Fairbanks 1953). As vocal fold tension increases, the rate of vibration does as well, impeding voicing and raising pitch on following vowels; contrariwise, decreases in vocal-fold tension decrease the rate of vibration, facilitating voicing and lowering pitch on following vowels (Ohala 1973, 1978). These synchronic effects are evident in cross-linguistic patterns of diachronic phonologization: in tonogenesis, high tone comes from historical initial voiceless obstruents while low tone comes from historical initial voiced obstruents (Haudricourt 1954; Hombert 1978; Thurgood 2002). In final positions, the opposite relationship holds. This robust relationship between vocal anatomy and tone is an example of phonetic correlates which have been encoded as such in phonological representations (Halle & Stevens 1971; Harris 1994; Avery & Idsardi 2001; Kula 2012)—that is, voice, tone, and laryngeal posture are all tied together in their representations in a variety of theoretical accounts.

Tone, however, is not the only phonological representation of laryngeal effects, since fundamental frequency (f_0) is also the primary correlate of the system of vowel quality effects—including breathiness and creakiness—known as register (Henderson 1952). Synchronically and diachronically, register effects hold the same relationship with obstruents as tone does: breathiness tends to be related to slackness of the glottal folds and voice, while creakiness tends to be related to stiffness and voicelessness. Indeed, in many languages vowel quality—rather than pitch—is the principal phonetic cue for tone. Such languages are sometimes known as "phonation prominent" languages; Acoma Keresan (Miller 1956) for example contrasts glottalized creaky vowels directly with tones. In many respects vowel register even behaves like an autosegment, further blurring the difference between register and tone *qua* phonological phenomena (cf. Abramson and Thongkum 2009; McCawley 1978).

Tone systems are language specific: The relationship discussed above between obstruent voicing and pitch is typologically robust since it is exactly the kind of mechanical effect which can be phonologized by speakers (Hyman 1973, 2008; Moreton 2008). Once grammaticalized, however, pitch effects shed their phonetic skin and escape from the phonetic motivation which gave rise to them, becoming autonomous phonological symbols. As such, the relationship between f_0 height and voicing is not universal. In many of the tonal Athabaskan languages, for example, tones developed from a proto-contrast between stem-final glottic and non-glottic obstruents, where glottalization (stiffness) produced a drop in f_0 and thus tone (Kingston 2005). However, some Athabaskan languages such as Tanacross and Northern Tutchone show "tone flips", exhibiting high tones that are cognate with low tones in other languages (Leer 1979, 1999). That is, after the phonologization of tones in these languages, further diachronic developments took place, severing them from their phonetic origins (cf. Anderson 1981; Barnes 2006; Hellberg 1978; Stausland Johnsen 2012; Vaux 2008). Phonetic facts explain typological patterns in that it is mechanical artifacts of speech production which are likely to be phonologized, but phonology *qua* human cognition is not sensitive to phonetic constraints (Anderson 1981; Hale & Reiss 2008; Sapir 1925).

Voice, vowel register, and tone—phonetics/phonology mismatches: Phonetics/phonology mismatches (Hamann 2014) come about when phonological behavior does not align with phonetic correlates. For

example, the apical vowels of Sinitic languages are vocalic allophones predictably realized after some consonants. They pattern like vowels and function syllabically like vowels, but have the articulatory characteristics of fricative consonants (Shao & Ridouane 2021). Green Mong (Andruski & Ratliff 2009) has a system of seven tones, along with two phonation types: breathy and creaky. Three of the tones have a similar f_0 contour—their contrastive function cannot be reduced to f_0, since f_0 is an unreliable correlate here. Instead, the contrast lays in the register difference, of which the most robust acoustic correlate is in the ration between frequency harmonics. This suggests that the tonal contrast in Green Mong emerges from the larynx, but in a language specific way. Put another way, the laryngeal postures which affect f_0 can be phonologized as tone or as vowel register effects.

In Vietnamese (Hoa Pham 2003), pitch height does not seem to be the primary phonetic correlate of tone. One of the tones in Vietnamese known as *hoi* is realized phonetically with low pitch, but patterns with the high tones phonologically in patterns such as reduplication, neutralization, and patterns of loan-word adaption (Burton 1982). One pattern of Vietnamese partial reduplication copies the initial consonant of a syllable, but not its tone. The reduplicant tone, however, must be of the same broad class, high or low, of the base. When a *hoi* base is reduplicated, it must be with another low-class tone, despite its phonetic expression as high pitch (1), as for example in the form for 'a little small' (data from Hoa Pham & Anh Pham 2020). Thus, f_0 is not correlated to tone in a universal, deterministic manner.

(1)

Tone class	Base	Tone (Pitch)	Partial reduplication	Tone reduplicant	Gloss
High	nặng [năŋ^{B2}]	*nặng* (high)	[năŋ^{A2}] [năŋ^{B2}]	*huyền* (high)	'a little heavy'
	ngọt [ŋɔt^{D2}]	*nặng* (high)	[ŋɔn^{A2}] [ŋɔt^{D2}]	*huyền* (high)	'a little sweet'
Low	trắng [ʈăŋ^{B1}]	Sắc (low)	[ʈăŋ^{A1}] [ʈăŋ^{B1}]	*ngang* (low)	'whitish'
	nhỏ [ɲɔ^{C1}]	*hỏi* (high)	[ɲɔ^{A1}] [ɲɔ^{C1}]	*ngang* (low)	'a little small'

Consequences for phonological theory: This talk presents an overview of the facts concerning the relationship between laryngeal configuration, frequency effects, and phonologized tone and register. It presents data from a typologically diverse set of languages and discusses the various ways in which those languages exploit tone and vowel register in phonological systems. The argument presented is that laryngeal configuration and pitch effects are the phonetic correlate of both tone and register systems, which are not in a one-to-one mapping relationship cross-linguistically. Indeed, laryngeal configurations and pitch effects are phonologized on a language-specific basis. Theories of tonal representation which tie voice and tone together (Bao 1990; Duanmu 1990; Wang 1967; Woo 1969), or imbue representations with phonetic substance (Avery & Idsardi 2001; Halle & Stevens 1971; Harris 1994) are not descriptively adequate, since these relationships are not invariant cross-linguistically. Furthermore, in theories which tie specific tonal categories to invariant articulatory configurations, the similar phonological behavior of tone and vowel register is an accident about which the theory has nothing to say. Finally, theories of phonology which tie specific phonological categories to universal phonetic expression (Chomsky & Halle 1968; Volenic & Reiss 2022) are likewise confronted with a serious difficulty, since the relationship between laryngeal configuration, acoustic signal, and phonological category is many-to-one and language specific.

Proposal: Any representational theory should be able to account for the contrastive role of phonological representations and patterns of morphophonological alternation. An adequate theory of tonal representations can do both without encoding the phonetic correlates of pitch in articulation or acoustics. Such a theory has the added virtue of being able to handle both tonal systems and vowel register systems and capture those aspects of their patterning which are common to both. This talk outlines the set of desiderata for a unified theory of tonal and register representations. In this view, phonological representations are determined by phonological behavior rather than phonetic substance (cf. Gussmann 2004; Kaye 2005). Tonal and register features have in common an autosegmental nature, and thus participate in the same kinds of cross-linguistic patterns of alternations. Here, representations contain no phonetic substance, being the markers of contrast and indices of natural-class behavior. They emerge from the language specific patterns which learners must acquire, rather than being universally encoded. This talk argues that such a theory achieves both descriptive and explanatory adequacy.

Towards a panorama of tonal sandhi in Northern Wu languages

Yu CHEN, Nathalie VALLEE, Thi-Thuy-Hien TRAN
Univ. Grenoble Alpes, CNRS, Grenoble INP, GIPSA-lab, 38000 Grenoble, France
first name.last name@gipsa-lab.grenoble-inp.fr

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Tonal languages often exhibit tonal sandhi, which refers to phonological changes in citation tones that occur at tonal boundaries in speech stream. This phenomenon is particularly complex in the Wu dialects of Chinese. As an example, Shanghainese is traditionally reported to have two types of tonal sandhi: a Left Dominant Sandhi (LDS) in semantic compounds such as nominal phrases (NPs) and a Right Dominant Sandhi (RDS) in prosodic phrases such as verbal phrases (VPs) (Duanmu, 1999; Qian, 1992; Takahashi, 2011; Xu et al., 1981, 1988; Yan, 2018; Zhang & Meng, 2016). Similar patterns are also found in other Northern Wu dialects (Li, 2004; Yan, 2018), raising important questions about the representation of tonal units in the functioning of these systems.

We conducted a pilot study with the aim of investigating acoustic characteristics of tonal contours in dissyllabic NPs and VPs in Shanghainese. Three young native female speakers, all born and raised in Shanghai (Minhang, Putuo and Qingpu) were involved in our preliminary study in which we specifically examined disyllabic units ($\sigma_1.\sigma_2$) presenting all possible Shanghainese tone combinations (Ti x Ti = 25 with i = 1 to 5) in both conditions (RDS and LDS). The lexical units selected were taken from words commonly used daily, such as those referring to foods and common household items, ensuring easy reading of ideograms and pronunciation. In order to avoid any possible confusion caused by phrasal cohesion ambiguity (Qian, 1992), the RDS and LDS conditions were created using two different sentences corresponding to distinct morphosyntactic structures but with the same tonal combination and identical syllabic structures, as shown in (1) below. A linear mixed-effects model was used to compare sandhi tones in both NPs and VPs with their corresponding monosyllabic tones, as well as to examine differences in sandhi tones for the same tonal combinations between NPs and VPs. Fixed effects included TONAL COMBINATIONS, STIMULUS TYPE (NP *vs* VP), and MEASUREMENT POINTS of f_0 (10 points from 10% to 100%), while random effects accounted for *Speaker* and *Repetition*. Results revealed that NPs undergo LDS-related phonological changes, with significant differences mainly observed in σ_2, and the overall disyllabic tone contour that resembles the quotation tone of σ_1. In contrast, VPs are more subject to phonetic effects of tonal coarticulation rather than to a phonological tonal sandhi process, showing very few significant differences in σ_1 on only one out of 25 combinations. Further analysis revealed that in VPs, sandhi tones occupying the same position (σ_1 or σ_2) with identical citation tones (*e.g.,* T1 in T2+T1 *vs* T5+T1) exhibit perseverative coarticulation from σ_1 to σ_2, sometimes completely altering the σ_2 contour – an issue overlooked in previous research on Shanghainese tonal sandhi (*e.g.,* in VPs, the sandhi tone of T1 in both T2+T1 and T5+T1 is traditionally described as 53, but our results show that T1 in T2+T1 remains a falling tone, whereas T1 in T5+T1 takes a rising contour with the perseverative influence of the low pitch of T5 (Fig. 1 & 3). Lastly, the limited contour differences between NPs and VPs (Fig. 1) raise doubts about whether native speakers are able to distinguish NPs from VPs via tone sandhi patterns. This pilot study opens perspectives for future intergenerational work on tonal production and tonal sandhi perception, by extending the corpus to tone combinations placed in various positions in sentences and to diverse age groups.

Although Shanghainese has been relatively well-studied, many other Wu languages remain underexplored, despite their importance in understanding tonal sandhi in the Wu dialect group (see for ex. Lan et al., 2023). Since other Wu dialects seem to retain tonal features that have disappeared in Shanghainese, a comparative study of tonal systems and tone sandhi patterns of a broader range of Wu dialects will help build a clearer description of Wu tone sandhi. The ongoing research proposal explores the variability *vs* stability of the Wu tonal system, focusing on tonal sandhi patterns. It aims to address the following key questions: What rules govern tonal sandhi in Wu? Are they homogeneous or influenced by factors such as speaker, age, gender, socioeconomic background, dialect and geographical origins? Our hypothesis is that younger speakers may exhibit different sandhi patterns due to Mandarin's influence as the dominant language of education and communication. Additionally, Wu languages may also influence each other, particularly through Shanghainese, the language of the great economical center. Fieldwork will be conducted in Changzhou, Wuxi, Suzhou, and Shanghai (Fig. 2), sampling four generations of speakers. Data collection will be included in an experimental sociophonetic approach: acoustic and electroglottographic analyses of tonal sandhi production, and auditory perception tests with native and non-native Wu speakers. To better analyze

time-series nonlinear tonal data, we also consider employing additional statistical tests, such as GAMM, to gain deeper insights into Wu tonal sandhi.

(1) Carrier sentences:

后天我 /ɦɤ22 tʰi33 ŋu23/… “The day after tomorrow I will (do something)”

荷兰卖 /ɦu22 lɛ33 ma23/…“Netherlands sells (something

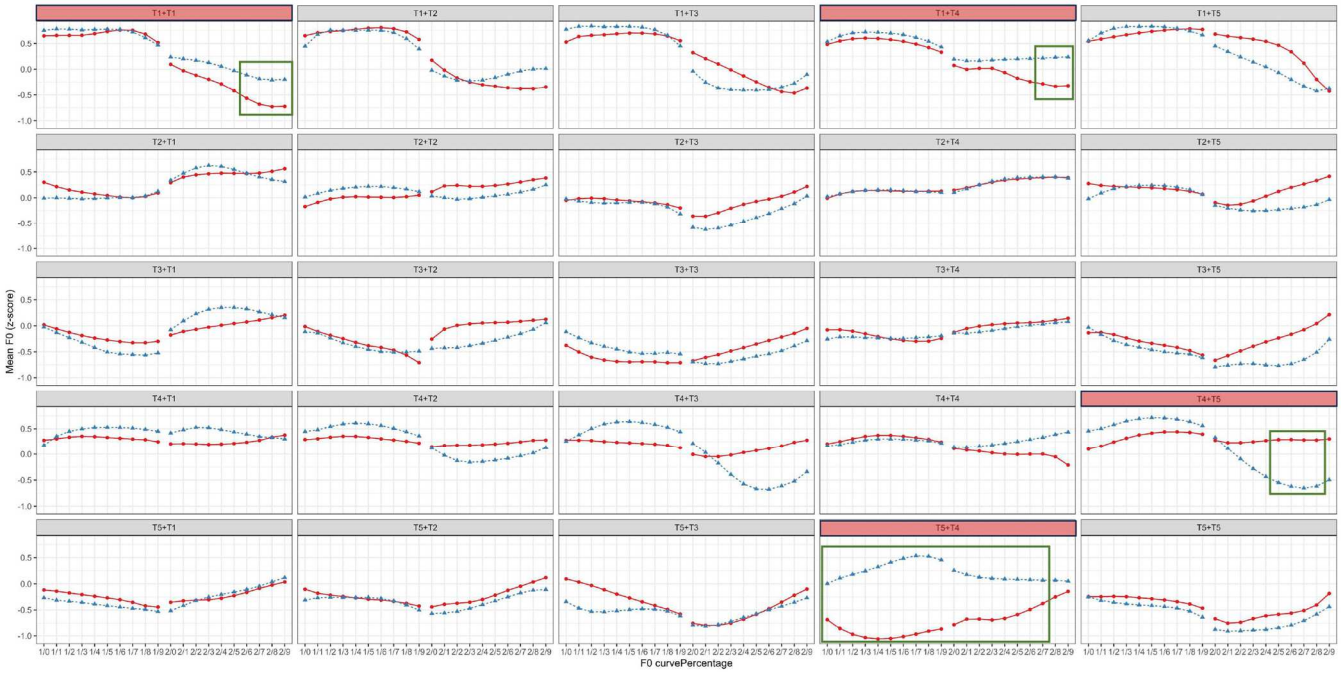

Fig. 1: *Normalized mean f_0 values and average tonal contours of NPs under LDS (red line, ●) and of VPs under RDS (blue line, ▲). Green areas indicate significant differences ($p \leqslant 0.05$).*

Fig. 2: *Map of 1: Changzhou; 2: Wuxi; 3: Suzhou; 4: Shanghai (number in black because Shanghai doesn't belong to the same administrative unit as that of other three cities). (江蘇省自然資源廳, 2024)*

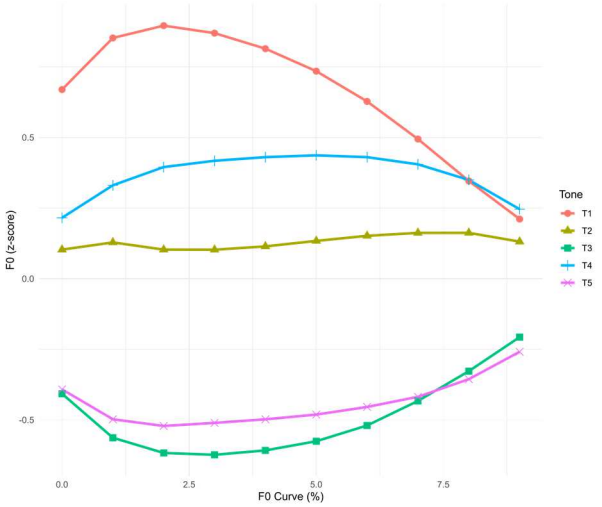

Fig. 3: *Tonal contours of Shanghainese citation tones across normalized time. T1 (53), T2 (34), T3 (23), T4 (55), and T5 (12) are illustrated.*

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Les oppositions de durée vocalique en français de Suisse romande: un cas de déphonologisation

Marie-Hélène Côté (U Lausanne) & Isabelle Racine (U Genève)

Contexte. En français de référence, les oppositions historiques de durée vocalique ont soit disparu, soit été réanalysées en oppositions de timbre. Les oppositions de durée se maintiennent cependant dans certaines variétés régionales, notamment en Suisse romande (p. ex. Andreassen *et al.*, 2010; Racine, 2024). Ces oppositions peuvent être caractérisées par le contexte (syllabe fermée ou ouverte) et la fonction (lexicale ou morphologique, selon que l'opposition distingue des lemmes différents ou des formes différentes du même lemme).

	Syllabe fermée	Syllabe ouverte
Morphologique	*général* /a/ vs *générale* /a:/	*ami* /i/ vs *amie* /i:/
Lexicale	*faites* /ɛ/ vs *fête* /ɛ:/	*bout* /u/ vs *boue* /u:/

Les oppositions de durée en Suisse sont documentées depuis longtemps (Métral, 1977; Schoch, 1980; Schwouvey, 2008), mais ces études ne s'appuient que sur des données déclarées et n'incluent qu'une partie des oppositions potentielles. Plus récemment, Grosjean *et al.* (2007), Racine & Andreassen (2012), Guignard (2019) et Côté *et al.* (2025) ont analysé des données de production. Racine & Andreassen (2012) montrent que les oppositions en syllabe fermée s'amenuisent à Neuchâtel chez les témoins plus jeunes, alors qu'elles paraissent stables en syllabe ouverte. Côté *et al.* (2025) établissent aussi que le /e:/ de *journée* est exclusif à la Suisse et absent chez les Haut-Savoyards de France voisine. Ces études se concentrent cependant sur une région ou un contexte particulier et elles restent descriptives; la dimension fonctionnelle est négligée, tout comme le statut de la durée dans le système linguistique.

Objectifs. Nous proposons ici une analyse systématique des oppositions de durée en syllabe finale ouverte en Suisse romande, en tenant compte de la fonction (lexicale ou morphologique) et de la variation régionale et générationnelle pour toutes des voyelles concernées, soit /i e ɛ a y ø u/. Dans un premier temps, nous relevons des résultats globaux sur l'ensemble du territoire. Ces résultats montrant notamment que la distinction entre voyelles brèves et longues s'amenuise chez les locuteurs les plus jeunes, nous creusons cet aspect pour un sous-ensemble des données, en nous interrogeant sur le statut de la longueur vocalique dans le système des locuteurs. Nous proposons que le système binaire et catégorique des locuteurs plus âgés, où la durée est intégrée phonémiquement, cède la place à un système où la durée est déphonologisée et devient un marqueur d'éléments morphologiques (opposition de genre) ou graphiques (la voyelle <e>).

Méthodologie. L'étude s'appuie sur des données du projet *Phonologie du Français Contemporain* (PFC; Detey *et al.*, 2016): 85 témoins provenant de 4 cantons de Suisse romande et 15 témoins de Haute-Savoie, à des fins de comparaison. Dans chaque localité les témoins sont répartis entre hommes et femmes et en trois générations. Chaque témoin a notamment lu trois listes de mots comprenant 12 paires minimales telles que *ami* /ami/ vs *amie* /ami:/, les membres d'une même paire apparaissant toujours dans des listes différentes. Ces paires impliquent toutes les voyelles pertinentes /i e ɛ a y ø u/. Tous les mots et les voyelles cibles (N=2 386) ont été segmentés manuellement dans *Praat* (Boersma & Weenink, 2024). Le point d'enquête de la commune vaudoise de Chavornay (12 témoins jeunes nés entre 1995 et 2005 et 9 plus âgés nés entre 1936 et 1972) fait l'objet d'une analyse plus approfondie, avec notamment la lecture de formes additionnelles comme *un génie* et *une génie*, où le découplage de la graphie et du genre grammatical permet de préciser le rôle respectif de ces deux facteurs.

Résultats globaux. Les données confirment que les distinctions de durée vocalique en fin de mot sont généralisées à toutes les régions enquêtées en Suisse romande: la durée moyenne des

voyelles longues et brèves est respectivement de 309 ms et 164 ms, une différence hautement significative. Ces distinctions sont aussi exclusives à la Suisse puisqu'elles sont absentes en Haute-Savoie, où l'ensemble des voyelles ont la même durée moyenne et la même dispersion que les voyelles brèves de Suisse romande. Les oppositions de durée en Suisse romande sont cependant dépendantes de la voyelle et de la génération. D'une part, l'opposition de durée n'est pas partagée par tous les témoins pour les voyelles de grande aperture /ɛ/ et /a/, ainsi que pour /ø/. D'autre part, l'écart entre les voyelles longues et brèves s'amenuise chez les témoins plus jeunes (contra Racine & Andreassen 2012). Le statut morphologique ou lexical des oppositions n'est cependant pas un facteur significatif.

Résultats pour l'enquête de Chavornay. Chez les locuteurs plus âgés, les oppositions impliquant /i y u e/ sont réalisées de façon saillante et catégorique, indépendamment de leur statut grammatical ou lexical. Tous et toutes réalisent *génie* avec /i:/, sans distinction au masculin et au féminin. Ces témoins ne varient que sur les oppositions impliquant /ø/ et /ɛ/, que la plupart ne réalisent pas, ainsi que /a/. Chez les plus jeunes, cependant, on note une augmentation de la variabilité inter- et intra-individuelle, qui manifeste deux tendances:

- Réduction générale de la durée des voyelles longues et de la systématicité des oppositions.
- Réanalyse de la durée sur la base de facteurs non-phonologiques:
    - Restriction des oppositions aux seuls contextes où la longueur marque l'opposition masculin-féminin; la longueur est ainsi conservée dans *amie* [ami:] mais pas *skie* [ski] et les jeunes innovent avec l'opposition *génie*$_{\text{MASC}}$ [ʒeni] vs *génie*$_{\text{FÉM}}$ [ʒeni:].
    - Extension des oppositions de durée aux voyelles /ø/ et /ɛ/ qui, à l'encontre de la tendance générale, présentent une opposition plus marquée chez les jeunes que les plus âgés. Cette extension correspond vraisemblablement à une généralisation de la durée comme marqueur de la graphie <e>. Cette hypothèse est soutenue par la forte augmentation chez les jeunes de la réalisation des voyelles longues avec diphtongaison centralisante (ex. *bleue* [blø:ᵊ]), où le schwa est une manifestation directe de la graphie.

Conclusion. On observe un début de décomposition des oppositions vocaliques à Chavornay, par deux mécanismes distincts: réduction des voyelles longues et réanalyse de la durée comme marqueur non-phonologique, ce qui mène à leur déphonologisation.

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Glide-induced quality change of vowels in Terek Kumyk

Elizaveta P. Dorofeeva, Anna V. Alhazova
(Lomonosov Moscow State University; Moscow, Russia)

1. Background. Terek Kumyk (< Kipchak < Turkic < Altaic) is a dialect of Kumyk language[1]. Its vowel inventory consists of 8 phonemes realised as shown in Tab. 1. It is worth mentioning that Terek Kumyk allows no hiatus.

Like many Turkic languages, Terek Kumyk has vowel harmony: [+ high]-affixes receive their [α front] and [α round] values from the rightmost root vowel (1), while [- high]-affixes (which always contain unrounded vowels) only receive [α front] value (2). Roundedness cannot be obtained by a [+ high]-affix if it is preceded by a [- high]-affix (the same pattern is observed and analysed for Turkish in [Charette and Göksel 1998]).

	[+front]		[-front]	
	[-round]	[+round]	[-round]	[+round]
[+high]	/i/ [i]	/ü/ [y]	/ɨ/ [ɤ]	/u/ [u]
[-high]	/e/ [e]	/ö/ [ø]	/a/ [ɑ]	/o/ [o]

Table 1: Inventory of vowels of Terek Kumyk.

(1) a. jaš-nɨ ‘child-acc’, qɨz-nɨ ‘girl-acc’;
b. bet-n**i** ‘face-acc’, it-n**i** ‘dog-acc’;
c. qol-n**u** ‘hand-acc’, jurt-n**u** ‘village-acc’;
d. öz-n**ü** ‘self-acc’, süt-n**ü** ‘milk-acc’;

(2) a. jaš-l**a**r ‘child-pl’, qɨz-l**a**r ‘girl-pl’, qol-l**a**r ‘hand-pl’, jurt-l**a**r ‘village-pl’;
b. bet-l**e**r ‘face-pl’, it-l**e**r ‘dog-pl’, öz-l**e**r ‘self-pl’, süt-l**e**r ‘milk-pl’.

In addition, Terek Kumyk has 2 glides — /j/ and /v/ — which are realised as consonants or vowels depending on their position, similarly to glides in other languages [Levi 2011; Polgárdi 2015]. In Terek Kumyk combinations /Cj/ and /Cv/ are prohibited, so the only option for a glide is to occur after a vowel or at the beginning of the word. When followed by a vowel, /j/ and /v/ are pronounced as [j] and [v] respectively (e. g. /jazmaq/ [jɑzmɑq] ‘write-inf’ and /havas/ [xɑvɑs] ‘interest’).

2. The focus of the study. The phenomenon of our interest is observed when a glide appears after a vowel and before a consonant or the end of word (*V_C|#*). In such a context, a glide triggers vowel quality — by which we mean roundedness and raise — change (Tab. 2). It is noteworthy that it occurs without reference to morphological structure: *vowel + glide* combination can either be separated by a morphemic boundary or not. Summing the data from Tab. 2 up, /j/ turns the preceding vowel into a [+ high] and [- round] one, while /v/ makes it [- high] and [+ round]. In both cases vowels preserve their [α front] value.

[1] The study is based on data collected by the authors during a field trip to the village Predgornoye in the Republic of North Ossetia — Alania in August 2023 and July 2024.

vowel	without glide	+/j/	+/v/
/a/	/jaramadɨ/ [jɑrɑmɑdɤ] ‘please-neg-pst’	/jaramaj/ [jɑrɑmɤː] ‘please-neg-ipfv’	/kikimav/ [kikimou] ‘owl’
/e/	/görmedi/ [gørmedi] ‘see-neg-pst’	/görmej/ [gørmiː] ‘see-neg-ipfv’	/üčev/ [yʧøu] ‘threesome’
/ɨ/	/sɨr/ [sɤr] ‘paint’	/sɨj/ [sɤː] ‘respect’	/tatɨv/ [tɑtou] ‘taste’
/i/	/bišir/ [biʃir] ‘cook.imp’	/bij/ [biː] ‘prince’	/šišiv/ [ʃiʃøu]‘tumor’
/o/	/qol/ [qol] ‘hand’	/qojmaq/ [qɤːmɑq] ‘leave-inf’	-
/ö/	/söz/ [søz] ‘word’	/söjle/ [siːle] ‘talk.imp’	-
/u/	/ulumaq/ [ulumɑq] ‘howl-inf’	/uluj/ [ulɤː] ‘howl-ipfv’	/suv/ [suː] ‘water’
/ü/	/ürüdü/ [yrydy] ‘walk-pst’	/ürüj/ [üriː] ‘walk-ipfv’	-

Table 2: Examples of *vowel* + *glide* interaction

Furthermore, a segment that has changed its quality under the influence of a glide impacts subsequent vowel harmony: in (1) rightmost /a/ triggers [- front, - round] harmony, while /kikimav/ attaches /nu/, a [- front, + round] affix. The same is observed for /j/: compare /uludu/ ‘howl-pst’ and /ulujdɨ/ ‘howl-ipfv-pst’ where [+ high] affix loses its roundedness.

3. Analysis. In view of the above, we aim to provide an analysis of vowel quality changes that is compatible with existing analyses of vowel harmony. To model this change that happens regardless of morphology but considering syllable structure, we use Strict CV framework [Lowenstamm 1996; Scheer 2004]. In this research, we shall regard harmony as “a manifestation of <...> government”, going rightward [Polgárdi 2024], adjusted for CVCV.

Nothing unexpected happens when *vowel* + *glide* appears before a vowel: glide is associated with C-slot between two vowels. Here it is licensed by the following vowel, and it acts like any other consonant and does not affect vowel harmony (Fig.1).

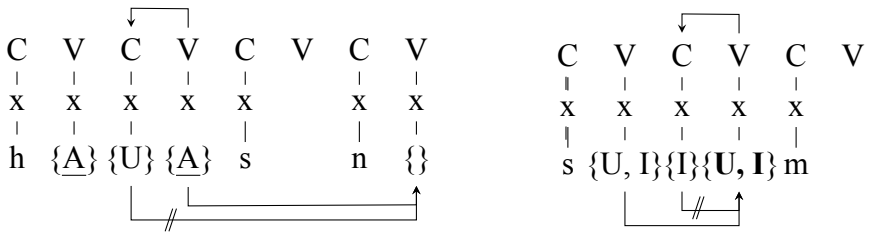

Figure 1: V+glide|_V (/havas/+/nI/ [xɑvɑsnɤ] ‘interest-acc’, /süjüm/ [syjym] ‘like-1sg’)

However, when not followed by a vowel, element set corresponding to a glide is associated not with skeletal position C, but with the following V, where it is combined with the element set of the preceding vowel. Not being separated by an occupied C-slot (in this case it is empty and governed by the following occupied C), they form a set of elements. This set can be realised by different speakers either as a diphthong-like sound or as an already existing vowel phoneme of Terek Kumyk, but longer, and that is why in the presented structure it occupies 2 time slots. (Fig.2). More details on elemental representations and rules and restrictions on their composition shall be provided in our talk.

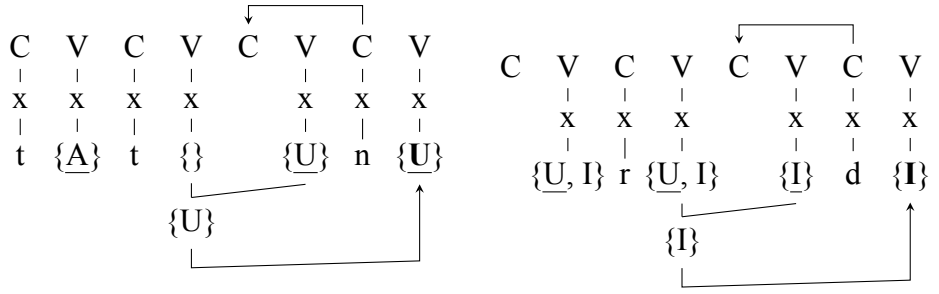

Figure 2: V+glide|_C|# (/tatɨv/+/nI/ [tɑtuvnu]|[tɑtu:nu] ‘taste-acc’, /ürüj/+/dI/ [yrijdi]|[yri:di]‘walk-pst’)

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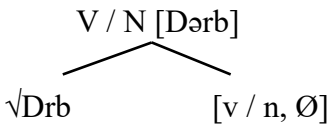
Phonologically Conditioned Allomorphy in Moroccan Arabic:
A Strict CV Approach to Triliteral Action Nouns

Abdelkader Elkhaoua
Memorial University of Newfoundland
aelkhaoua@mun.ca

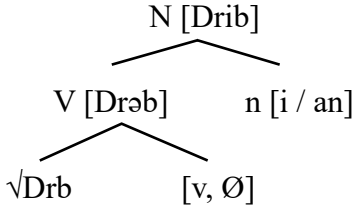
Aim: This presentation examines the complex derivational morphology of triliteral action nouns in Moroccan Arabic (MA), focusing on the phonological conditioning of the allomorphs /i/ and /an/. The only existing analysis of Moroccan Arabic action nouns, Imouzaz (1991), argues that all action nouns are derived from the verb, rather than the root. However, this approach does not account for key phonological and semantic differences between various noun forms. By re-evaluating the derivation of action nouns, this study proposes a novel classification establishing two distinct categories of action noun. The first are root-based action nouns and these are formed via zero derivation, the second are verb-based action nouns, derived phonologically.

The Phenomenon: The existence of two grammatical nominals of the same verb, with no blocking effect suggests they are not competing forms (Embick & Marantz, 2008). This study extends this argument specifically to MA, demonstrating that while the existence of two grammatical action nouns of the same verb, such as [Dərb] / [Drib] 'hitting,' and [ʃuf] / [ʃufan] 'seeing,' does not involve competition as they target different paradigm slots, other forms of action nouns do compete, allowing only one surface form: [Drib] / *[Dərban] 'hitting' vs. *[ʃwaf] / [ʃufan] 'seeing'. The derivation of the two distinct categories of action nouns is given in (1) below. Moreover, these root-based action nouns exhibit phonological patterns identical to what Boudlal (2001) refers to as non-derived nouns, reinforcing their direct root origin: [Dərb] 'hitting' vs [fərx] 'bird'. Furthermore, semantic differences between action nouns of the same verb indicate that these forms serve distinct functions (Harrell, 1967).

(1) a. [Derb] 'hitting'



b. [Drib] 'hitting'



The present analysis introduces an interesting complexity with a broader significance to the linguistic architecture, this is because of the shapes that verb-based action nouns take. These require Phonologically Conditioned Allomorphy (Paster, 2014). Consider the following data:

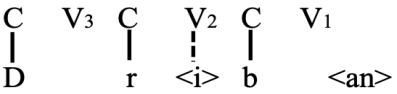
(2)	**Verb**	**Action Noun**	**Gloss**
a.	ftəħ	ft**i**ħ	'opening'
b.	ʃəkk	ʃəkk**an**	'doubting'
c.	bus	bus**an**	'kissing'
d.	fiq	fy**a**q	'waking up'

The vowel variation in (2a) results from apophony and will be addressed separately. For now, all vowels are represented as /i/ for simplicity, as this is the most productive pattern. Action nouns in

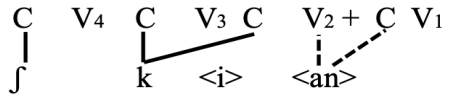
(2d) form a small, unproductive set and will be discussed separately in the future. The distribution of /i/ and /an/ in verb-based action nouns follows a phonological optimization process. The variant /i/ is inserted to break up consonant clusters in triliteral strong roots as in (2a), whereas /an/ is suffixed to weak and geminate roots as in (2b) and (2c) where the /i/ variant cannot be accommodated. This kind of pattern suggests competition for insertion between /i/ and /an/ which can access the phonological shape of the exponents. An analysis of this type using Priority (Bonet et al., 2007) is conceivable, however, it weakens the thesis of Strict Modularity (Newell & Sailor, 2024). In line with recent attempts at reanalyzing cases of Priority using strictly modular phonological tools (Ulfsbjorninn, 2020; Lahrouchi & Ulfsbjorninn, 2024), we will offer such an analysis.

Proposal: Using the Strict CV framework (Lowenstamm, 1996; Scheer, 2004), this study unifies these patterns by analyzing /i/ and /an/ as floating exponents. Instead of these being in competition for insertion, they are both inserted (cf. Scheer 2016) simultaneously. I propose that the choice of one allomorph over the other, in our case, relies on three operations: (i) link floating exponent(s) to empty slot(s), if there are any. (ii) Epenthesize a CV unit if there are no appropriate empty slots at all. (iii) link the exponent preferred by the structure. I also propose that floating elements cannot be linked to delinked skeletal slots—those that were previously occupied. Consider (3) below:

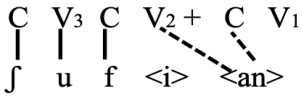
(3) a. [D**ri**b] (appropriate empty slot)



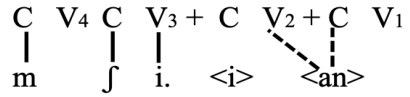
b. [ʃəkk**an**] (CV-epenthesis)



c. [ʃuf**an**] (CV-epenthesis)



d. [məʃy**an**] (2 CVs-epenthesis)



In (a), the floating /i/ associates with V_2, an available empty V-slot, eliminating the need for CV insertion. In (b) and (c), no empty slot is available, requiring CV epenthesis to host a floating exponent. When an empty V-slot and C-slot are adjacent, /an/ is preferred over /i/, as /i/ would leave a slot unfilled. In (d), a single CV insertion does not create an empty slot, so two are needed. Again, /an/ is preferred over /i/ due to adjacent empty slots.

Conclusion: This study challenges Imouzaz's (1991) claim that all action nouns originate from the verb, providing phonological evidence that some are directly derived from the root. It also highlights how allomorph selection in MA follows natural phonological optimization rather than arbitrary morphological constraints. Instead of a Priority account, which would account for the data in question, we proposed a fully modular alternative couched in Strict CV phonology.

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Euh… but why? Facts and formal representations of French Schwa

Noam Faust (Université Paris 8, CNRS SFL), Mathilde Hutin & Mélanie Lancien (Université de Lorraine, CNRS ATILF)

Students required to transcribe French words often ask how they can know whether to use <ə>, <ø> or <œ> – the former being a "schwa" and the latter two being strong, lexical vowels (e.g., *peur* [pœʁ] 'fear'; *peureux* [pørø] 'coward'). Teachers usually answer that "if the word can be pronounced without the vowel, transcribe it as <ə>." In other words, what determines whether a vowel is a schwa is not its acoustic cue, but its phonotactic behavior.

Much phonological work has been devoted to the vowel known as "schwa". Most of that work acknowledges that the quality of that vowel, at least in the contemporary French of France, is not a central [ə] (Dauses 1973, Malécot & Cholet 1977, Fourgeron et al. 2007). But its exact quality is not clear, beyond the fact that it is front, mid and rounded. The closest to an answer we have found is the much-cited paper by Bürki et al. (2008), which suggests that the realization of "schwa" is distinct from those of both /ø/ and /œ/. However, an obvious problem with this work is that it compares schwa, which is always unstressed, to unstressed *and stressed* [ø, œ].

The present talk brings two new pieces to the puzzle, one empirical and one formal. First, experimental evidence is provided to the effect that acoustically, schwa is indistinguishable from /ø, œ/ – contra Bürki et al. (2008). Second, a rationale is proposed for *why* French uses such a marked vowel as its weakest vowel. Using the tiers of Kaye et al.'s (1985) Element Theory, it is claimed that the realization of schwa is feature-filling on all three available tiers.

First, a pronunciation experiment was designed to compare central or front mid rounded vowels that can be omitted (traditional definition of French schwa) vs. those that cannot be omitted (traditional definition of full vowels). To ensure comparability, both vowel types occur in unstressed syllable (where /ø/ and /œ/ are neutralized, Tranel 1987). To control for the effect of orthography, test-items in both categories are spelled either <e> or <eu> (and one <on>). In total, 23 words (12 with omittable and 11 with non-omittable vowels) were embedded in carrier sentences and mixed with 26 filler sentences, then were read aloud by 20 native speakers of Parisian French (10 female, 10 male, mean age = 23.35) in randomized order. Audio files were then automatically aligned with WebMAUS (Kisler et al. 2017) and the vowels of interest analyzed using Praat (Boersma & Weenink 2024). Results (Figure 1) show no significant difference between the acoustic quality of schwa and non-schwa.

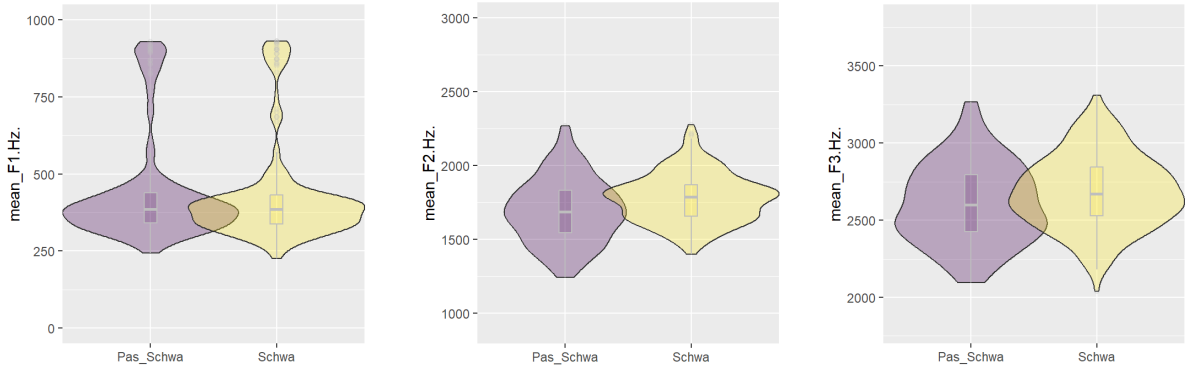

Figure 1. Mean F1 (left), F2 (middle) and F3 (right) in Hertz (Hz) for schwa (yellow) vs. non-schwa (purple)

Typologically, the fact that the French weak vowel is round is unexpected. Indeed, de Lacy (2006), Lombardi (2003) and Lee (2008) reject the possibility of round epenthetic/weak vowels because of the markedness of rounding. The latter two also find weak mid [e] surprising, although epenthetic [e] is quite common (Faust 2024). Dupoux et al. (2011) and Steriade (2009) point to phonetic variability as a key factor in the selection of the weak quality of a language; but the vowel quality [ø] is probably not the single most variable among French vowels (Kahn et al. 2011). Why, then, does the language use [ø] as its weak vowel?

In Element Theory (Kaye et al. 1985), the three basic elements |A, U, I| are placed on the three different tiers shown in (2). Mid front rounded vowels like [ø] are combinations of the

three elements (2a). A weak vowel can be conceptualized as empty on all three tiers, with phonetics filling in the element of each tier when necessary (2b). The two vowels will be phonetically identical, except that the feature filling in (2b) will be realized only under certain conditions. Interestingly, languages exhibiting [e] as weak can be formalized along the same lines: the High and Round tiers are fused, and their default realization |I| combines with | A| on the Open tier, resulting in [e] (2c).

(2)

	a.		b.			c.			
Round	U		v	→	U				
	|		|		|			
High	I		v	→	I	High/Round	v	→	I
	|		|		|		|	|
Open	A		v	→	A	Open	v	→	A
	|		|		|		|	|
	/ø/		▪		[ø]		▪		[e]

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Metrically-significant and insignificant schwas in Omani Mehri

Noam Faust (université Paris 8, CNRS SFL)

In this talk, I wish to contribute to the ongoing discussion of the interaction between syllable shape and vowel quality and length in Mehri, a South Arabian language spoken in Oman and in Eastern Yemen. As can be seen in (1), the high vowels /i,u/ are lengthened, stressed and faithfully realized in open medial syllables or in final syllables closed with a singleton. In closed syllables, even when stressed, they are reduced to [ə]. That said, there are principled cases in which /i/ and /u/ are reduced to short [ə] even though they stand in a stressed open syllable. In (2b), the stressed, long vowel /ū/ of the base (2a) corresponds to a short, stressed [ə́] when an [ə]-initial object clitic is added. Curiously, this does *not* occur before the homophonous *subject* suffix (2c). In (2d), there is again a stressed [ə] in an open syllable; we know that it is underlyingly /i/ by comparison to (1c).

(1)	a.	ktūb	'he wrote'	(2)	a.	thərkū́b	'she mounts'
	b.	ktə́b-k	'I wrote'		b.	thərkə́b=ən	'she mounts us$_{acc}$'
	c.	nī́śəz	'he drank tea'		c.	thərkū́b-ən	'you (fpl) mount'
	d.	nəłz-ək	'I drank tea'		c.	nə́łəz-kəm	'y'all (m) drank tea'

Watson (2012) establishes the generalization of "pre-suffix shortening", whereby the vowel of a verbal base is shortened before "word level suffixes" – object pronouns on verbs and possessive pronouns on nouns. This covers (2a-c). Watson & al-Mahri (2018) motivate this pattern with a constraint *HeavyAdjoin, banning adjoined heavy syllables, and high-ranked only at the word level. Watson et al (2024) discuss cases like (2d), suggesting what is essentially a three-stage account. First, the /ə/ of the base /níłəz-kem/ disappears (the process is left unmotivated). This yields intermediate /níłz-kem/, which leads to vowel reduction /nə́łzkəm/. Then a schwa is reinserted to break the CCC cluster, yielding [nə́łəzkəm] – an opaque counterbleeding rule ordering (schwa insertion would have prevented vowel reduction).

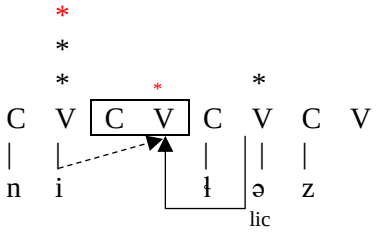
Rubin (2018) mentions an alternative to the problem of (2a,b), which also uses rule ordering. If the 1PL.OBJ suffix is taken to be /n/, the underlying representation is /jəhərkub=n/. Stress and vowel reduction apply to yield /jəhərkə́bn/. Epenthesis follows, producing the opaque [jəhərkə́bən]. Note, however, that [ə]s *can* open preceding syllables (1c, 2c). Rubin would need to assume that the schwas of clitics are epenthetic but those of stems and suffixes aren't. But then what of (2d), where even a stem [ə] seems to be epenthetic (while Rubin does not discuss these cases, he could in principle adopt an analysis similar to Watson et al's (2024)).

The relative disadvantages of these previous analyses are as follows. Watson & al-Mahri's *HeavyAdjoin is somewhat ad-hoc, as is its high ranking "at the word level" – nothing prevents the same constraint from being ranked higher at the stem level. In addition, a different analysis is provided by Watson et al (2024) for (2d), which also involves an unmotivated rule of stem-vowel deletion (/níłəz-kem/=>/niłzkəm/). Rubin's take, in turn, distinguishes two type of schwas in an unfalsifiable manner. Moreover, both Watson et al (2024) and Rubin (2018) require extrinsic rule ordering.

I would like to propose a third view, which brings the two phenomena together and circumvents *some* of the shortcomings. My analysis is formalized within Strict CV (Lowenstamm 1996, Scheer 2004) and Strict CV Metrics (Faust & Ulfsbjorninn 2018 *et passim*). Consider (3). Following Bendjaballah & Ségéral (2017), stress is exponed by a CV unit when possible. Strict CV metrics motivates this using "incorporation", a process by which the metrical potential of a nucleus can be amassed with that of a previous nucleus. As is uniersally the default, all full vowels initially project to L2, /ə/s project to L1. The inserted empty V projects to L1, too, and its projection can be incorporated into that of the lexical vowel (see red asterisks). As a result the lexical vowel reaches L3 and becomes prominent. Concomitantly, since the V-slot of the inserted CV is licensed by a following nucleus, the vowel may lengthen and be faithfully realized.

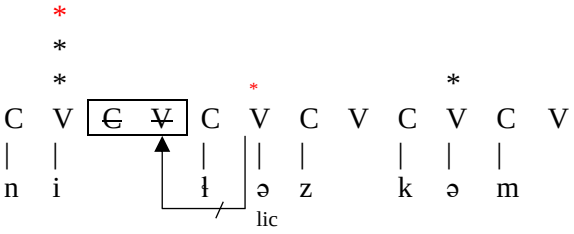
Now compare (3) to (4). Initially, the full vowel is followed by two schwas. Such a sequence constitutes a lapse. In order to resolve that lapse, the projection of the first schwa is incorporated into the projection of the full vowel. Consequently, the /ə/ has no projection power. Such a schwa, I assume, is weak and cannot license a preceding long vowel.

(3)



[nɪ́ɬəz] ‘he drank tea’

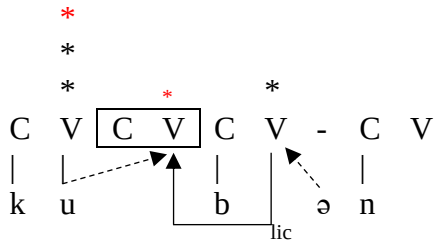
(4)



[nə́ɬəzkəm] ‘y’all (m) drank tea’

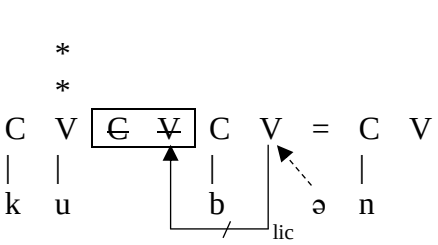
We now know what distinguishes a strong schwa from a weak one: the former projects, the latter doesn’t. We may thus generalize that schwas in clitics do not project (6), whereas those of affixes do (5). As a result, the clitic schwa cannot license the preceding length. Unlike Rubin’s distinction between epenthetic and non-epenthetic schwas, and arguably Watson & al-Mahri’s *HeavyAdjoin, the present proposal ties in with the cross-linguistic evidence regarding the prosodic weakness of clitics.[1]

(5)



[thərkṵ̄b-ən] ‘you (fpl) mount’

(6)



[jəhərkə́b=ən] ‘he mounts us$_{acc}$’

The proposed analysis does not require rule ordering, and accounts for the similar behavior of stem and clitic insignificant schwas. There are still several additional issue to comment upon if time permits, such as stress-attracting clitics with full vowels and unreduced, morphologically meaningful long vowels before schwa-initial clitics.

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[1] The analysis in (3) and (4) could be recast in terms of feet. [(niː)səz] (3) leaves only one syllable at the right edge, but *[(niː)ləzən] would leave two, and so the footing is changed to /(niłə)zən/ realized [nə́ləzən]. I do not see how the analysis in (5) and (6) can be thus recast.

On comparative concepts in the typology of tone

Dmitry Gerasimov (INALCO, Paris)

The identification of fundamental units of cross-linguistic comparison is still a hotly debated issue in phonological typology (Kiparsky 2018; Maddieson 2018; Moran, Easterday & Grossman 2023; a.o.); this appears to be especially true for suprasegmental phonology (Campbell 2022: §2.1–2.2; Himmelmann 2023; Maslinsky & Vydrin in prep.). In this talk, I attempt to show that typology of tone should not necessarily rely on a single set of equatable categories, illustrating this claim with the comparison of tonal systems of Dom (Trans-New Guinea; PNG) and Jamsay (Dogon; Mali); data from (Tida 2006) and (Heath 2008) respectively.

Both languages distinguish two contrastive tonal levels, L and H, which combine to form melodies. Lexical tonal melodies in Dom are H, LH and HL; a few suffixes can be argued to contribute a LH grammatical melody. Jamsay has a larger inventory: H and LH lexical melodies for verbs, H, LH, HL and LHL lexical melodies for nouns and other major word classes, plus L, H and HL grammatical melodies. In both languages, tonal melodies are associated from right to left and mora is the primary tone-bearing unit. This results in contour tones, which gravitate towards the right edge and require a heavy (super-heavy in case of LHL bell-shaped contour in Jamsay) syllable. Both languages rely on final lengthening in case of conflict and in both there are some restrictions on the occurrence of LH as opposed to HL contours, in a typologically common manner (Zhang 2004; 2013).

Still, the two languages differ greatly wrt their tonal systems. In Dom, each phonological word (aside from some clitics that undergo tone deletion) carries one of the three melodies, which extends rightwards as toneless suffixes are added. When a suffix has its own inherent melody, it's either gets deleted or overwrites that of the stem. A few sandhi rules that apply across the clitic boundary can be stated in terms of the three melodies, without the necessity to refer directly to the pitch levels that constitute them. Tone in Dom is thus a word-level phenomenon, with H, LH and HL serving as basic units of the system. Jamsay, on the contrary, has two tonemes H and L, which may dock to one or more morae. Suffixes with inherent tones preserve them, which results in a great variety of tonal patterns for fully inflected words. Only the tone of the last preceding mora spreads rightwards onto toneless morphemes. There is an inventory of tonal rules applying at word-internal morpheme boundaries, that are only sensitive to tones of the adjacent morae, not the entire melody.

Thus, some similarities and differences between the two languages in question are revealed by comparing their tonemes (H and L in Jamsay vs. H, LH and HL melodies in Dom), while others are best captured by comparing the melodies of Dom to those in Jamsay, although functionally the former are tonemes and the latter combinations thereof. Both choices of tertium comparationis are productive and there is no point in arguing which one of them is right. In the typology of tone, as in linguistic typology in general (Haspelmath 2010), construal of comparative concepts depends on the task at hand. A comprehensive typology of tonal systems should probably employ several intersecting sets of equatable categories, because relying on just one mode of comparison may miss important generalization.

Acknowledgements

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Phonological Restrictions in Malayalam Vowel Harmony

Greeshma Joseph (Indian Institute of Technology, Delhi)

A prosody-induced height harmony occurs in the Malayalam [+Dravidian][1] words wherein the high vowels /i/ and /u/ in the initial syllable are lowered to the corresponding mid-vowels when the low vowel /a/ is in the adjacent syllable as in (1).

1		UR	SR	gloss
	[i]→ [e]	*ila*	*ela*	'leaf'
		iṯam	*eḏam*[2]	'space'
	[u]→ [o]	*kuṯa*	*koḏa*	'umbrella'
		cuma	*coma*	'cough'

The *high-low* vowel sequence in the left edge is marked as the initial stressed syllable has a low sonority vowel followed by a high sonority vowel. The stringency markedness scale (De Lacy, 2004) concerning the vowel sonority hierarchy is given in (2):

2	stressed syllable		unstressed syllable	
	*σˈ/[(i,u),(e,o),(a)] *σˈ/[(i,u),(e,o)] *σˈ/[(i,u)]	high vowel (low sonority) is the least preferred	*σ/[(a),(e,o),(i,u)] *σ/[(a),(e,o)] *σ/[(a)]	low vowel (high sonority) is the least preferred

In this regard, Malayalam has a syllable composition that violates the sonority hierarchy. Analytically, the resolution of this mismatch can be accomplished through various strategies: (i) shifting stress from the initial syllable (ii) raising the vowel in second syllable, and (iii) lowering the vowel in initial syllable. Malayalam goes for lowering (Align- L, Ident-Low >>Ident-High), making the initial syllable the target for augmentation that violates positional faithfulness (M>>PosF). Moreover, it is observed that this harmony is restricted in certain phonological environments as in (3).

3	UR	SR	*Harmony X*	gloss
	citta	*citta*	**cetta*	'aunt'
	t̪iɳɳa	*t̪iɳɳa*	** t̪eɳɳa*	'floor'
	umma	*umma*	**omma*	'kiss'
	ucca	*ucca*	**occa*	'noon'

Intervening consonant sequences, such as geminates, obstruct the vowel harmony in the initial syllable. A theoretical question in this context is how consonants impede prosody-induced harmony. Additionally, the vowels /i/ and /u/ do not show similar patterns when it comes to the intervening consonant(s). Harmony does not occur with /i/ when the intervening consonant is a labial which is *a case of under-application* as in (4a). Another challenge is that harmony is observed when the retroflex geminate /ʈʈ/ intervenes between /u/ and /a/. This situation is a case of *over-application* shown in (4b) as it stands in stark contrast to the blocking environment illustrated in (3). This raises the question of clubbing the vowels /i/ and /u/ into the natural class *'high'*.

4a.	harmony X	*ima*	**ema*	'eyelash'
		ivar	**evar*	'these people'
	harmony ➹	*cuma*	*coma*	'cough'
		cuvar	*covar*	'wall'

4b.	harmony X	*ciʈʈa*	**ceʈʈa*	'discipline'
		t̪iʈʈam	**t̪eʈʈam*	'sequence'
	harmony ➹	*muʈʈa*	*moʈʈa*	'egg'
		kuʈʈa	*koʈʈa*	'basket'

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Dyslexia and Spelling: Phonological Awareness Deficits in Moroccan First-graders Learning Standard Arabic

Assya Hanine

Faculté des Lettres et des Sciences Humaines Ain Chock - Université Hassan II Casablanca

Abstract:

This study investigates the challenges faced by dyslexic first-grade children in Morocco when spelling words in Standard Arabic. The ability to spell is influenced by various factors, including phonemic awareness, knowledge of phoneme-grapheme correspondences, and reading ability (Caravolas, Hulme, & Snowling, 2001). Dyslexia, a specific learning disorder, significantly impairs reading and spelling skills. It is characterized by difficulties in word recognition, spelling, and decoding despite adequate intelligence and educational opportunities (Lyon et al., 2003, Hebert et al., 2018). These difficulties primarily stem from deficits in the phonological component of language, which is crucial for literacy development. The prevalence of dyslexia among Moroccan students is estimated to be around 12%, necessitating focused attention (Leqouider et al., 2021). This study seeks to understand how dyslexia influences spelling skills in Standard Arabic, focusing on phonological difficulties and the unique orthographic features of the Arabic script. To achieve this, a spelling test based on a first-grade reading textbook was administered to four dyslexic children aged 7 to 8. The spelling errors were analyzed in terms of phonological plausibility –whether the misspelling retained the correct phonological form of the word despite being orthographically incorrect– and conventional accuracy, which requires knowledge of the Arabic orthography and spelling rules. The results revealed consistent difficulties in areas such as long vowels, diacritics, letter configurations, consonants, and morphological patterns. Additionally, most errors were classified as dysphonetic, with fewer instances of semiphonetic and phonetic errors. These findings highlight the interaction between the phonological and visual aspects of the Arabic script, emphasizing the need for targeted intervention strategies to address not only phonological deficits but also the orthographic and morphological complexities of Arabic, particularly within the Moroccan educational system, to better support the unique needs of dyslexic children.

Keywords: *Dyslexia, Phonological awareness, Spelling, Phoneme-grapheme correspondence, Standard Arabic, First-grade, Literacy acquisition*

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Sonority and the Structure of Arabic Quadriliteral Roots

Ali Idrissi & Mashael Al-Muhawes
Qatar University

Research on Arabic quadriliteral (quadriconsonantal) roots spans their historical development, morphology, phonology, semantics, and theoretical implications. Early Arabic grammarians, such as Sibawayh and Ibn Jinni, examined their structure, derivations, and status within the Arabic lexicon. Modern scholars have analyzed them systematically, with some providing foundational grammatical descriptions (Wright, 1896) and others highlighting their productivity in Standard and Spoken Arabic varieties (Ryding, 2005; Brustad, 2004; Heath, 1989).

Several other studies argue that quadriliteral roots originate from biconsonantal or triconsonantal roots through full or partial reduplication or root augmentation (Bohas, 1997; Kuryłowicz, 1973; Brockelmann, 1908). For example, it has been argued that reduplicated forms involve repeated biconsonantal roots (e.g., /z-l-z-l/ 'to shake violently' from /z-l/ 'to slip'), while augmented forms emerge via affixation, insertion of additional radicals, or possibly merging two triconsonantal roots (e.g., /d-h-r-ž/ 'to roll', from /dr̂/ 'to collapse' and /drž/ 'to do gradually'). Additionally, it has been noted that many quadriliteral roots appear in loanwords adapted into Arabic dialects (Ferguson, 1959; Heath, 1989; Ziani, 2020).

We argue that the above derivation-based view does not apply to all Arabic quadriliteral roots. We propose that these roots fall into three major types: augmented, reduplicated, and primitive. Augmented roots involve the addition of a consonant (typically a glide, although other types of consonants may be used) (e.g., *rqm-n* 'digitization' from *rqm* 'digit). Reduplicated roots typically feature repetition of two root consonants, originating mostly from biliteral roots (a sin *ħlħl* 'solve' from *ħl* 'solution'), but may also be extracted from etymological triliteral roots (e.g., *hmhm* 'to murmer' from *hms* 'whisper'). Reduplicated roots frequently express repetition or plural action or mimic a sound in nature (i.e., onomatopoeic). Primitive quadriliteral roots, by contrast, are not derived from biliteral or triliteral inputs, do not necessarily show the same semantics as genuinely reduplicated roots; and, we believe, they develop/have developed as independent lexical units (e.g., *tˁmʔn* 'reassure').

We analyzed a corpus of 770 Arabic quadriliteral C1C2C3C4 roots. We calculated the sonority distance between the adjacent consonant pairs, C1-C2, C2-C3, and C3-C4, and found that primitive quadriliteral roots adhere to a distinct *sonority profile template*. Our sonority distance calculations indicate that while sonority significantly increases from C1 to C2 and from C3 to C4, it significantly decreases from C2 to C3. While it is not clear why only primitive quadriliteral roots exhibit this pattern, this still suggests that the C1C2 and C3C4 in the general quadriliteral word pattern function as separate phonological domains, or sonority "shells", possibly reflecting how quadriliteral roots historically evolved, i.e., through reduplication of some minimal biconsonantal lexical unit.

We argue that this sonority frame requirement was and remains active in the mental grammar of Arabic speakers. This explains why old loanwords from Farsi and other languages into Arabic and recent loanwords from languages such as French and English strikingly conform to this frame. A

comparison of primitive native and loan quadriliteral roots in our corpus reveals a striking parallel (e.g., *srkl* 'wonder around' from French *cercle* 'circle', *srbs* 'serve' from French *service* 'service', bnšr 'flat tyre' from English *puncture*).

We discuss the broader implications of our data and analysis for the nature and genesis of quadriliteral roots in Arabic as well as for the concepts of phonological templates (McCarthy, 1981), phonotactic restrictions (Frisch et al., 2004), and the adaptation of loanwords in Arabic.

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La voyelle épenthétique en farsi : fidèle et sans tête !

Alireza Jaferian – SFL CNRS

Il est bien connu que le persan n'admet aucun groupe consonantique en position initiale de mot (Samareh 1999, Bijankhan 2018, Jaferian 2024, comme plusieurs autres travaux). Les attaques branchantes n'échappent pas à cette restriction. Dans les emprunts, ces dernières sont réparées par l'insertion d'une voyelle épenthétique. Dans la variété iranienne standard du persan, appelée farsi, la voyelle épenthétique par défaut est /e/. Celle-ci est utilisée lorsque la première voyelle lexicale du mot est adaptée en une voyelle basse en farsi (a). Dans les autres cas, une copie de la première voyelle lexicale est privilégiée (b), ce qui est un effet d'harmonie vocalique.

	Anglais	Forme adaptée	Français	Forme adaptée
a.	Pride	p**e**rɒjd	train	t**e**ran
	glider	g**e**lɒjder	classe	k**e**lɒs
b.	free	f**i**ri	prise	p**i**riz
	browse	b**o**roz	Grenoble	g**o**ronobl
	cruise	k**u**ruz	flûte	f**u**lut

Les voyelles basses ne participent donc pas à l'harmonie vocalique dans les emprunts, contrairement au cas des mots natifs, où l'arrondissement se propage à travers une consonne glottale : /bahɒr/ → [bɒhɒr] « printemps ». Les groupes sC initiaux sont réparés par prothèse (sC > VsC). La syllabe contenant la voyelle épenthétique étant fermée par s, la voyelle épenthétique ne peut pas subir d'harmonie vocalique et est toujours /e/ : « stop » > [ʔestop].

L'épenthèse vocalique utilisée par les persanophones a fait l'objet de plusieurs études, notamment dans leur usage de l'anglais langue étrangère (Karimi 1987, Shademan 2002, Akbari 2013). L'harmonie vocalique, processus optionnel et partiel en farsi, n'a pas échappé aux chercheurs persanistes (Modarresi Ghavami 2011, Jam 2020).

Trois questions se posent, cependant, auxquelles on n'a pas, à ma connaissance, fourni de réponses adéquates dans la littérature à ce jour :

1. Pourquoi les voyelles basses ne participent-elles pas à l'harmonie vocalique lorsqu'il s'agit de voyelles épenthétiques ?
2. Pourquoi /e/ est-il la voyelle épenthétique par défaut ?
3. Pourquoi, dans les emprunts ayant pour première voyelle lexicale une voyelle non-basse, la copie de celle-ci est-elle préférée à /e/ ?

Dans cette communication, j'utilise la Théorie des Éléments (Backley 2011) et la Théorie de l'Optimalité (Prince & Smolensky 1993/2004) pour tenter de pallier cette lacune.

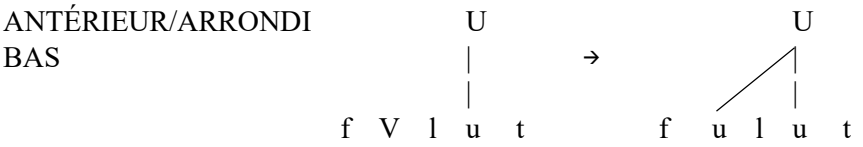
Inspiré d'une analyse similaire portant sur un parler du Croissant français (Faust, à paraître), je propose, dans le cadre de la Théorie des Éléments, qu'en farsi, les voyelles épenthétiques ne peuvent pas avoir de tête. Je propose ainsi que les voyelles du farsi ont la structure suivante, où seules les voyelles basses ont une tête, soulignée dans la notation.

/i/ : I	/u/ : U
/e/ : IA	/o/ : UA
/a/ : A	/ɒ/ : UA

Ce manque de tête se traduit par une longueur moins importante. Plusieurs études acoustiques confirment, en effet, qu'en farsi, les voyelles basses sont plus longues que les voyelles moyennes et hautes (Ghaffarvand et al. 2017, Aronow et al. 2017).

Quant à la question de savoir pourquoi en farsi /e/ est la voyelle épenthétique par défaut, plutôt que /i/, plus commune typologiquement, l'explication consiste à dire que les deux tires correspondant aux traits ANTÉRIEUR/ARRONDI et BAS y sont remplies, sans qu'aucun élément ne constitue une tête : /e/ contient un élément I et un élément A. Cependant, /o/ remplit les mêmes conditions. Il reste alors à expliquer pourquoi /e/ est préféré à /o/, ce qui ne contrevient pas à la tendance typologiquement attestée.

Enfin, la réparation par copie, lorsque cela est possible, soit dans les cas comme en (b) *supra*, est privilégiée parce qu'elle aboutit à des outputs plus optimaux, car plus fidèles à la forme sous-jacente. La réparation par épenthèse consiste, dans ces formes, à une simple propagation d'une voyelle sous-jacemment présente sur la position vocalique vide entre les deux consonnes du groupe initial. La contrainte DEP n'y est donc pas violée.



Lors de la présentation, je fournirai plus de données et expliquerai en détail mon analyse en Optimalité. Par ailleurs, je m'intéresserai de plus près à la structure des voyelles non-basses du farsi : ont-elles ou non une tête lorsqu'elles ne sont pas épenthétiques ? J'aborderai à ce propos la syncope vocalique en post-tonique dans certaines formes verbales préfixées : /najumad/ → [najmad] « Il ne vint pas. » *vs* /naxʊbid/ → *[naxbid] « Il ne dormit pas. »

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The Typology of the Distribution of |A| using MSLCs: the propensity for bipositionality

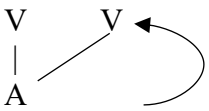
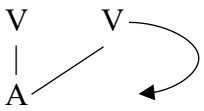
Mohamed Lahrouchi & Shanti Ulfsbjorninn
CNRS- Université Paris 8 & Memorial University of Newfoundland

Typological Background: Crothers (1978) explores the typology and universals of vowel inventories. However, Crothers is almost silent on long vowels. The only long vowel 'universal' that is broached is the tendency for short high/low vowels to be more central than their long equivalents (Crothers 1978: 123). Lass (1984: 91) rightly complains that there is no reason to privilege the shorts as '*the* vowel system' of a language. Lass (1984) leaves vowel length/inventories unresolved: "more complex, more relevant… than has been admitted".

Theoretical Background: Particular grammars contain well-formedness statements on featural distributions. These featural distributions can be stated with respect to each other, such as occurs in vowel harmony (particularly in Charette & Göksel's model 1998). However, many other restrictions are stated in terms of a feature's position in syllable structure. Especially common are restrictions on distributions with regard to monopositional vs. bipositional structures. Lahrouchi & Ulfsbjorninn (L&U 2025) propose a theory of such restrictions, which amounts to a theory of the formal distributional restrictions of features. The proposal is that phonological UG can make distributional statements bidirectionally; thereby yielding a specific shape of typological variation. Languages can restrict a feature/melody (M) to a particular structure (S) (Bottom up), or they can force a given structure (S) to contain a given feature/melody (M) (Top down). These bidirectional grammatical statements are called: *Melody-to-Structure Licensing Constraints* (MSLCs).

Aim: We investigate the typology of |A|-vowel restrictions with respect to bipositionality. We will show that it mirrors what L&U find for occlusion |ʔ|. The typology of |A|-vowel and bipositionality restrictions reveal MSLC's expected bidirectionality. In some languages, the feature |A| must be contained by a bipositional vocalic structure (Bottom up), while in other languages, it is the bipositional vocalic structures that must contain |A| (Top down). Just as for occlusion (L&U), this condition can be made separately for headed/pure |<u>A</u>| (open-mid/low or just [a]), or all |A| (any mid & low vowels). The table below displays the predicted 4 types of language.

(1)

	Bottom up	**Top Down**
		
	Feature must be contained in structure	*Structure must contain feature*
Any |A|	**Gadsup** (Franz & Franz 1966) Short i |I|, u |U|, ʌ |Ø| Long e: |A.I|, o: |A.U|, a: |A|	**Hupa** (Golla 1970:35) Short ɪ |I|, ʊ |U|, a |A| Long ɛ: |A.I|, o: |A.U|, a: |A|
Headed |<u>A</u>| Pure	**Telegu** (coastal, Lisker 1963) Short i, |I|, u |U|, e |A.I| o |A.U|, ə |A| Long i: |I|, u: |U|, e: |A.I|, o: |A.U|, æ: |<u>A</u>.I|, a: |<u>A</u>|	**H. Yao** (Downer 1961:137) Short any Long a: |<u>A</u>|

Gadsup stands for a language type where MSLCs proceed Bottom up such that the feature |A| is found only in bipositional structure. Whereas, Hupa is a Top down type of language whose |A| can be short, consequently any long vowel must contain |A|, that is, any bipositional V structure must contain |A|. The remaining types differ from the first two on the basis of headedness function. In

Coastal Telegu, any |A| can be mono- or bipositional, but headed |A̲| can be found only in a bipositional structure. This is in contrast with Highland Yao, where it is the bipositional vocalic structure that must contain headed or pure |A̲|. In addition to these four systems, other languages will be shown to fit within this four-way system. Additionally, we will also see that the MSLCs can be made in both directions simultaneously.

Furthermore, as L&U show for occlusion, the pattern where |A| is *excluded* from bipositional structures is impossible to state in MSLC's (they cannot be negative) and, consequently, this pattern is correctly predicted to be unattested.

For this feature, we therefore find that MSCLs correctly model a phonological grammars's feature to structure co-occurrence restrictions.

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Structure and complexity: sonorant internal codas in three Romance languages

Xiaoliang Luo (HTL - Université Paris Cité)

Lenition in weak positions has been the subject of numerous studies. It is generally assumed that the internal coda is a weak position where consonants tend to weaken. For example, Latin *facta* > Fr. *faite*, *rupta* > Fr. *route*. At the same time, we observe that when the internal coda is a sonorant, it does not disappear despite being in the same structure and during the same comparative periods. For example, Latin *porta* > Fr. *porte*, Latin *germanum* > Sp. *hermano*, Latin *caldus* > It. *caldo*.

Carvalho (2008) raises the question regarding sonorants in internal coda position: why sonorants function as "better" codas compared to obstruents.

Theoretical frameworks within government phonology, particularly Coda-Mirror Theory (Ségéral & Scheer, 2001), have made significant strides in enhancing our understanding of fortition and lenition. However, they fall short in addressing the divergence between obstruents and sonorants in internal coda positions. This is because these frameworks rely exclusively on positional factors that define strength through lateral relations. In this model, both an obstruent and a sonorant occupying the same syllabic position are subject to the same lateral relations: neither licensed nor governed, as shown in (1).

(1) rupta > route porta > porte

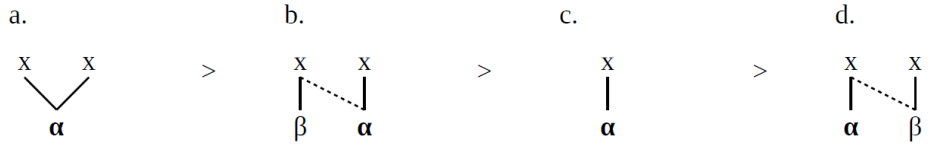
There is a theoretical paradox concerning *fortis*/*lenis*: in strong positions (word initial and post-coda), obstruents are considered *fortis*, while in weak positions (internal coda in our case), obstruents are *lenis*, as they tend to disappear. Sonorants appears to be *fortis* in internal coda, as they tend to be retained.

A clarification should be made to resolve this paradox: we distinguish between positions and segments. Positions can be labeled as *fortis* or *lenis*; Segments are not inherently *fortis* or *lenis* but rather undergo fortition and lenition processes. Segments can be classified as complex or simple in terms of Element Theory (henceforth ET, see KLV 1985; Harris 1990; Harris & Lindsey 1995; Backley 2011), within a given language system (Cyran 2010).

Let us now introduce phonological space and segmental complexity as variables within CVCV framework (Lowenstamm 1996; Scheer 2004), by adopting the Strength is length hypothesis (Luo&Enguehard 2019; Enguehard&Luo 2020), stated as follows:

(2) a. Consonants branches to each other, respecting the No Crossing Line principle.
b. Branching brings strength.
c. Contour diminish strength.
d. More complex segments need more phonological space

(3)



For the consonantal segment α in (3), a geminate is represented in (3a), (3b) represents a post-coda, (3c) can be either an intervocalic consonant or a final coda, and (3d) represents the internal coda, which shares its position with the post-coda. According to (2c), the internal coda is the weakest position.

Complexity is expressed by the number of elements in terms of ET. Rhotic, nasals (with place neutralized in the internal coda), lateral, and an example of obstruents are given in (4):

(4) r=| | N=|L| l=|A|U| p=|U|h|ʔ|H|

We observe a clear correlation between complexity and internal coda deletion in (5): the more complex a segment is, the more it tends to be deleted in the internal coda. This directly follows from the theory in (2d) and (3d): there is a conflict between high complexity and the limited phonological space of an internal coda, which cannot accommodate a complex segment.

(5)

a.	Rhotic	porta > Fr. porte fortem > Sp. fuerte norma > It. norma	- complex	preservation
b.	Nasals	cantus>It./Sp. canto Fr. chant		
c.	Lateral	alter > It. altro caldus > Fr. chaud sal(i)cem > Sp. sauce		
d.	Obstruents	octo > It. otto musca > Fr. mouche ruptum > Sp. roto	+complex	deletion

Moreover, the behavior of the three languages is consistent: above a certain complexity threshold, the internal coda is deleted, either partially or entirely.

Internal coda	**French**	**Spanish**	**Italian**
rhotic | |	preserved	preserved	preserved
archiphonemic nasals |L|	partially deleted (nasalization)	preserved	preserved
lateral |A|U|	partially deleted (vocalization)	partially deleted (vocalization)	preserved
obstruents (3 to 4 Elements)	deleted	deleted	partially deleted (gemination)

To answer the questions raised by Carvalho (2008), sonorants are "better" internal codas because they are less complex and align more effectively with the limited phonological space available.

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Prosodic augmentation in the Moroccan Arabic broken plural

Ali Nirheche & Michael Becker (University of Massachusetts Amherst)

We document and analyze diachronic changes in the Moroccan Arabic broken plural, where iambic (C.CVC) plurals are augmented to (C.CV).CV, e.g., [(k.tub)] → [(k.tu).ba] 'books' (1a). The changes in (1a-b) are ongoing and the one in (1c) is complete. We analyze the three types of change in (1) as driven by NONFINALITY, where the iambic foot is preferably separated from the right edge of the word by an added syllable, contrary to previous claims that NONFINALITY is universally unable to drive epenthesis (Blumenfeld 2006, Moore-Cantwell 2016). In our analysis, in the spirit of McCarthy (1997), Moroccan broken plurals form disyllabic iambs, with any third syllables being phonologically predictable.

(1)

	pattern change	SG	old PL	→	new PL		
a.	C.CuC → C.Cu.Ca	k.tab	k.tub	→	k.tu.ba	'book(s)'	32
b.	C.CaC → C.Cu.Ca	ʔ.dˤəm	ʔ.dˤam	→	ʔ.dˤu.ma	'bone(s)'	6
c.	C.CaC → C.Ca.Ci	rək.b-a	*r.kab	→	r.ka.bi	'knee(s)'	20

Data: Moroccan Arabic has two kinds of plurals: "sound" = suffixal, e.g., the suffix [-at] in [ħ.sab ∼ ħ.sa.b-at] 'complaint(s)', and "broken" = templatic, as in (1) above. The corpus used in the study comes from Nirheche (2025a). It contains 1166 plurals with their corresponding singulars, of which 486 (42%) are broken plurals. We extracted the 67 C.CuC(a) plurals from this corpus and marked the presence of final [a] as prohibited, optional, or obligatory. Since the corpus is based on one speaker, we conducted a broader study in which 42 native speakers provided their preferences for a selection of 18 C.CuC(a) plurals, exemplified in (2). The corpus and survey were strongly correlated ($r = .83$, $t(16) = 6.1$, $p < .0001$).

(2)

	SG	PL	gloss	corpus	our survey
a.	qər.n	q.run	'century'	no [a]	10% [a]
b.	kər.ʃ	k.ruʃ ∼ k.ru.ʃa	'belly'	optional [a]	48% [a]
c.	n.mər	n.mu.ra	'tiger'	obligatory [a]	88% [a]

Analysis with lexically specific constraints: we used a Maximum Entropy (Goldwater & Johnson 2003) model with two general constraints, NONFINALITY (one violation for every foot that includes the word-final syllable) and DEP (one violation for every segment that isn't in the UR). The UR includes a lexically specified plural vowel, /u/. Other constraints, not shown here, require the plural to have a word-initial iamb, prevent deletion of the consonants of the singular, predict the quality of the epenthetic vowel, etc. (a fully fleshed out analysis is given in Nirheche 2025b). The initial state, before learning starts, is given in (3). The constraints have no weight yet, so free variation is predicted, i.e., 50% [a] for all C.CuC plurals.

(3)

/noun + u_{PL}/		NONFINALITY $w = 0$	DEP $w = 0$	$\mathscr{H}$	p
/kər.ʃ/	(k.ruʃ)	−1		0	.50
	(k.ru)ʃa		−1	0	.50

When given a list of observed lexical items and their plurals, the model creates lexically-specific copies of the constraints ("clones") for each item (Moore-Cantwell & Pater 2016), and then weights all the constraints to match the observed frequencies and to generate general predictions.

We show the result of learning three lexical items in (4a–c), with the prediction for a novel word ("wug", Berko 1958) in (4d). The real simulation has all of the items in our corpus. The large number of constraints gives the model enough power to correctly derive existing lexical items, and at the same time, learn a general grammar without overfitting.

(4)

		NoF	Dep	NoF qərn	Dep qərn	NoF kərʃ	Dep kərʃ	NoF nmər	Dep nmər		
/noun + $(\sigma^{\text{l}}\sigma)_{\text{PL}}$ + u_{PL}/		14.8	16	0	6.9	1.1	0	9	0	$\mathscr{H}$	p
a. /qər.n/	(q.run)	−1		−1						−14.8	.99
	(q.ru).na		−1		−1					−22.9	.01
b. /kər.ʃ/	(k.ruʃ)	−1				−1				−16	.50
	(k.ru).ʃa		−1				−1			−16	.50
c. /n.mər/	(n.mur)	−1						−1		−23.9	.01
	(n.mu).ra		−1						−1	−16	.99
d. /wəgː/	(w.gug)	−1								−14.8	.76
	(w.gu).ga		−1							−16	.24

Final [a] is not morphemic: Moore-Cantwell (2016) claims that prosodic constraints such as NonFinality cannot drive the epenthesis of segments, but they can drive the epenthesis of morphemes. We survey all of the suffixes of Moroccan Arabic that have an [a] (e.g., the feminine suffix, a sound plural suffix, etc) and show that none of them are a plausible match. For example, the [a] cannot be the feminine suffix because all C.Cu.Ca plurals are masculine, as evidenced by the masculine agreement they trigger on adjectives, e.g., [k.ru.ʃa ʕam.r-in] 'stomachs full-masc.pl'. This is despite the singular [kərʃ] 'stomach' being feminine. Therefore, we argue that NonFinality drives segmental epenthesis. Golston & Wiese (1995) provide another example of segmental epenthesis driven by NonFinality in the German plural, where a final [ə] is only added to prevent final stress, e.g. [ˈʃuː-ə] 'shoes'.

Conclusions: We examine a large corpus of Moroccan plurals from a prosodic perspective, both synchronically and diachronically, and attribute the innovation of C.Cu.Ca plurals to epenthesis. We then extend our analysis to other trisyllabic broken plurals in the language, showing that they are derived with a disyllabic template, and that any third syllables are fully predictable from other phonological factors. Following McCarthy (1997), prosodic morphology—in Moroccan Arabic and universally—has no underlying templates, only markedness constraints on foot structure. Our analysis adds to the typology of prosodic effects, showing that NonFinality can interact freely with Dep to drive epenthesis, contra to prior proposals.

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Using Temporal Stability to Probe the Syllabification of Medial Geminates: Evidence from Moroccan Arabic

Ali Nirheche (University of Massachusetts Amherst)

The aim of this study is to investigate whether temporal stability methodology can be used to probe the syllabification of geminates, taking Moroccan Arabic as a case study. Patterns of temporal stability, which examine how consonantal gestures align relative to a following vowel, have been widely used to investigate the syllabification of consonant sequences (Browman and Goldstein, 1988; Goldstein et al., 2007; Shaw et al., 2009; among others). Two patterns of temporal stability have been identified in the literature: c-centre-to-anchor and right-edge-to-anchor. In the former, the midpoint of the consonantal gestures (the c-centre) is aligned at a stable distance from the end of the following vowel (the anchor), regardless of the number of consonants. This pattern indicates that the language has complex onsets. In the right-edge-to-anchor pattern, the midpoint of the final consonant in a sequence is aligned at a stable distance from the anchor, regardless of the number of consonants in the sequence, which indicates that the language prefer simplex onsets. While patterns of temporal stability have traditionally been used to investigate consonant clusters, its application to geminates has remained largely unexplored. In this study, I show that temporal stability methodology can be effectively used to investigate the syllabification of geminates, with evidence from Moroccan Arabic showing that its medial geminates exhibit a right-edge-to-anchor stability pattern.

I conducted a production experiment involving 10 native speakers of Moroccan Arabic. Participants were asked to produce target word pairs containing medial geminates and non-geminate CC sequences along with their singleton counterparts embedded in a carrier phrase. Following Durvasula et al., 2021, acoustic measurements were taken to quantify the c-center-to-anchor and right-edge-to-anchor temporal intervals. Geminates were split into two equal halves to allow the right half to be treated as an independent consonantal unit for temporal measurements. The temporal stability of each interval was measured using Relative Standard Deviation (RSD), calculated as $(\text{SD}/\text{Mean}) \times 100$. RSD normalizes variance to allow meaningful comparisons across intervals of different lengths, which is relevant here since the c-centre-to-anchor interval is inherently longer than the right-edge-to-anchor interval. A mixed-effects linear regression model was fit to evaluate stability differences across each pair of items, with participant and word pair as random effects.

The results show that medial geminates in Moroccan Arabic, similar to non-geminate CC sequences, exhibit a right-edge-to-anchor stability pattern, indicating that they are heterosyllabic. Figure 1 shows that, while the c-centre-to-anchor interval durations vary across singeltons (VCV) and geminates ($\text{VC}_\text{i}\text{C}_\text{i}\text{V}$), the right-edge-to-anchor interval durations remain consistent. Table 1 shows that the right-edge-to-anchor interval has the lowest RSD values overall and across all word pairs. The same results were found for medial non-geminate CC sequences, which also showed less variable overall duration between VCV and VCCV (Figure 2) and lower RSD values (Table 2) at the right-edge-to-anchor interval. Two mixed-effects linear regression models statistically validated these results. The first one confirmed that, for medial geminates, the RSD values for the right-edge-to-anchor interval are significantly lower than those for the c-centre-to-anchor interval ($\beta = -4.56$, $SE = 1.46$, $t = -3.1$, $p < 0.05$). The second model found no significant difference in RSD values between the right-edge-to-anchor interval for geminates and that observed for medial non-geminate CC sequences, suggesting that the null hypothesis cannot not be rejected ($\beta = -0.34$, $SE = 0.47$, $t = -0.72$, $p = 0.47$).

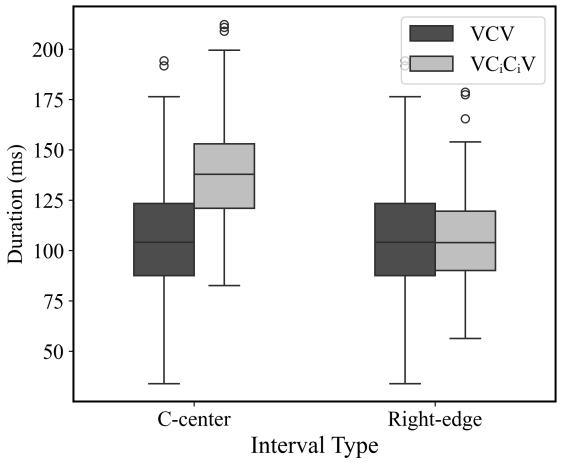

Figure 1: Overall raw durations for the c-centre and right-edge intervals of medial geminates and singeltons.

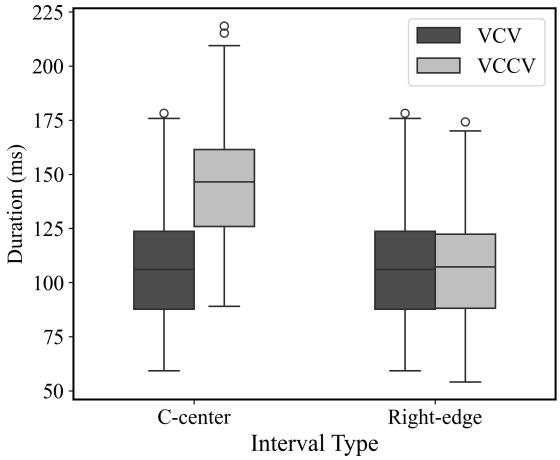

Figure 2: Overall raw durations for the c-centre and right-edge intervals of medial C and CC.

	C-Center			Right Edge		
Pair	**Mean**	**SD**	**RSD**	**Mean**	**SD**	**RSD**
sˤ*ara*~dˤ*arra*	105.4	24.6	23.9	95.1	15.4	16.7
ʕ*uma*~ʕ*amma*	120.3	19.6	16.5	103.6	12.7	12.1
kala~*lalla*	114.4	24.7	21.7	100.2	15	15
sˤ*at*ˤ*a*~*ħat*ˤtˤ*a*	126.4	19.7	15.6	108.2	12.2	11.3
riʃa~*kaʃʃa*	142.8	16.9	11.9	122.2	14.2	11.8
Average	121.9	21.1	17.9	105.9	13.9	13.4

Table 1: RSDs of c-center and right edge to anchor intervals across the five singleton-geminate word pairs

	C-Center			Right Edge		
Set	**Mean**	**SD**	**RSD**	**Mean**	**SD**	**RSD**
baqa~*sabqa*	138.3	20.7	15.1	117.9	15.7	13.3
sala~*makla*	117.7	22.1	19.1	98.7	13	13.1
nuba~*rakba*	129.6	23.2	18.2	109.5	11.2	10.3
mama~*ra□ma*	123.6	28.3	22.6	104.4	12.3	11.5
□ana~*ba□na*	121.2	27.5	22.9	103.1	15.7	15.3
Set average	126.1	24.4	19.6	106.7	13.6	12.7

Table 2: RSDs of c-centre and right edge to anchor intervals across the five C-CC word pairs

These findings confirm that temporal stability is a robust methodology for probing the syllabification of geminates. The findings also add empirical evidence to the widely held view in phonological theory that medial geminates have a heterosyllabic representation (Davis, 2011). Future research could build on these findings by examining the temporal stability patterns of geminates across other languages. Future studies can also use this methodology to investigate the syllabification of geminates in other word positions (e.g., word-initial and word-final) as well as other types of geminates (e.g., fake geminates).

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Tonic vs. templatic lengthening in Italian and Italo-Romance

Diana Passino *(BCL, CNRS & Université Côte d'Azur)*

Italian, as well as many Central Southern Italo-Romance dialects, are well known languages where stressed vowels in open syllable are subject to lengthening (Loporcaro 2015:117). There is group of Italo-Romance dialects, however, that display a peculiar situation whereby only open syllable of paroxytonic words undergo lengthening and further diphthongization, whereas open syllables of proparoxytonic words and syllables preceding obstruent/liquid clusters do not undergo such processes and behave as vowels in closed syllables. I will examine both Italian and a well described variety of Southern Italo-Romance, namely Altamuran (Loporcaro 1988), and argue, assuming a CVCV representation, that a metrical template ˈCVCVCV (that as implicit in CVCV theory, may contain empty C or V positions) is active in both languages with some relevant differences: in Italian ˈCVCVCV acts only as a minimal word-template that exploits stress-related V lengthening (/pane/[pa:ne]'bread') or other strategies of template satisfaction, such as C lengthening (/gas/ [gass] 'gas'). The ˈCVCVCV minimal template, in addition, plays an active role in the formation of hypocoristics and clippings, as Thornton (1996) has shown, proposing trochaic feet as Italian minimal words. The ˈCVCVCV minimal template is also active in Altamuran, as in many other Upper-Southern dialects, where, as in Italian, it triggers lengthening and then diphthongization of vowels (/fɪl/[fi i̯l] 'thread', as well as compensatory C lengthening after V loss (tjene > tiene > tiənə > tinə [tinn] 'he/she holds). I argue, however, that V lengthening/ diphthongization, *contra* common assumptions in the literature (Loporcaro 2015:27-28, among others), although targeting stressed syllables, is not stress-related but purely templatic. It only takes place in subminimal ˈCVCV words (/fɪl/ 'thread'/) because, as opposed to Italian, ˈCVCVCV in Altamuran and other Upper-Southern dialects not only acts as a minimal template, but also as a maximal template. Stressed open syllables of words that already satisfy the ˈCVCVCV template, like ˈrɪtənə, 'they laugh','ʃɪdd 'wing', vɪtr 'glass', do not lengthen/diphthongize because the template is already satisfied lexically (1):

(1)

ˈC	V	C	V	C	V
r	ɪ	t	ə	n	ə
ʃ	ɪ	d		d	
v	ɪ	t		r	

I will then discuss data that further substantiate the claim that vowel lengthening in Altamuran does not originate by spreading on the space projected by stress, arguing that stress in Altamuran projects empty space to the left of vowels and not to the right, like in Italian. In Italian vowel-spreading takes place to the right causing vowel lengthening (Larsen 1998), as shown in (2) for the word /fato/ [fa:to] 'destiny':

(2)a. C V [C V]$_{stress}$C V

f a t o

Relevant evidence for claiming that stress projects on the left in Altamuran comes from two phenomena that target stressed word-initial vowels to the exclusion of unstressed word-initial vowels: definite article /l/ doubling after prepositions such as /a/ ([a **l**ˈ**l** ert] 'to the garden' vs. [a **l** arˈd͡ʒɪnd] 'to the silver') and /j/ prosthesis, as shown for instance by the first present indicative form of 'to have' that gets prosthesis when lexical and stressed [ˈ**j**aggj], whereas the same word unstressed if auxiliary does not get prosthesis [ˈaggj]. The two phenomena hint at the presence of structural space projected to the left of the stressed vowel, as it will be shown in detail.

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The Contrastive Remnant Condition and the prosody of gapping in Shingazidja

Cédric PATIN
Univ. Lille, CNRS, UMR 8163 - STL - Savoirs Textes Langage, F-59000 Lille, France
cedric.patin@univ-lille.fr

Gapping "*refers to any elliptical clause containing at least two remnants* […] *and lacking at least the main verb*" (Bilbiie 2019: 85), and "*involve[s] material in a conjunct that is allowed to go unexpressed when there is identical material in the preceding conjunct*" (Johnson 2019: 562). A representative example of gapping is given in (1), where a (second) verb 'likes' that one might expect between 'Mary' and 'metal' is absent or deleted:

(1) Mark likes jazz and Mary, metal.

Susanne Winkler, in various works discussing ellipsis since 1997 (e.g. 2005, 2016, 2019[363]; Konietzko & Winkler 2010), proposes the two following principles, the second being the focus of this talk:

(2) a. *Givenness-Marking Hypothesis* [GMH]: given material is deaccented or deleted at Phonological Form.
b. *Contrastive Remnant Condition* [CRC]: given information licenses a contrastive interpretation of the remnant(s). The contrastive remnant(s) must be assigned a strong contrastive pitch accent.

As explained by Bilbiie (2019: 83), "*[t]he proponents of these two hypotheses consider that* […] *the* [CRC] *holds for "non-constituent ellipsis" (where the missing material does not correspond to a regular constituent), namely gapping, stripping or Right Node Raising*". The main idea, following several authors such as Kuno (1982), is that "*gapping is an elliptical variant of a pair-list answer to a multiple wh-question that has an exhaustive topic–focus structure*" (Winkler 2016: 373). An example such as (1) would thus be a possible answer to the question '*who likes what?*', and the remnants (= 'Mary' and 'metal') should be 'assigned a strong contrastive pitch accent'.

However, Bilbiie (2019: 86) explains that "*[w]hereas […] there is a general consensus on the givenness status of the missing material as well as on the contrastive relationship that must exist between remnants and correlates, scholars are divided in their views when it comes to the informational status of remnants*". Some scholars (e.g. Kuno 1976, Hartmann 2000, Johnson 2014) consider that all remnants have a focus contribution, while for others (including Bilbiie), "*[i]n gapping, the first remnant is a contrastive topic, the second remnant a contrastive focus*" (Winkler 2016: 374).

The prosodic consequences of the CRC (or similar proposals) have hardly been explored. Regarding gapping, the main reference is Féry & Hartmann (2005), whose predictions and results, built upon data from German, are in agreement with the CRC, even if they also observed a number of cases of deaccenting. Other studies devoted to the prosody of gapping make it difficult to assess CRC (e.g. Kawahara & Shinya (2008) on Japanese, Gürer & Göksel (2019) on Turkish), or are not production studies (Carlson 2001, Hendriks et al. 2006, etc.).

It is therefore important to continue exploring the reality of the CRC, particularly for non-Germanic languages. A Bantu language seems, from this point of view, an interesting choice, as many Bantu languages do not have a specific prosody associated with focus (Downing & Pompino-Marschall 2013, Güldemann et al. 2015, Downing & Rialland 2017). When there is a specific prosody, there is most of the time no (pitch)accent-focus association, e.g. in Chichewa (Malawi, N31), focus is expressed through phrasing according to Kanerva (1990). In this talk, I will explore the prosody associated with gapping constructions in a Bantu

language of Comoros, Shingazidja (G44a), and verify if the CRC apply to this language and, if so, how it is expressed.

Shingazidja has a privative tone system (/H/ contrasts with Ø), where the high tone shifts unboundedly to its right except if it is blocked by a following underlying tone bearing unit or the right boundary of a Phonological phrase (*φ*), and every even-numbered tone is deleted due to OCP resolution (Tucker & Bryan 1970, Cassimjee & Kisseberth 1989, 1998, a.o.). In (3), for instance, the tone of the subject *mlimádji* 'farmer' shifts on the following syllable (a vowel which is underlyingly H is underlined), where it is blocked by the *φ*-boundary that separates the subject from the VP; the tone of the verb *haníka* 'he gave', on the other hand, shifts up to the first syllable of the word *ɲuŋgú* 'cooking pot(s)', where it blocked because of the tone of the final syllable, which is in turn deleted due to OCP.

(3) [(m̩-limadjí)$_{\varphi}$ (ha-nika wa-nd̩u ɲ-úŋgu n-ʤiɾo)$_{\varphi}$]$_{ι}$
1-*farmer* 1.PFV-*give* 2-*person* 9-*c. pot* 9-*heavy*
'A farmer gave a heavy cooking-pot to people.'

The *φ* roughly aligns with the "*maximal projection of a lexical head*" (Truckenbrodt 1999:233), and an Intonation phrase (ι) roughly aligns with the clause. A H% signals the end of a non-final ι, optionally followed by a pause, and the L% the end of a final ι. Tones inside an *ι* are downstepped. Stress falls on the penult (Rey 1990), as in many Bantu languages (Downing 2010), but prominence can emerge on the final or antepenult due to complex interaction with tones and sonority.

In Shingazidja, focus is expressed by the insertion of a *φ*-boundary after the focalized element; if *wánd̩u* 'persons' has to be focalized in (3), the tone of the verb would have stopped on its final syllable. However, alternative strategies will be used when phrasing makes no difference. In (3), for instance, a *φ*-boundary already separates the subject from the VP in broad-focus condition, so an insertion would have no impact. In such a case, the (stressed) penult of the focused element would be lengthened, associated with intensity and F_0 peaks, and/or its tone would not be downstepped. To my knowledge, in contrast, no specific prosody is linked to (contrastive) topicalization.

Data was collected from one native speaker, using various sentences varying in the presence or absence of the ellipsis, the number of remnants, the structure of the remnant (with or without an adjective), the contrastiveness between the two conjuncts, the presence of a context question, etc. First, they reveal that each conjunct aligns with an ι, the second being downsteped, and that a *φ*-boundary separates the first remnant from the second, as predicted by Féry & Hartmann (2005).

As for CRC, my results support S. Winkler's claims. The remnants following the site of the ellipsis exhibit prosodic properties typical of focused elements. In (4c), for instance, a *φ*-boundary follows *wabuʃĩ* 'Madagascans', while it is not the case when there is no ellipsis (4b).

(4) a. [(Djumwá)$_{\varphi}$ (ha-uli'zá)$_{\varphi}$ (o=wa-sawahili 'má-gaɾi)$_{\varphi}$]$_{ι}$
Juma 1.PFV-*sell* AUG_2=2-*Swahili* 6-*car*

b. [(Saidí)$_{\varphi}$ (há-uli'zá)$_{\varphi}$ (o= wa-buʃĩ 'má-beni)$_{\varphi}$]$_{ι}$
Said 1.PFV-*sell* AUG_2=2-*Madagascans* 6-*truck*

c. [(Saidí)$_{\varphi}$ ——— (o=wa-bu'ʃĩ)$_{\varphi}$ (ma-'béni)$_{\varphi}$]$_{ι}$
Said EL AUG_2=2-*Madagascans* 6-*truck*

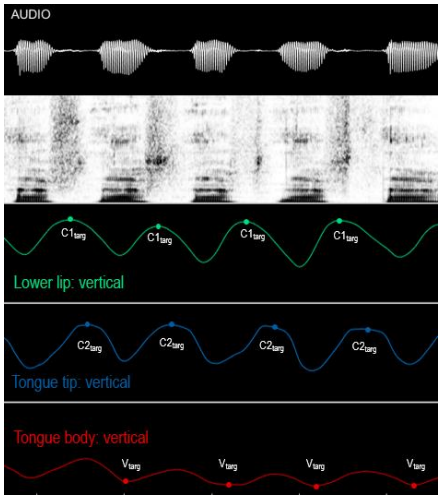
'Juma has sold cars to the Swahilis, Saidi (b) has sold / (c) ~~has sold~~ trucks to the Madagascans.'

When a *φ*-boundary already follows the post-elllipsis remnant, the other features associated with focus emerge (increased duration, intensity and F_0 peaks, no downstep). None of these features, in contrast, characterizes the first remnants of each ι.

Tight and loose coordination as a marker of complex onsets and extrasyllabicity in French

Teja Rebernik[1], Annie Rialland[1], Philipp Buech[1], Anne Hermes[1]
[1]Laboratoire de Phonétique et Phonologie, Université Sorbonne Nouvelle, CNRS, Paris, France

Within the framework of Articulatory Phonology (Browman & Goldstein, 1992) and the coupling hypothesis (Nam & Saltzman, 2003), numerous studies have demonstrated that syllable structure is reflected in articulatory coordination patterns (e.g., American English: Marin & Pouplier, 2010; Italian: Hermes et al. 2013). More specifically, complex onsets display global coordination (C-center effect), which is tighter and more stable, whereas non-complex clusters exhibit local coordination, which is looser and more variable. Based on phonological criteria, previous research suggests that /f/ in /fn/ clusters (e.g., *fnac*) and /s/ in /sp/ clusters (e.g., *spa*) are extrasyllabic, while /pl/ clusters (e.g., *plage*) constitute true complex onsets (Rialland, 1994). The current study investigates the articulatory coordination of French consonant clusters /pl/, /fn/, and /sp/ to assess whether the phonological status of these clusters is mirrored in their gestural coordination. The only prior study investigating local vs. global coordination patterns using articulatory kinematic methods had inconclusive results (Kühnert et al., 2006). Using articulatory data from a fast syllable repetition task, we show that when coordination is measured in terms of target-to-target lags (Hermes et al., 2017), /pl/ demonstrates tighter and more stable coordination, consistent with its status as a complex onset, while /fn/ and /sp/ show looser and more variable patterns. Further, these findings suggest that phonological knowledge is recoverable even in a fast syllable repetition task.



Method and analysis. Articulatory and acoustic data were collected from three female native French speakers (ages 24, 36, 72; more speakers currently being recorded). Sensors were placed on the upper and lower lips, tongue tip, tongue body, and jaw using an EMA AG501 system. Participants completed a fast syllable repetition task, producing simple CV syllables (/pa/, /fa/) and C_1C_2V clusters (/pla/, /spa/, /fna/). The task involved producing each syllable type as fast as possible on a single breath. We analyzed the articulatory gestures by measuring the point of maximum constriction (i.e., target) for consonants and vowels. Gestural timing was assessed via target-to-target lags: $C1_{targ}$-$C2_{targ}$, $C1_{targ}$-V_{targ} and $C2_{targ}$-V_{targ} (see Fig. 1 for example /fna/ annotations). To quantify coordination stability, we calculated the standard deviation of these lags across repetitions for each speaker and cluster type. Statistical analyses, including linear mixed-effects models (*lmer*), were used to evaluate significant differences in coordination patterns across clusters.

Results. The lag analysis shows that the $C1_{targ}$-$C2_{targ}$ for /pl/ clusters is both smaller and less variable compared to /fn/ and /sp/ (see Fig. 2). The statistical model revealed significant differences in coordination tightness (smaller and less variable lags) between /pl/ and the other clusters. Pairwise comparisons indicate that /pl/ differs significantly from /sp/ ($p = 0.01$) and /fn/ ($p < 0.001$), while /fn/ and /sp/ are not significantly different from each other ($p = 0.4$). These significant differences in coordination of /pl/ vs. /fn, sp/, were also present in the $C1_{targ}$-V_{targ} but not $C2_{targ}$-V_{targ} measures.

The results confirm that /pl/ forms a complex onset, being tightly coordinated, whereas /fn/ and /sp/ do not exhibit this tight coordination. Furthermore, the analyses show significant

differences in stability across the tested clusters /pl/, /fn/, and /sp/. Specifically, the /pl/ clusters exhibit more stable coordination patterns, in line with their status as complex onsets. In contrast, the /fn/ and /sp/ clusters display more variable coordination, aligning with their extrasyllabic status.

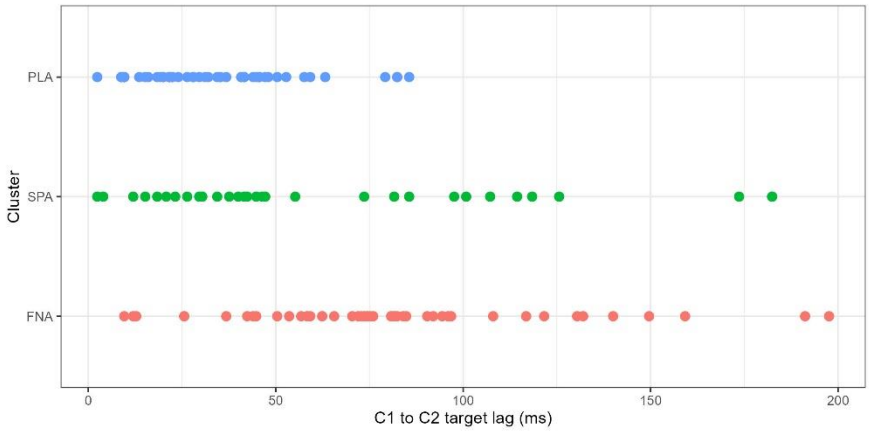


Figure 2: $C1_{targ}$-$C2_{targ}$ lag for all three clusters, /pla, spa, fna/ across speakers.

Summary/Conclusion. The results of this study provide evidence for differences in articulatory coordination patterns in French consonant clusters, reflecting their distinct phonological statuses. These findings therefore align with the coupling hypothesis of syllable structure, which predicts that extrasyllabic segments (such as /f/ in /fn/ and /s/ in /sp/) are not tightly bound within the syllable, resulting in looser and less stable coordination patterns, clearly contrasting with /pl/, which maintains tight coordination indicative of its role as a complex syllable onset.

An additional observation was noted by the experimenters during the syllable repetition task. After approximately the fourth syllable repetition, /fna/ and /spa/ were perceived as shifting to /naf/ and /pas/, potentially indicating that /f/ and /s/ take up the coda position. This perceptual shift could provide support for the extrasyllabic status of /f/ and /s/. In contrast, no such perceptual shift occurred for /pl/, which was consistently perceived as a coherent phonological unit, maintaining its status as a tightly coordinated complex onset. This potential perceptual shift is currently being quantified.

These findings suggest that phonological knowledge about syllable structure is recoverable even in fast syllable repetition. The observed differences in coordination patterns and variability across clusters provide evidence for a distinction between complex onsets (e.g., /pl/) and extrasyllabicity (e.g., /fn/, /sp/). Further data from additional speakers will be presented at the conference, including a detailed intragestural analysis.

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Acoustic correlates of standard Kosovar Albanian stress

Irena Sawicka & Andrzej Żak (Institute of Slavic Studies, Polish Academy of Sciences)

The literature on Albanian stress is very limited. To date, it has not been possible to formulate a rule determining the place of stress. The only true assessment is that Albanian stress is free and basically immobile in inflection. However, two clear tendencies are visible. According to the first one, the last syllable of the word-formation root is stressed (e.g., *pˈun-a* 'work'), the second indicates that many suffixes draw the stress on themselves (e.g., *punë-tˈor* 'worker'). Although specific patterns lead to a clear tendency to stress one of the two last syllables, it cannot be said that the Albanian stress falls on a specific syllable of the word.

There is no consensus on the acoustic realization of prominence (i.e., stress) in Albanian. The literature predominantly identifies increased intensity as the primary characteristic of stressed vowels (e.g., Dodi 2004, Beci 2004). However, the complementary effect of the main prosodic correlates (i.e., intensity, fundamental frequency, and duration) is also mentioned.

We propose an acoustic analysis of standard Kosovar Albanian stress using certain research methods. Standard Kosovar Albanian refers to the standard Albanian language based on Tosk varieties, as spoken in Kosovo by individuals without Gheg dialectal influence. The analysis is based on standard Kosovar Albanian speakers' recordings made in Prishtinë.

In our study, we conducted both paradigmatic and syntagmatic comparison (van Heuven 2018: 20, van Heuven & Turk 2020: 151–152). The first one entails an analysis of stressed and unstressed syllables in both members of a minimal pair that differs only in the stress placement (e.g., *veprimtˈari* 'activist' : *veprimtarˈi* 'activity'). Then, an extensive syntagmatic comparison has been made. Based on a text read by standard Kosovar Albanian speakers, we established the acoustic stress correlates, such as intensity, fundamental frequency change, duration, and vowel quality of stressed and unstressed vowels, paying attention to the phonetic and prosodic context of the vowels (van Heuven 2018, van Heuven & Turk 2020). Statistical analysis shows which of those correlates is the most significant in standard Kosovar Albanian. Additionally, we compared the obtained results of paradigmatic and syntagmatic analyses. The PRAAT software (Boersma & Weenink 1992–2025) and automatized scripts were used for segmentation and analysis of the acoustic signal.

Both the paradigmatic and syntagmatic comparisons show that duration seems to be the main acoustic correlate of standard Kosovar Albanian stress.

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Göktuğ Börtlü (Selçuk Üniversitesi, Konya)
Eugeniusz Cyran (Catholic University Lublin)
Tobias Scheer (Université Côte d'Azur, CNRS 7320)

Minimal word constraint in Turkish final devoicing

Basic pattern. Final devoicing in Turkish is more intricate a pattern than in other final devoicing languages (like German or Russian). Voiced fricatives never undergo this process (*kaz* "goose.Nom" - *kaz-ɨ* "id. Acc"). Word-final voiced stops always devoice in bisyllabic (or bigger) roots: *kitap* "book.Nom" - *kitab-ɨ* "id. Acc". Alongside with their regular devoiced form, some loans also display non-devoiced forms (*etüd-ü* "study.Acc" - *etü[t]* / *etü[d]* "id. Nom"). This appears to be a learned or spelling pronunciation: it does not withstand the generalization for the native vocabulary, where bisyllabic or bigger roots devoice without exception.In monosyllabic CVC roots, voiced stops may (*tat* "taste.Nom" - *tad-ɨ* "id. Acc") or may not devoice (*saʤ* "sheet metal.Nom" - *saʤ-ɨ* "id. Acc"). Whether or not a monosyllable undergoes final devoicing cannot be predicted: it is a lexical property of roots (e.g. Inkelas 1995). Finally, stops may also be lexically voiceless (both in mono- and bisyllabic roots), as in *top* "ball.Nom" - *top-u* "id. Acc" and *sepet* "basket.Nom" - *sepet-i* "id., Acc".

Size constraint. Inkelas & Orgun (1995) have added an observation to the puzzle: final stops in CVC monosyllables behave as described (they may or may not devoice), but in CVCC monosyllables they side with bisyllables: they always devoice (*garp* "west.Nom" - *garb-ɨ* "id. Acc"). Using moras, the relevant descriptive generalization equating CVCVC and CVCC is "voiced stops always devoice iff the root is at least bimoraic" (coda Cs moraic, last C extrametrical). The same may be expressed in Strict CV, but this doesn't matter for our purpose.

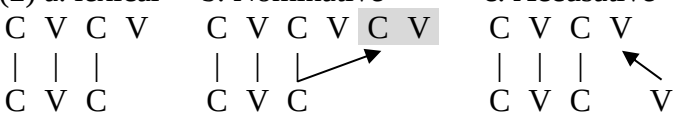
Three-way contrast. Followed by other authors, Inkelas & Orgun (1995) analyze the three-way distinction between voiceless, devoicing and non-devoicing CVC roots in terms of Laryngeal Realism (Iverson & Salmons 1995, Honeybone 2005), as under (1). We subscribe.

(1)	laryngeal distinctions in Turkish			
a.	C^{L} phonologically voiced	no devoicing	sɑʤ - sɑʤ-ɨ	Non-devoicing stops are phonologically specified as such and therefore cannot devoice (1a: they bear L (or [voice])).
b.	C° phonologically unspecified	devoicing	tɑt - tɑd-ɨ	
c.	C^{H} phonologically voiceless	voiceless anyway	top - top-u	

By contrast, devoicing stops are neutral consonants C° 1b, which are unspecified (or underspecified) for voicing: they take on voicing from their environment in intervocalic position (passive voicing), otherwise are voiceless. Finally, voiceless stops are phonologically specified as such (1c: they bear H (or spread glottis)) and therefore cannot be passively voiced.

Analysis. Inkelas & Orgun's (1995) analysis is based on two crucial moves regarding the data: the whole class of monosyllabic voiced devoicing words (1b) is dismissed ("the virtual nonexistence of alternating final plosives in (C)VC roots…" p.778), and the learned /spelling pronunciation whereby some loans afford undevoiced pronunciations (the aforementioned *etüd* class) is taken seriously. We argue that both options regarding data selection are unwarranted. A word class represented solely by loans is suspicious, and the fact that the words in question also afford the regular voiceless pronunciation is not mentioned by Inkelas & Orgun. If these two data points are corrected, their analysis of the size restriction is not workable anymore. Rather, we argue that (virtual) geminates are the crucial ingredient of the size restriction. When spelt out by themselves (i.e. without suffixes), roots that are too small (2a) geminate their final consonant in order to meet the minimal word size (we use Strict CV representations where the minimal word size is defined as "encompassing at least two nuclei, final empty nuclei being ignored"). This gemination uses epenthetic syllabic constituents, the grey-shaded empty CV unit under (2b). When a suffix is added, whether V-initial as under (2c) or C-initial, the minimal word size is met and no gemination occurs. Non-devoicing of CVC roots is then a consequence of gemination: geminates do not devoice (reminiscent of geminate integrity).

(2) a. lexical b. Nominative c. Accusative



What geminacy protects against is the phonological alteration of the consonant. In regular L systems with final devoicing, the L is removed in word-final position by a phonological process. This is disallowed when the consonant is a geminate, thus devoicing is blocked (1a). In bisyllabic roots, however, the L may be removed since here the C^L is not a geminate. Neutral C° (1b) is phonologically unspecified and receives passive voicing from the environment upon phonetic interpretation (as in Acc *tad-ɨ*). In regular H systems with final devoicing, the phonetic interpretation of C° word-finally is voiceless (Nom *tat*). A geminate C° as under (1b) is a case in point: unlike under (1a), no prime needs to be removed, and its pronunciation is voiceless due to phonetic interpretation, whether simple or geminate. Finally, nothing happens to C^H (1c) in the phonology: it is pronounced voiceless, whether singleton or geminate.

Final geminates are virtual. Final geminates under (2b) are so-called virtual geminates: they arephonologically geminate, but phonetically singleton. This configuration is found in many languages: English agma is a (partial) geminate /ŋg/ phonologically, which is pronounced singleton [ŋ] (e.g. Hammond 1997). In Norwegian (e.g. Kristoffersen 2007: 210ff), long vowels that occur in unsuffixed roots (common gender) shorten when the neuter suffix -t is added: *peen* - *pen-t* "pretty.comon gender, id. neuter). When the root-final consonant happens to be -t as in *søøt* "soft.common gender", we know that adding the neuter suffix produces an underlying /-tt#/ cluster, which like all other clusters shown shortens the preceding vowel: *søt* "soft.neuter". However, the /tt/ is pronounced as a singleton [t], rather than as a geminate [tt]. In Turkish, lexical geminates as in *ha[tt]-ɨ* "line.Acc" appear as singletons word-finally: *ha[t]* "id. Nom". Since geminates instantiate coda-onset sequences, there is no reason why they should degeminate phonologically: word-final coda-onset clusters RT, TT and RR are legal: *sert* "hard", *zapt* "conquest", *alarm* "alarm". We conclude that in Turkish, phonological geminates are pronounced singleton in word-final position.

VOT. The three-way laryngeal system of Turkish (1) is also reflected in VOT. In a typical two-way language, one category has a VOT around zero (neutral consonants C°), while the other is either significantly negative (L languages: prevoicing) or significantly positive (H languages: aspiration). But in Turkish, there is no consonant type with a VOT around zero (Kallestinova 2004). Rather, voiceless initial stops ptk have +53 VOT, against voiced initial stops bdg displaying -43 VOT (Öğüt et al. 2006, averaged over the three stops and 30 participants). This suggests the presence of both laryngeal specifications L (or [voice]) and H (or [spread glottis]). A similar spread VOT pattern in Swedish leads Ringen & Helgason (2008) to the same conclusion of a 3-way laryngeal distinction in a 2-way contrast language.

Voice assimilation (VA). Turkish allows for coda-onset clusters word-finally (*örf* "custom.Nom") and before consonant-initial suffixes (*örf-ler* "id. pl."). But CCC clusters are disallowed in monomorphemic strings, and are repaired in loanword adaptation (*elektirik* < *electric*, *asturonot* < *astronaut*, etc.). We conclude that morphologically complex CC-C clusters are not computed in one domain: *örf-lAr* is [[örf] lAr] where the root-final cluster is computed in the inner domain and then frozen (just like the cluster [ksθs] in English *sixths* [[[siks]θ]s], which is impossible within a morpheme). This is confirmed by the fact that the voicing of root-final stops is always identical when word-final and when occurring before a C-initial suffix (*sadʒ* - *sadʒ-ɨ* - *sadʒ-lar*, *tat* - *tad-ɨ*, *tat-lar*): in both contexts, the voice value is acquired upon domain-final computation. Now consider that in Turkish, suffix-initial stops may either take on the voicing of the preceding segment (-tA / -dA "locative": *sadʒ* - *sadʒ-ɨ* - *sadʒ-da* "sheet metal. Loc", *tat- tad-ɨ* - *tat-ta* "taste.Loc"), or come with their own fixed voicing. In the latter case, stop clusters disagreeing in voicing are produced. Thus *-ken* "converb marker (CV)" begins with a fixed voiceless k: *atʃ* - *atʃ-ɨ* - *atʃ-ken* "hungry.CV", *sadʒ* - *sadʒ-ɨ* - *sadʒ-ken* "sheet metal.CV", the latter form bearing a [dʒk] cluster. Conversely, *-gil-ler* "as a whole" has an initial fixed voiced g: *turuntʃ* - *turundʒ-u* - *turuntʃ-gil-ler* "citrus", producing the cluster [ntʃg] in

turunʧ-gil-ler. If a C° were involved in clusters that disagree in voicing, it should be passively voiced, i.e. receive voicing from the (phonetic) environment. Since this is not what we see, clusters disagreeing in voicing suggest that no C° is involved: both consonants are specified for voicing ($C^{H}C^{L}$ or $C^{L}C^{H}$). Stops like in -tA / -dA, though, are C° unspecified for voicing. Thus the behaviour of VA confirms that Turkish contrasts three types of stops: C^{L}, C^{H} and C°.

Lexical stress modulates lenition: The case of palato-alveolar affricates in Italian

Bowei Shao[1], Anne Hermes[1], Philipp Buech[1], Maria Giavazzi[2]
(Laboratoire de Phonétique et Phonologie[1] & Département de sciences cognitives, ENS-PSL[2])

Introduction: Palato-alveolar affricates in Italian emerged from the palatalization of velar obstruents before front vowels in Italo-Romance. These consonants underwent deaffrication, starting in Florentine in the early 14th c. (Castellani, 1952) and later spreading to other Tuscan varieties, resulting in palato-alveolar fricatives word-initially and intervocalically (e.g., [ˈtʃeː.na] > [ˈʃeː.na] 'dinner', [ˈpaː.tʃe] > [ˈpaː.ʃe] 'peace'). This change has since extended to central and southern varieties (Loporcaro, 2006; Bertinetto, 2010). Standard Italian is now divided between 'deaffricating' and 'non-deaffricating' varieties, the latter limited to regions north of Tuscany, where the palato-alveolar affricate is preserved. The deaffrication of palato-alveolar affricates into their corresponding fricative is a case of consonantal lenition. This study is the first to examine the articulatory realization of Italian affricates, focusing on non-deaffricating varieties to determine whether they too show signs of incipient lenition. It also explores whether prosodic context influences lenition (Katsika & Tsai, 2021; Shao et al., 2025). We hypothesize that, (i) despite originating from non-deaffricating regions, speakers will exhibit some lenition, consistent with trends in other varieties. Moreover, (ii) due to the fortifying effect of lexical stress, affricates close to stress will be less lenited than those further away.

Materials: The target words were trisyllabic nonce words, structured /$C_1V_1.C_2V_2.C_3V_3$/, differing solely by the position of stress on the first or the second syllable. The V_1 and V_3 positions were occupied by /i/. C_1 and C_2 were occupied by /p, t/ and V_2 was /a, e/. C_3 was /tʃ, dʒ/ (e.g., /ˈpi.ta.tʃi/, /pi.ˈta.tʃi/). The nonce words were written in their orthographic forms with lexical stress marked by an accent (e.g., pítaci, pitáci), embedded in a carrier phrase *Pimpa parte da __ la mattina presto* ('Pimpa leaves __ early in the morning') and randomized. Fifteen speakers were recorded with EMA (AG501) with synchronized acoustic signals (15 speakers × 4 repetitions × 32 targets = 1875 tokens). Tongue-mid trajectory in the high-low dimension was analyzed over the duration of the $V_2C_3V_3$ sequence with 10 time points for each segment; values were modeled using GAMMs with mgcv. We also analyzed the following acoustic parameters: the duration of the closure and release phases, RMS amplitude and energy of both phases and the burst. Prior to any formal analysis, we observed that speakers fell into two distinct groups: a group of five speakers, 'leniters' exhibited systematic lenition of affricates. The remaining ten speakers, 'non-leniters' showed no apparent sign of lenition.

Results: (I Closure and release duration) For all affricate consonants, the closure phase is longer in close-to-stress position than in far-from-stress position, regardless of the nature of the preceding vowel (atʃ: $\beta = 8.31$, $p = 0.009$; etʃ: $\beta = 10.46$, $p = 0.004$; adʒ: $\beta = 6.45$, $p = 0.002$; edʒ: $\beta = 4.80$, $p < 0.001$). This systematic significant difference however disappears in the release phase of the affricates (atʃ: $\beta =$ -1.06, $p = 0.42$; etʃ: $\beta = 1.75$, $p = 0.44$; adʒ: $\beta = -4.76$, $p = 0.009$; edʒ: $\beta = -1.69$, $p = 0.32$). **(II RMS amplitude and energy)** There is a systematic stress-conditioned difference among speakers identified as 'leniters'. These speakers exhibit consistent variations in RMS amplitude and acoustic energy during both closure and burst. The closure phase and the burst exhibit lower acoustic energy and reduced RMS amplitude in the close-to-stress condition (energy - atʃ: $\beta = -0.78$, $p = 0.002$; etʃ: $\beta = -1.10$, $p < 0.001$; adʒ: $\beta = -0.38$, $p = 0.004$; edʒ: $\beta = -0.08$, $p = 0.007$; RMS - atʃ: $\beta = -0.39$, $p = 0.002$; etʃ: $\beta = -0.55$, $p < 0.001$; adʒ: $\beta = -0.19$, $p = 0.004$; edʒ: $\beta = -0.19$, $p = 0.007$), indicating resistance to lenition. These systematic differences are observed regardless of consonant voicing but they are absent in the release phase. **(III Tongue tip trajectory and position)** The GAMM estimates of tongue tip movement along the high-low (y) dimension are presented in *Figure 1* for leniters and *Figure 2* for non-leniters. The data reveal that the displacement from [a, e] to [tʃ] or [dʒ] is significantly larger when [a, e] are stressed. This suggests that stress enhances articulatory di placement, likely as part of the effort to achieve greater prominence in stressed syllables. Furthermore, a delayed articulatory target is observable for both leniters and non-leniters, which may correspond to the longer closure duration

observed in the close-to-stress condition. Though both leniters and non-leniters exhibit stress-induced articulatory differences, these differences do not extend to the tongue tip trajectory.

Discussion: Our results indicate that a lenition process is ongoing, but it is weak and not uniformly adopted by all speakers. The present results call for a more in-depth acoustic analysis of the lenition process following (Katz & Pitzanti, 2019) and for an analysis of the tongue mid sensor, as it may offer more insight into lenition. Both analyses will be presented at the conference, together with a discussion of the implications of the present results for the phonology of Italian.

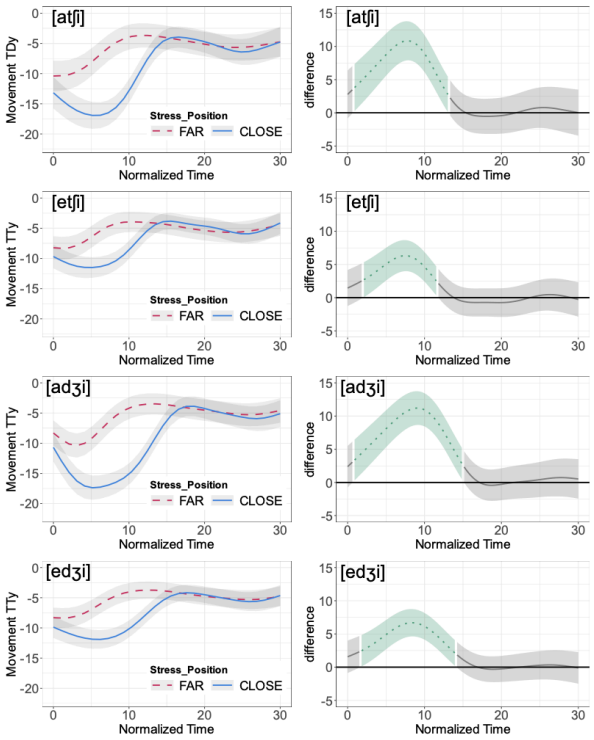


Figure 1: *GAMM-fitted tongue tip trajectories for* ***leniters*** *in [V_2.C_3i] sequences on the high-low (y) dimension (mm) by normalized time (left) and estimated differences (right). Time point 0 marks the acoustic onset of V_2, and time point 30 marks the offset of V_3. Estimated differences with 95% confidence intervals are shown, and green dotted lines indicate significant differences between far-from and close-to-stress conditions.*

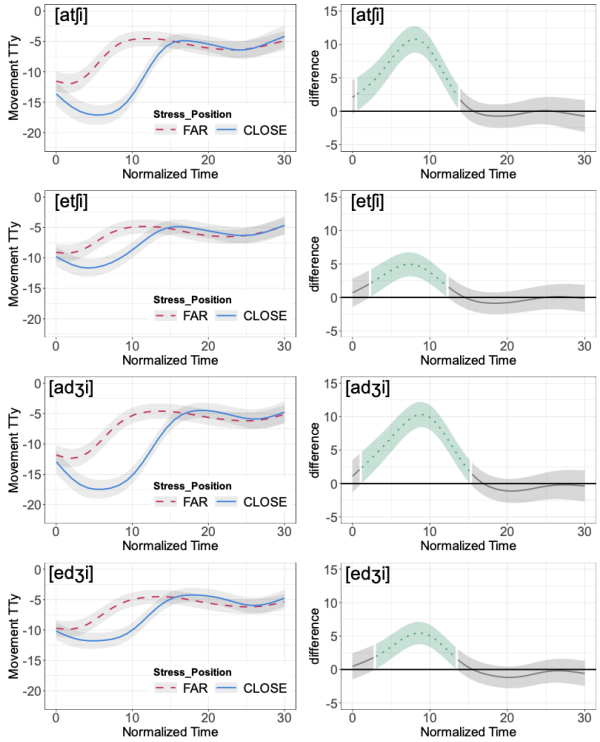


Figure 2: *GAMM fitted tongue tip trajectories of the* ***non-leniters****. For details on the legend, please see Figure 1.*

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A Constraint-based Analysis of Ablaut Reduplication in Punjabi

Nasir Abbas Rizvi Syed (LUAWMS)

Tooba Sahar (LUAWMS)

Punjabi is an Indo-Aryan language spoken mainly in Pakistan, India and Canada. There is no previous study on Punjabi ablaut reduplication (AR). This type of reduplication is related to the heads of the base and the reduplicants. This process influences no other segment. The paper presents and analyses examples of Punjabi AR constructions using a constraint-based paradigm. The data in appendices (1-2) show that long or short vowels in the base contrast with their counterparts in the reduplicants, primarily in lip-rounding or F3 lowering. Therefore, all bases except those with /ʊ/ or /u/ in the stressed nuclei take [ʊ] or [u] in the reduplicant peaks. The vowel change in reduplication occurs only in the stressed syllables. However, if the nuclei of the bases contain /u/ or /ʊ/, the low vowel /a/ or schwa appears in the reduplicant head, respectively (appendix-3). The vowel length between the base's and reduplicants' nuclei is maintained in that if the long vowel is in the base, a long vowel appears in the reduplicant, and with a short vowel in the base, a short vowel appears in the reduplicant's peak.

These data are analysed using the RED=[u]/[ʊ], Constraints OCP-nucleus-BR, and INTEREST. RED=[u]/[ʊ] is the main trigger for reduplication. It demands that the head of a reduplicant must have [u] in the head. Therefore, in general, all vowels in the heads of the reduplicants have this vowel. However, OCP-nucleus-BR is the higher-ranked constraint that does not allow a vowel repetition in the base and the reduplicant heads in specific cases. If the base head has a short [ʊ] or long [u], it cannot take the same vowel in the reduplicant head (appendix-3). INTEREST activates in these cases and ensures maximum dispersion between the heads of the base and the reduplicant (Minkova, 2002). Resultantly, with a long [u] in the base head, a reduplicant with the long vowel [a] appears, and a base with the short vowel [ʊ] in the peak, schwa appears in the head of the reduplicants. Also, MAX-IO, DEP-IO, and IDENT-IO constraints do not allow any deletion, insertion or change in the base, and IDENT-BR[C], DEP-BR and MAX-BR are resistant to any feature change like insertion (of a mora in the form of vowel lengthening) or deletion (of a mora in the form of vowel shortening) in the reduplicants. The following ranking yields the Punjabi AR grammar.

IDENT-IO, DEP-IO, MAX-IO, IDENT-BR[C], DEP-BR, MAX-BR, OCP-nucleus-BR >>
RED=[u]/[ʊ] >> INTEREST >> IDENT-BR[V]

As a quantity-sensitive language, Punjabi assigns stress to the heaviest vowel in a lexical word. In the syllables of equal weight, stress falls on the left-most syllable. Since faithfulness constraints are inviolable, nothing can be changed in the base and the reduplicant except the nucleus of the reduplicant. Every other segment of the base is essentially copied in the reduplicant. Thus, Punjabi AR presents examples of fixed-segment ablaut reduplication.

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Appendices:

1. Long vowels

Base	Glosses	Base-reduplicant
a. [o-u]		
/loɽ/	need	[loɽ-luɽ]
/'fo.ʈo/	photo	[foʈo-fuʈo]
/'k^{h}o.ʈa/	donkey	[k^{h}o.ʈa-k^{h}u.ʈa]
b. [ɔː-u]		
/'pɔː.ɖa/	Plant	[pɔː.ɖa-pu.ɖa]
/'hɔː.ɖi/	gutter	[hɔː,ɖi-hu.ɖi]
/'sɔː.ɖa/	Grocery	[sɔːɖa-su.ɖa]
c. [a-u]		
/paɽ/	tear	[paɽ-puɽ]
/k^{h}a/	eat	[k^{h}a-k^{h}u]
/'pan.ɖe/	Utensils	[panɖe-pun.ɖe]
/bə.'ɳa/	make	[bə.ɳa-bə.ɳu]
d. [ɛː-o]		
/bɛː/	sit	[bɛːh-buh]
/'pɛː.ɽa/	ugly	[pɛː.ɽa-pu.ɽa]
/pɛːr/	foot	[pɛːr-pur]
e. [e-u]		
/k^{h}eʈ/	field	[k^{h}eʈ-k^{h}uʈ]
/'fe.ʈã̆/	Damnation	[fe.ʈã̆-fuʈã̆]
/'pe.ɖã̆/	sheep	[peɖã̆-puɖã̆]
f. [i-u]		
/piɽ/	rush	[piɽ-puɽ]
/pir/	pain	[pir-pur]
/pir/	religious guide	[pir-pur]
2. Short vowels		
a. [ɪ-ʊ]		
/'ʈɪl.la/	loose	[ʈɪlla-ʈʊlla]
/'nɪk.ki/	small	[nɪk.ki-nuk.ki]
/'mɪɽ.ʈi/	Dust, soil	[mɪɽ.ʈi-mʊɽ.ʈi]
/'ʈɪb.ba/dune		[ʈɪb.ba-ʈʊb.ba]
b. [ə-ʊ]		
/'xəb.bər/	News	[xəb.bər-xʊb.bər]
/'ləɽ.na/fight		[ləɽ.na-lʊɽ.na]
/mər/	die	[mər-mʊr]
3. Rounded vowels		
a.		
/k^{h}u/	well	[k^{h}u-k^{h}a]
/punɖ/	wasp	[punɖ-panɖ]
/rũ̆/	spirit	[rũ̆-rã̆]
b.		
/p^{h}ʊl/	flower	[pʊl-pəl]
/c^{h}ʊp/	hide	[c^{h}ʊp-c^{h}əp]
/pʊl/	forgot	[pʊl-pəl]

Le *goro-awasé* : étude des jeux mnémoniques numériques en japonais

Rie Urasoko – Université Bordeaux Montaigne, D2iA

Le japonais offre une diversité de jeux de mots basés sur la segmentation en mores. Le *goro-awasé*, au cœur de notre étude, associe chiffres et homophones pour produire des formes mnémoniques utiles à la mémorisation (numéros de téléphone, dates etc.). Il utilise plusieurs lectures des chiffres (lecture native, sino-japonaise (SJ), voire anglaise adaptée), comme illustré en Tab.1.

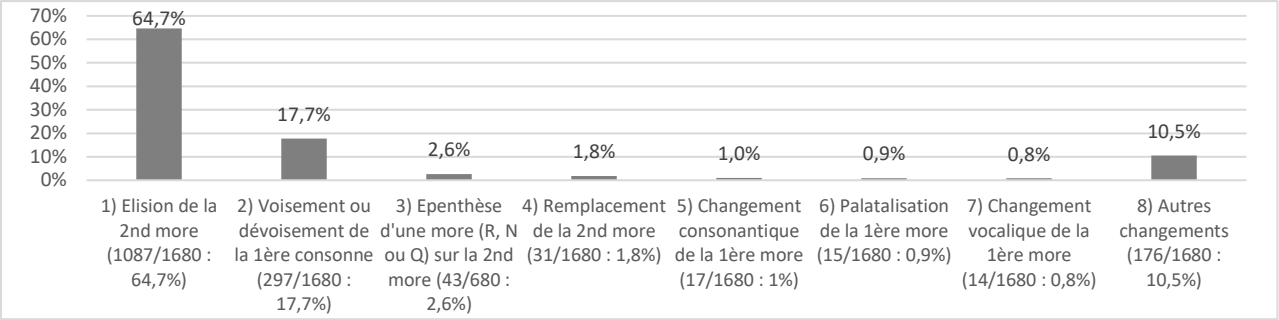
	0	1	2	3	4	5	6	7	8	9	10
Native		*hi, hi.to*	*hu, hu.ta*	*mi*	*yo, yo.N*	*i.tu*	*mu*	*na.na*	*ya*	*ko.ko. no.tu*	*to.R*
SJ	*re.R*	*i.ti*	*ni*	*sa.N*	*si*	*go*	*ro.ku*	*si.ti*	*ha.ti*	*ku, kyu.R*	*zyu.R*
Anglaise	*ze.ro*	*wa.N*	*tu.R*	*su.ri.R*	*fo.R*	*fa.i.bu*	*si.Q.ku. su*	*se.bu.N*	*e.i.to*	*na.i.N*	*te.N*

Tab.1 Lectures des chiffres de 0 à 10 en japonais selon trois systèmes - native, sino-japonaise et anglaise adaptée (N : nasale more, R : seconde partie d'une voyelle longue, Q : consonne géminée, la frontière moraïque est marquée par le point)

Par exemple, le nombre 39 (/saN-zyuR-kyuR/) est transformé en /saN-kyuR/, rappelant ainsi l'expression anglaise *thank you*. Par un procédé similaire, le nombre 893 est transformé en /ya-ku-za/ « mafia japonaise », résultant de la réduction de /saN/ (3) à /za/ par élision de /N/ et voisement de /s/ en /z/. Le nombre 51, /ko-i/, signifiant « carpe », provient de la modification de /go/ (5) en /ko/ par dévoisement et de la réduction de /iti/ (1) à /i/ par chute de /ti/. Enfin, le nombre 6480, /mu-si-ba-zero/, se traduit par « zéro carie » (*musiba* signifiant « carie »), résultant de la réduction de /hati/ (8) à /ba/ par élision de /ti/ et voisement de /h/ en /b/, et est souvent utilisé comme numéro de téléphone pour dentistes. Ces lectures reposent sur des manipulations phonologiques, examinées ici à travers 3345 *goro-awasé* recensés (Mizumoto 2023). Notre analyse repose sur la nature moraïque du japonais, où chaque more, qui constitue l'unité prosodique fondamentale, contribue de manière équivalente à la structure phonologique du japonais. Les mores spéciales (/N/, /R/ et /Q/) se distinguent des mores indépendantes (CV, V, CyV), notamment par le fait qu'elles ne peuvent être en position initiale. La distinction entre ces types est importante pour comprendre la sensibilité des positions moraïques à la modification dans ce jeu de mot.

Nous avons identifié neuf types récurrents de modifications phonologiques dans nos données : élision, épenthèse, remplacement (élision + épenthèse), voisement, dévoisement, dénasalisation, palatalisation, changement vocalique et consonantique. De cette typologie émerge une première hiérarchie structurante : i) les modifications de la more péninitiale (ex. 16 /iti-roku/ transformé en /i-ro/ signifiant « couleur » ou 392 /saN-ku-ni/ transformé en /sa-ku-niN/ « cultivateur »), touchant notamment les mores spéciales, sont majoritaires (69,1% des cas modifiés), ii) les modifications touchant la more initiale sont plus rares mais phonologiquement pertinentes, reflétant souvent des asymétries structurelles propres au japonais, telles que la prédominance du dévoisement sur le voisement en position initiale. Plusieurs chiffres offrent théoriquement la possibilité d'un dévoisement de la more initiale, notamment zero/ (0), /go/ (5) et /zyuR/ (10). Pourtant, seul le dévoisement de /g/ en /k/ (5) est réellement attesté dans nos données, ce qui suggère une asymétrie entre le potentiel phonologique et les réalisations. Par ailleurs, ce dévoisement (du /g/ en /k/ du chiffre 5, *go*) s'observe préférentiellement en position initiale, contrastant avec le voisement, qui apparaissent plutôt en position médiane ou finale. Si des exemples comme /hi/→/bi/ (1), /hu/→/bu/ (2), /sa(N)/→/za(N)/ (3), /ha(ti)/→/ba(ti)/ (8), /ku/→/gu/ (9) ou /toR/→/doR/ (10) etc. attestent que des segments voisés peuvent effectivement apparaître dans le *goro-awasé*, leur apparition reste moins systématique et plus rare que le dévoisement initial de /g/ du chiffre 5. Cette distribution asymétrique reflète par ailleurs un fait diachronique selon lequel les mots d'origine native n'autorisent pas de consonnes voisées (*g, z, d, b*) en position initiale. En outre, les statistiques des résultats (Tab.2) mettent en évidence une répartition claire parmi les procédés phonologiques du *goro-awasé*: choisir une des lectures complètes du chiffre, sans changement phonologique (1665/3345 soit env. 50% des données, exclu du Tab.2), modifier la deuxième more du chiffre (par élision (64,7%), épenthèse (2,6%) ou remplacement (1,8%)) sans affecter la more initiale, modifier la more initiale

(dévoisement/voisement (17,7%) > changement consonantique (1%) > palatalisation (0,9%) > changement vocalique (0,8%)), et enfin, d'autres types de changements non motivés (10,5%).



Tab.2 Répartition des changements phonologiques des *goro-awasé* (1680 entrées excluant 1665 entrées sans modifications)

Pour expliquer la stabilité phonologique de la more initiale dans le *goro-awasé*, on peut mobiliser le concept de fidélité positionnelle, issu de la théorie de l'optimalité (Beckman 1999 ; Prince & Smolensky 1993). Selon ce principe, certaines positions, notamment initiales, bénéficient d'une fidélité privilégiée aux représentations sous-jacentes. Appliqué au jeu de mots en japonais, cela rend compte du fait que la more initiale est moins sujette aux modifications que la more péninitiale. Les changements se concentrent plutôt sur des mores faibles, souvent la péninitiale, résultant d'un compromis entre fidélité et contraintes structurelles. Ce cadre permet ainsi d'expliquer pourquoi la manipulation phonologique en position péninitiale, notamment la suppression, est nettement plus fréquente que les altérations touchant la more initiale, ces dernières violant en effet ce qui serait la contrainte de fidélité positionnelle la plus hautement classée (*Ident-Initiale-μ* : la more initiale doit conserver ses traits segmentaux).

Nous pouvons tirer deux généralisations de cette étude. La première concerne la position privilégiée et la stabilité de la more initiale, un phénomène largement abordé dans la littérature dans divers contextes phonologiques (Beckman 1999 ; Irwin 2009 ; Irwin et Lyddon 2016 ; Labrune et Irwin 2021 ; Nooteboom 1981). Cette observation rejoint l'étude de Schourup (2000) sur le *goro-awasé*, qui propose la généralisation appelée *Left Identity*, selon laquelle un élément mnémotechnique peut évoquer une variante numérique si sa portion gauche est phonologiquement identique à celle de la variante. L'organisation hiérarchique des changements phonologiques dans nos données vient également compléter cette formulation. On peut également supposer que la stabilité de la position initiale repose sur la distinctivité phonologique intrinsèque des premières mores des chiffres japonais, qui seraient plus saillantes que les secondes mores, ces dernières étant souvent partagées en /R/, /N/ (ou /ti, tu, ta, to ou ku/ etc. hormis la lecture anglaise). La seconde généralisation indique que le procédé phonologique du *goro-awasé* reflète des phénomènes courants de la phonologie du japonais, tels que le *rendaku* (voisement séquentiel lors de la formation d'un composé), la palatalisation (observée dans des flexions ou expressions verbales ou adjectivales), l'alternance *h*/*p* (selon l'analyse diachronique, Ueda 1897 et l'effet diacritique, Schourup 2000) ou l'apophonie (changement vocalique, Irwin et Lyddon 2016 ; Labrune et Irwin 2021). Enfin, ces processus phonologiques se réalisent au niveau de la more plutôt qu'à celui de la syllabe (Labrune 2012 ; Uwano 1993).

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Too strong, too weak, or just right: gradiently active tones and tonal fusion in Ayutla Mixtec

Thom van Hugte | Universität Leipzig
thom.van_hugte[at]uni-leipzig.de

Main claim: Assuming Gradient Symbolic Representations and the possibility for tonal primitives (H, L, etc.) to "fuse" is necessary in order to analyse tone in Ayutla Mixtec, an Oto-Manguean language of Mexico. The data are too complex to be accounted for using standard assumptions on tonal representations, such as an open set of primitives or tonal features. **Data (Pankratz & Pike, 1967):** Ayutla Mixtec has H, M, and L surface tones. Roots are typically bisyllabic and cannot end in M unless they are entirely M-toned. Floating H tones appear after word-final /ʔ/. For example, when [ʃī.dàʔ] 'tongs' and [vì.ʃì̀] 'cold' are combined into the sequence [ʃī.dà ví.ʃì̀] 'the cold tongs', [ví] is high-toned (note: /ʔ/ is deleted if word-final without being phrase-final). Table 1 shows the data with the most crucial tonal alternations.

2nd root / 1st root	**M.L**	**L.L**	**L.H**
H.H	H.L	--	--
M.Lʔ/L.Lʔ	H.H.L	H.L	--
H.Lʔ	H.H.L	M.L	--
H.Hʔ	H.H.L	M.L	M.H

Table 1: *tones of roots in isolation in bold, with glottal stops indicated for the preceding root to indicate the presence of floating H. The cells in the body of the table show the surface realisations of the second root. The double hyphens indicate that no alternation takes place.*

Plain H.H overwrites M.L to H.L, and never affects any L. When the first root ends in /ʔ/, there are three possible different effects on the leftmost tone of the second root: nothing, raising a low to mid, or complete overwriting. H.Hʔ uniquely raises L.H to M.H, but patterns with H.Lʔ in its effects on L.L roots, whereas M.Lʔ/L.Lʔ roots cause full overwriting there. Yet all ʔ-final roots overwrite M.L roots, which will surface as H.H.L trisyllables. Assuming only floating H, it should not be able to raise L to M. Assuming tonal features like [+upper], the alternations are inconsistent. In both cases, one would need to posit extremely specific constraints to account for these diverse alternations and still lack a uniform explanation of the data. **Analysis:** I assume Gradient Symbolic Representations (Smolensky & Goldrick, 2016) where each phonological object can have an activity/strength between 0 and 1. In Gradient Harmonic Grammar (cf. Hsu, 2022), gradiently active objects will gradiently violate weighted constraints, such that e.g. deleting a fully active tone incurs a greater MAX-T violation than deleting a weak tone. Conversely, realising a weakly active tone requires a DEP-T violation that is unnecessary for a fully active tone. For Ayutla Mixtec, I assume a constraint that penalises multiple H tones in roots at the word-level phonology, which is satisfied by reducing H-activity of the floating tone. Any intervening L or /ʔ/ reduces the amount of activity that needs to be deleted.

***[HxH>1]ω**: *penalise multiple H tones within a word such that their combined activity may not exceed 1, where each intervener x between H tones provides a "buffer" of 0.4.*

This yields the following representations after word-level phonology: M.L^{ʔH1}, L.L^{ʔH1}, H.L$^{ʔH0.8}$, H.H$^{ʔH0.4}$. In roots with only one H, nothing needs to change. In H.L^{ʔH}, the intervening L and ʔ each provide a buffer of 0.4, so that H may have 0.8 as its activity (1–(2 x 0.4)+0.8=1). Therefore, if there is only one intervener, the constraint will enforce floating $H_{0.4}$. In case of hypothetical *H.H (with two *separate* H tones), the constraint would require full deletion of one H, essentially being OCP-H within a word. Having derived these activity differences at the word level, the H tones violate the same constraints differently at the phrasal level, hence their different behaviours. The constraints themselves stay relatively simple and motivated.

I furthermore assume that H and L tones can fuse into a derived M by associating to the same TBU. Although this is an uncommon assumption, I can show that this straightforwardly explains data from multiple unrelated languages. In Ayutla Mixtec, derived M consists of fully active L and partially active H, which together have full activity. I assume a constraint that bans fusion between fully active tones (*2T_1>σ), so H_1 and L_1 cannot fuse. The motivation for this can be connected to the fact that Ayutla Mixtec lacks contour tones.

H L2 $H_{0.8}$ L H	*[HxH>1]ω	MAX-H	DEP-H	*FLOAT	DEP-A	$\mathcal{H}$
	∞	100	10	5	1	
☞a. H L2 H_1 L H			–0.2	–1		–7
b. H L2 $H_{0.8}$ L H	–0.4				–1	–∞
c. H L2 $H_{0.4}$ L H		–0.4			–1	–41

In the tableau on the left, candidate a. is the winner because *FLOAT is relatively low-weighted. Because *[HxH>1]ω stays active at the phrasal level, a fusion of $H_{0.8}$ and L_1 is banned (candidate b.). Weakening H to activity 0.4 would allow fusion into [M] as shown in candidate c., but MAX-H has a high weight. For the same reason, a fully active floating H_1 in the input would also simply be left floating. In contrast, if the input were already $H_{0.4}$, we would expect it to fuse with the fully active L into surface [M].

If the second root is M.L in isolation, it becomes H.L or H.H.L. I assume underlying M is in fact unspecified Ø. This explains 1) the restriction on M-final roots, 2) why non-floating H tones spread there, and 3) why floating H does something unusual. The floating tones not only associate, but must also satisfy a constraint that needs floating H to align to both underlying TBUs of the word: ALIGN-R(FL.H,ω). Because L cannot be deleted, the alignment constraint can only successfully be satisfied by "evacuating" L to an epenthetic syllable, allowing H to associate to both underlying TBUs.

H L2 $H_{0.8}$ L_1	MAX-L	*2T_1 > σ	DEP-H	ALIGN-R(FL.H,ω)	DEP-σ	MAX-A	DEP-A	$\mathcal{H}$
	∞	∞	10	8	3	2	1	
a. H L2 H_1 L_1			–0.2	–1			–1	–11
b. H L2 H_1 L_1		–1	–0.2				–2	–∞
☞c. H L2 H_1 L_1			–0.2		–1	–1	–3	–10
d. H L2 H_1	–1		–0.2				–2	–∞

Candidate a. violates the alignment constraint. Candidate b. violates the inviolable constraint against fully active tones fusing. Candidate c. is optimal by shifting L onto an epenthetic syllable, as it cannot be deleted (as in d.). When the second root is L.L, only the strongest H can delink L. The weaker H tones need not violate DEP-H and can both fuse with L to become a derived M without violating *2T_1>σ. The reason why there is no epenthetic syllable in that case, it because this would require floating H to become fully active, violating DEP-H; it would need to be fully active on its own in order to associate to the first TBU of the root. Hence L.L cannot surface as *H.H.L or *H.M.L. In conclusion, all surface patterns can be accounted for if a restricted version of GSR derives differences at the word level. The additional theoretical assumptions are independently motivated and/or can explain multiple aspects of the data.

Sources: Hsu, Brian. (2022). Gradient symbolic representations in Harmonic Grammar. *Language & Linguistics Compass*, e12473. https://doi.org/10.1111/lnc3.12473. **Pankratz, Leo & Eunice V. Pike**. Phonology and Morphotonemics of Ayutla Mixtec. *International Journal of American Linguistics, 33*(4), 287–299. **Smolensky, Paul & Matthew Goldrick**. (2016). Gradient symbolic representations in grammar: The case of French liaison. Ms, Johns Hopkins University and Northwestern University, *ROA 128*.

Alternances vocaliques et co-phonologie de la dérivation savante en français standard

Charles Vancaeyzeele (Laboratoire Ligérien de Linguistique)

1. Données. L'histoire du français est jalonnée d'épisodes d'emprunts massifs faits au latin, responsables d'une cohabitation entre formes « populaires » (i.e. de tradition directe) et « savantes » (i.e. empruntés au latin) en synchronie du français moderne. Lorsque deux items populaire et savant manifestent une proximité à la fois dans le contenu sémantique et dans la forme, il est généralement admis qu'ils appartiennent à un même paradigme morphologique (cf. Guilbert 1975, Bonami & Strnadová 2018, Fradin 2021), générant ainsi de nombreux sites d'alternance. Cette étude examine un corpus dictionnairique (cf. *Le Petit Robert*) de 218 paradigmes dérivationnels du français standard. Trois de ces paradigmes, affichés en (1), font chacun alterner un radical populaire (RP) (cf. 1a et 1b) avec un radical savant (RS) (cf. 1c) (les sites d'alternance vocalique et le nombre total de paradigmes qui les hébergent sont indiqués).

1)

	[ɛ/e]~[a] & Ø~[i]		[ɛ/e]~[i] & Ø~[e]		[œ/ø]~[o] & Ø~[y]	
a.	*aigle*	[ɛgØl]	*lettre*	[lɛtØʁ]	*peuple*	[pœpØl]
b.	*aigl-on*	[ɛgØl-ɔ̃]	*lettr-é*	[lɛtØʁ-e]	*peupl-er*	[pøpØl-e]
c.	*aquil-in*	[akil-ɛ̃][1]	*littér-aire*	[litɛʁ-ɛʁ]	*popul-aire*	[popyl-ɛʁ]
/218	42 & 47		7 & 30		21 & 41	

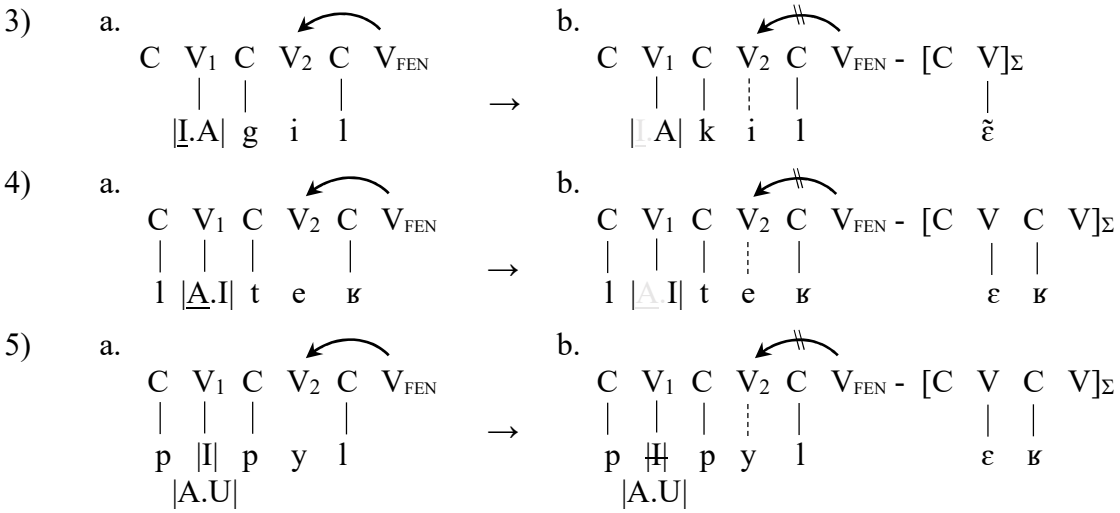
2. Problématique et proposition. La « dérivation savante » est le processus par lequel un RS émerge à partir d'un RP lorsque celui-ci sélectionne certains suffixes (Tamine 1982), eux-mêmes appelés « savants » (ici étiquetés « Σ ») ; en l'occurrence, il s'agit de $[\text{-}ɛ̃]_{\Sigma}$ et de $[\text{-}ɛʁ]_{\Sigma}$, (cf. 1c). L'identification des mécanismes sous-jacents à l'émergence d'un RS a fait l'objet de nombreux travaux, l'hypothèse acceptée par défaut étant celle d'un mécanisme de supplétion (cf. Corbin 1976). Certains auteurs tentent cependant d'imputer la réalisation de certains sites d'alternance à l'application de règles phonologiques morphologiquement conditionnées, à condition que les alternances en question soient suffisamment régulières. Quoique satisfaisants, les résultats présentent certaines limites. Alors que l'analyse de Schane (1968) et Schane & Boulakia (1973) puise dans la diachronie, la proposition de Dell & Selkirk (1978) se restreint à deux alternances V~V : [ɛ]~[a] et [œ]~[o]. Cette étude propose un traitement uniformisé des six alternances affichées en (1), tout en évitant de recourir à la supplétion et de poser des représentations diachroniquement valables en synchronie. L'analyse s'inspire également de l'intuition de Schane & Boulakia (1973), selon laquelle les RS manifestent des propriétés phonologiques particulières, inconnues des RP. La dérivation savante agit alors comme un facteur d'apparition de ces propriétés, modifiant la forme de surface des RP.

3. Cadre théorique. Trois approches théoriques sont combinées : le cadre du CV Strict (Lowenstamm 1996, Scheer 2004), le modèle des co-phonologies (Orgun 1996, Sande *et al.* 2020) et la Théorie des Éléments (Kaye *et al.* 1985, Backley 2011).

4. Analyse. Les réalisations savantes du tableau (1) sont imputées à l'activation simultanée de trois mécanismes phonologiques regroupés au sein d'une co-phonologie « savante » (notée Φ_{Σ}), déclenchée par la concaténation à un RP d'un suffixe savant idiosyncratiquement spécifié à cet effet. Les effets de Φ_{Σ} sont listés en (2). La prise en compte de Φ_{Σ} permet d'obtenir les représentations des RS suffixés [akil-ɛ̃] (cf. 3b), [litɛʁ-ɛʁ] (cf. 4b) et [popyl-ɛʁ] (cf. 5b), respectivement dérivés à partir des RP [ɛgl] (cf. 3a), [lɛtʁ] (cf. 4a) et [pœpl] (cf. 5a). Le mécanisme (2a) de Φ_{Σ} permet d'expliquer pourquoi V_2 est uniquement réalisé dans les RS : V_{FEN}, par défaut en mesure de gouverner V_2 (cf. 3a, 4a et 5a), perd cette faculté en (3b), (4b) et (5b). La voyelle jusqu'alors flottante est donc contrainte de s'associer pour satisfaire l'ECP.

2) Φ_{Σ} { a. Re-paramétrage du V_{FEN} ; b. Suppression des têtes phonologiques ; c. Réduction des matrices de trois éléments }

[1] L'alternance consonantique [g]~[k] n'est pas traitée ici.



Les alternances en V_1 sont quant à elles dues à deux effets possibles de Φ_Σ : soit le noyau est contraint de se débarrasser d'un troisième élément (cf. mécanisme 2c, effectif en 5b), soit l'élément tête est supprimé (cf. mécanisme 2b, effectif en 3b et en 4b). En partant du principe que le segment populaire [ɛ] possède une forme sous-jacente différente entre les RP [ɛgl] (cf. 3a) et [lɛtʁ] (cf. 4a), soit /e/ |I.A| et /ɛ/ |A.I| respectivement, l'émergence des deux segments savants [a] et [i] en (3b) et (4b) est effectivement attendue. Ce traitement est légitimé par le fait que, en français standard, le contraste d'aperture qui oppose /e/ à /ɛ/ est neutralisé dans cette position, i.e. en syllabe fermée (Mertens 2019). L'archiphonème /E/ qui en résulte est donc susceptible de dissimuler l'un comme l'autre objet.

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Vocalisme des verbes trilitères sains dans deux sociolectes de l'arabe tunisien : gouvernement propre et pieds prosodiques

Charles Vancaeyzeele & Mohamed Bahri (Laboratoire Ligérien de Linguistique)

1. Données et problématique. La transcription de 21h de données orales d'arabe tunisien (AT) parlé à Tunis révèle deux vocalismes différents dans les verbes trilitères sains, au perfectif (PF) et à l'imperfectif (IPF) de la forme I. Le vocalisme de la variante A (AT-A) est assez bien connu de la littérature (Chekili 1982, Turki *et al.* 2015), contrairement à celui de la variante B (AT-B). Ils sont mis en contraste en (1) à travers la flexion de la racine √ktb (« écrire »).

1) FLEXIONS DE LA RACINE √ktb AU PF ET À L'IPF EN AT

		PF (AT-A)	IPF (AT-A)	PF (AT-B)	IPF (AT-B)
SG.	1	ktɨb-**Ø**tØ	nɨ-ktɨb	ktɨb-**ɨ**tØ	nɨ-ktɨb
	2	ktɨb-**Ø**tØ	tɨ-ktɨb	ktɨb-**ɨ**tØ	tɨ-ktɨb
	3M	ktɨb	jɨ-ktɨb	ktɨb	jɨ-ktɨb
	3F	kɨtb-ɨt	tɨ-ktɨb	kɨtb-ɨt	tɨ-ktɨb
PL.	1	ktɨb-na	nɨ-k**Ø**tØb-u	ktɨb-na	nɨ-k**ɨ**tØb-u
	2	ktɨb-tu	tɨ-k**Ø**tØb-u	ktɨb-tu	tɨ-k**ɨ**tØb-u
	3	kɨtb-u	jɨ-k**Ø**tØb-u	kɨtb-u	jɨ-k**ɨ**tØb-u

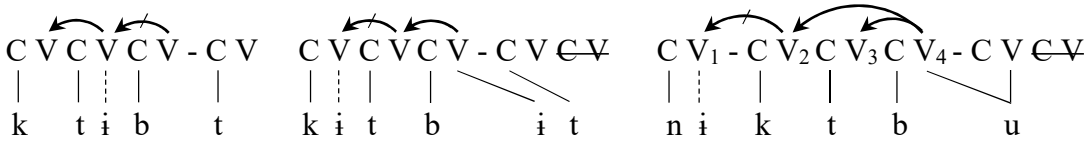
Les réalisations divergentes sont mises en gras. Alors que l'AT-A tolère les séquences finales de deux consonnes (cf. [ktɨb-ØtØ]) et les séquences médianes de trois consonnes (cf. [nɨ-kØtØb-u]), ce n'est pas le cas pour l'AT-B (cf. [ktɨb-ɨtØ], [nɨ-kɨtØb-u]). Cette étude propose de dégager les raisons de cette asymétrie, en postulant que le vocalisme de l'AT-B est dérivé à partir de celui de l'AT-A. Une réflexion de nature sociolinguistique est aussi présentée : elle permet de corroborer l'analyse phonologique, tout en lui trouvant des applications concrètes.

2. Cadre théorique. L'analyse s'inscrit dans le cadre de la Théorie CVCV (Lowenstamm 1996, Scheer 2004), que nous complétons d'une dimension métrique en postulant que les noyaux projettent des « pieds de gouvernement propre » (Rowicka 2001).

3. Analyse (AT-A) : Gouvernement Propre. Le vocalisme de l'AT-A est identique à celui des paradigmes correspondants en arabe marocain (AM), amplement décrits dans la littérature en Phonologie du Gouvernement (Kaye 1990b, Kaye *et al.* 1990) et en CVCV. Les alternances [ɨ]~Ø sont attribuées à un mécanisme d'épenthèse géré par le gouvernement propre (GP) (cf. Kaye 1990a, 1990b, Kaye *et al.* 1990), dont les effets varient selon le paramétrage. Suivant Arbaoui (2002), les deux contraintes suivantes sont adoptées : i) les noyaux vides finaux (FEN) sont incapables de gouverner[1] ; ii) le domaine d'application du gouvernement exclut le gabarit suffixal. La quasi-totalité des formes est correctement dérivée, dont [ktɨb-t] en (2a). En revanche, le segment [ɨ] dans le suffixe de [kɨtb-ɨt] en (2b) n'est pas épenthétique, mais lexical (*ibid.*).

2) ALTERNANCES [ɨ]~Ø ET GP (NON-)LOCAL

a. 1/2SG.PF [ktɨb-t] b. 3SG.F.PF [kɨtb-ɨt] c. 1PL.IPF [nɨ-ktb-u]



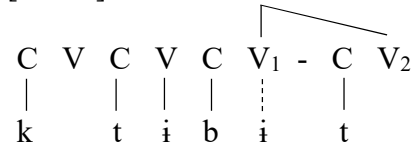
[1] L'existence du FEN (et de sa propension à dispenser des forces latérales) est une conséquence de l'architecture phonologique supposée par la théorie CVCV (réputée pour multiplier les positions vides), bien qu'elle lui soit antérieure. En Phonologie du Gouvernement Standard, Kaye *et al.* (1986) répudient la possibilité que l'AM ait des noyaux simples en position finale de syllabe. Kaye (1990a), en revanche, stipule que le FEN est présent dans toutes les langues qui admettent des consonnes en finale de mot. Si le FEN est licencié, alors il demeure vide ; s'il ne l'est pas, il doit être réalisé. Crucialement, un FEN licencié est incapable de proprement gouverner un noyau immédiatement précédent (c'est le cas de l'AM). Inversement, Charette (1991) stipule que les FEN (sur le plan typologique) sont des gouverneurs-licencieurs potentiels, et ce même s'ils sont licenciés.

Concernant les formes plurielles à l'IPF, dont le radical ne présente aucune voyelle en surface (cf. [nɨ-ktb-u] en 2c), un autre type de GP, en l'occurrence « non-local », est dispensé par V_4 sur V_2 et V_3 simultanément (cf. Kaye 1990b). Il est postulé que le domaine d'application du GP non-local est le radical uniquement. La présence de [ɨ] en V_1 est donc imputée au GP « local », que V_2 est incapable de dispenser puisqu'il est gouverné.

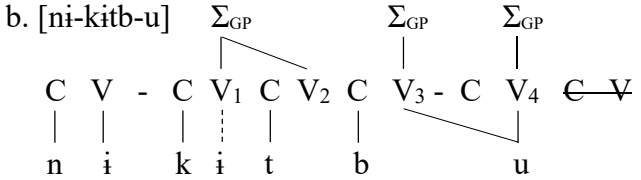
4. Analyse (AT-B) : pieds prosodiques. Les formes en (2b) et (2c) ne sont pas attestées en AT-B (cf. [ktɨb-ɨt] et [nɨ-kɨtb-u]), qui ne semble pas tolérer les séquences de noyaux vides. La dérivation des formes se déroule en deux temps. Le GP (paramétré de manière identique) s'applique tout d'abord, générant ainsi les formes obtenues en (2). Ensuite, les séquences de noyaux vides sont réparées par la projection de « pieds de gouvernement propre » (Σ_{GP}) (Rowicka 2001). Les Σ_{GP} se construisent de droite à gauche, et sont maximalement constitués de deux noyaux. Chaque noyau rempli projette à lui seul un Σ_{GP} dont il est la tête (cf. V_3 et V_4 en 3b). Crucialement, une tête est nécessairement réalisée phonétiquement. Si deux noyaux vides projettent un Σ_{GP}, celui de gauche est le siège d'une épenthèse de [ɨ] (cf. V_1 en 3a et 3b).

3) PROJECTION DE PIEDS GP

a. [ktɨbɨ-t]



b. [nɨ-kɨtb-u]



5. Ouverture sociolinguistique. La dérivation de l'AT-B à partir de l'AT-A est corroborée par le statut sociolinguistique des deux variantes : l'AT-B, stigmatisé et sujet à stéréotypage négatif, se définirait uniquement par une dépendance appuyée par l'AT-A, qui fait office de norme sociale (cf. Labov 1966). Par ailleurs, le traitement épenthétique de [ɨ] se prête à deux applications différentes : (i) l'élaboration de conventions de transcription orthographique de l'AT en alphabet latin, dans lesquelles ce segment serait ignoré ; (ii) l'établissement d'une corrélation entre la réalisation des sites d'alternance et certaines catégories socio-professionnelles, afin de définir un certain « potentiel socio-différentiel » (cf. Lahire 2004).

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The Phonology of the Bangime Perfective-1 Suffix

Fabian Zuk (LLACAN - UMR 8135)

Bangime is a language isolate spoken by some 3000 speakers across 7 villages of the Bandiagara region in central Mali (cf. Blench 2007; Hantgan 2013), its speakers the Bangande claim genealogical affiliation with the neighbouring Dogon linguistic group. Despite many resemblances in vocabulary, which Hantgan (2013) attributes to borrowing, the morpho-syntax of the languages are very distinct, especially regarding such typological traits as word order (cf. Dyachkov & Hantgan *in prep*). One point of convergence between these language families however is the use of tonal overlay, ablaut, and suffixation to mark Aspect, Mood and Polarity (AMP) according to verbal class.

Among AMP categories, Bangime marks two distinct perfectives: (PFV1) and (PFV2); the former is found in focalized constructions and as the head of a relative clause, while the latter is found more broadly, denoting non-stative events and is regularly used to translate French past tenses (cf. Heath & Hantgan 2018: 272–282). The two forms of the perfective may be distinguished by tone alone (1a–b), by tone + suffixation (1c–d), by suffixation alone (1e) or by changes of the final vowel (1f-g) (cf. Heath & Hantgan 2018: 219–220). In this regard, Bangime is like Germanic, in its marking of verbal categories through ablaut, e.g. English present *sing,* preterit *sang,* p.p. *sung*; or through suffixation *burn* ~ *burn*[t], *house* ~ *hous*[d], *part* ~ *part*[əd]. In this talk we focus on the morpho-phonology of the Bangime suffixing PFV-1 class, framed within element theory (Backley 2011) and strict CV phonology (Scheer 2004). Through internal reconstruction (cf. Author et al. *in prep*) we have reconstructed an underlying **dV* morpheme for the perfective-1, where *V* represents a *schwa*-like underspecified vowel characterized by the element |A|.

(1)		**Pfv2$_{3Sg}$**	**Ipfv$_{1Sg}$**	**Pfv1$_{3S}$**	
a.	‘exit’	*bìrè*	*bìrè*	*bīrè*	tone
b.	‘wait’	*dēŋgò*	*dēŋgò*	*dèŋgò*	
c.	‘hang up’	*jṵ̀:*	*jṵ̀rà*	*jūndà*	(tone) + suffix **dv*
d.	‘dance’	*jṵ̀:*	*jùw̃ò*	*jūmbà*	
e.	‘buy’	*ɥàà*	*ɥàà*	*ɥààrà*	
f.	‘swim’	*jìnì*	*jìnà*	*jìnà*	(tone) + ablaut
g.	‘help’	*bɔ̀gù*	*bɔ̀gɔ̀*	*bɔ̄gɔ̀*	

While Heath (*unpublished*) has reconstructed a perfective suffix **rV* which undergoes fortition when in contact with a stop, here we have inversed the interpretation of the underlying-to-surface mapping, reconstructing underlying *d instead, based on evidence that /d/ is flapped intervocalically in Bangime. This hypothesis is confirmed from the wholesale lack of [d] intervocalically in the Bangime lexicon, and the identification of widespread post-vocalic lenition. Rather, as in (2a) we posit that intervocalic /d/ → [ɾ] through the loss of its occlusion |ʔ| element. The inherent stop nature of the underlying stop phoneme remains visible when preceded by a consonant where it remains /d/ after an /n/ (1c) or assimilates to [b] after an /m/ as in (1d) according to the place assimilation rule in (2b).

(2)

		C		C		V	V
		|		|	/	|
a.	/d/ =	|ʔI|	→	[ɾ] =	|I|		____

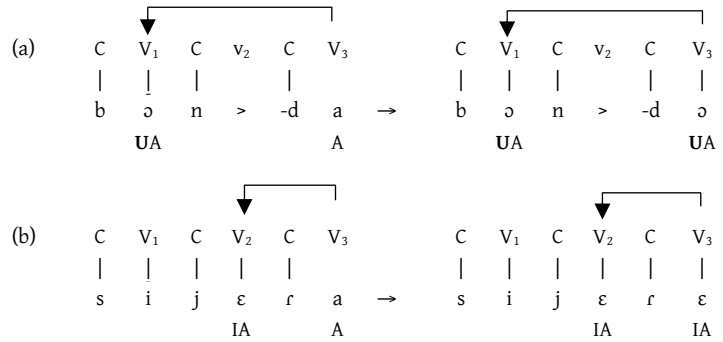
b. /d/ = C | → [b] / C | |ʔI| |ʔU| |U| ____

As shown in (1c–e) the vowel of the perfective-1 suffixes *-dV* regularly surfaces as [a], though the additional data in (3) demonstrate a greater range of surface vowels: [a] ~ [ɔ], [o], [ɛ].

(3)		**Pfv2$_{3Sg}$**	**Ipfv$_{1Sg}$**	**Pfv1$_{3S}$**
a.	'live'	*bɔ̀r̃ɔ̀*	*bɔ̀r̃ɔ̀*	*bɔ̄ndɔ̀*
b.	'moisten'	*mùw̃ɔ̀*	*mùw̃ɔ̀*	*mùw̃ɔ̀rɔ̀*
c.	'pass'	*dɔ̀ɔ̀*	*dɔ̄ɔ̀*	*dɔ̀ɔ̀rɔ̀*
d.	'urinate'	*sìjɛ̀*	*sìjɛ̀*	*sìjɛ̀rɛ̀*
e.	'cultivate'	*dɛ̀ː*	*dɛ̀ː*	*dɛ̀ːrɛ̀*
f.	'rip'	*pùjɛ̀ː*	*pùjɛ̀ː*	*pùjɛ̀rɛ̀*

The vowel of the perfective-1 suffix *-dV* matches that of V_2 of the root vowel in a majority of cases, both in vowel height and roundness/backness, hence the proposal of root-conditioned progressive vowel harmony from the verbal root to the perfective-1 suffix. Harmony can be accounted for by the superposition of |U|, |U̲| or |I| onto the underlying |A| of the suffix target V_3 from the first filled vowel to its left, in those cases where the trigger also contains the element |A|. This is formalized in (4), where vowel harmony fails to occurs in (4a) and (4b) due to the presence of |A| in the trigger nucleus.

(4) *If* V_3 *of suffixal* -dV 'perfective-1' *governs a verb-stem vowel containing* |A| *and any colouring elements* {I, U}, *then all colouring elements are copied onto* V_3.



Through the place-assimilation (2) and |I,U|-harmony (4) rules presented here, a significant majority of reputed suffix allomorphy (Heath & Hantgan 2018; 2020) in the Bangime perfective-1 suffix can be accounted for as regular allophony. Several complicated case studies and lenition within Bangime more generally will also be discussed.

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